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Article in *Energy Procedia* · October 2018

DOI: 10.1016/j.egypro.2018.10.023

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# Comparison between eco-management and audit scheme and ISO 14001:2015

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## Abstract

Traditional approaches to protect environment usually rely on a legal framework that enforces measures and behaviors on organizations. However, to achieve sustainability it is necessary to apply other tools that need a stronger commitment from the organizations in the three pillars of sustainable development. The implementation of an Environmental Management System, being a voluntary instrument, can play an important role in the environmental pillar because it has a structured approach to manage environmental aspects of organizations. The new revisions of the two most important standards maintain the previous pattern. EMAS (Eco-Management and Audit Scheme) incorporates the requirements of ISO 14001:2015 while maintaining important additional requirements such as the Environmental Statement and the employee involvement. The new revision of ISO 14001 by emphasizing organizational environmental performance can be a significant opportunity to increase sustainability given the fact that this international standard is more widely implemented than EMAS.

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Selection and peer-review under responsibility of the scientific committee of the 5th International Conference on Energy and Environment Research, ICEER 2018.

**Keywords:** Environment management systems; environment; sustainability; EMAS; ISO 14001

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## 1. Introduction

Sustainable Development (SD) aims to achieve a higher and better level of development considering economic, environmental and social concerns. Traditional environmental policies relied on mandatory regulation to decrease pollution and reducing environmental impacts caused by industry and other sources of pollutants. The legislation is a powerful tool to reduce emissions to air, water, and soil and to protect natural resources and ecosystems. In the European Union, there are many regulations about environmental issues. However regulatory issues are external to organizations and in this case organizations' ultimate goal is to achieve the limits established to avoid penalties and other intangible drawbacks such as bad reputation or relations with local communities. Environmental Management Systems (EMS) were created with the goal of helping organizations to better manage their environmental aspects [1]. There are two main reference standards that set out the requirements for an environmental management system, namely the ISO (International Organization for Standardization) International Standard 14001:2015 [2] and the Eco-Management and Audit Scheme (EMAS) regulated by the European Regulation EC 1221/2009, with the changes presented in European Regulation EC 1505/2017 [3,4]. These two standards are based on a different environmental policy approach because they are voluntary.

Concerning the most relevant difficulties to adopt EMS, from an internal perspective, the costs of its implementation and of using cleaner technologies, are usually stated in the literature [5]. From an external perspective, the more relevant difficulties mentioned are obstacles in different local and international environmental legislation [5] and integration through the overall supply chain [6]. The two systems were recently revised and this work performs an analysis of both systems identifying the main changes in each of them and addressing key aspects that can show the differences between them, which can be valuable information for organizations that want to implement an EMS and improve its environmental performance.

## 2. ISO 14001

ISO 14001 is an International Standard based on the concept that better environmental performance can be achieved when environmental aspects are systematically identified and managed.

The revised standard ISO 14001:2015 presents some aspects that are completely new and others that were modified. Some changes are due to the new requirements that affected the way some of the other requirements are applied. In this analysis, the requirements that will be addressed are the ones that bring some novelty by themselves. For example, understanding the organization and its context falls into the category of new requirements. It is a consequence of the adoption of Annex SL, which intends to harmonize the standards concerning management systems. This is a strategic requirement and organizations should consider the external and internal questions, including environmental issues that can affect or be affected by its environmental performance [7]. Strategic tools such as SWOT (Strengths, Weaknesses, Opportunities, and Threats) and PESTEL (Political, Economic, Social, Technological, Legal, and Environmental) can be used for those purposes, [8]. Understanding the needs and expectations of interested parties is also a new requirement since it adopts a new and deeper approach to this issue. In the 2015 ISO 14001 edition, it is necessary to identify the relevant interested parties (customers, employees, suppliers, shareholders, local community, authorities, etc.) and their needs and expectations and determine which of them will become obligations of the organization [2]. Organizations should focus on issues or changing circumstances related to the needs and expectations of (relevant) interested parties (including regulatory requirements) and local, regional, or global environmental conditions that can affect, or be affected by, the organization. Once identified as a priority, actions to mitigate adverse risk or exploit beneficial opportunities are integrated into the operational planning of the EMS and organizations are expected to adopt proactive initiatives to protect the environment from harm and degradation [7]. In the determination of the scope of the EMS, the most significant change is related to consideration of new requirements previously mentioned. Leadership and commitment is also a new requirement. In this requirement, top management is held responsible for EMS and although there is the possibility of delegating responsibilities to others, the accountability for the effectiveness of EMS remains attributed to it. The existence of a management representative in this version is not required. Environmental policy is not a new requirement but has an innovative approach because it expands the commitment of organizations to include aspects such as sustainable resource use, climate change mitigation and adaptation, etc.

The requirement for actions to address risks and opportunities is new because it goes beyond the old concept of preventive actions [8]. In the 2015 ISO 14001 edition, the organizations that adopt it should determine the risks (negative) and the opportunities (positive) related to its environmental aspects, compliance obligations and other context issues. The novelty is also present in the environmental aspects requirement since it is introduced the life cycle perspective. Life cycle thinking and related methodologies such as life cycle assessment are important tools to achieve Sustainable Development and are being applied to find more sustainable solutions [9, 10]. Organizations will need to extend its control and influence the environmental impacts associated with product use and end-of-life treatment or disposal. The communication requirement has significantly changed because it is necessary a process for internal and external communication (what, when, whom and how). There is a recommendation for delivering factual, accurate and truthful information and that, for example, complaints should have a prompt and clear answer. In the requirement Monitoring, measurement, analysis, and evaluation there is a significant change because now organizations will have to evaluate their environmental performance by establishing criteria and indicators. It reinforces the relevance of the continuous improvement of the organization's environmental performance.

Reflecting the technological advances in managing information ISO 14001:2015 incorporates the concept of 'documented information', instead of 'documents' and 'records' [7].

Recent research on ISO 14001:2015 perceived benefits reports that the "integrated approach with other management sub-systems", the "alignment with business strategy", the "improved top management commitment", and the "improved internal and external communication", are the major benefits achieved by organizations that have already been successfully certified accordingly to the ISO 14001 2015 edition [11].

### 3. EMAS

The relevant revisions in the new EMAS 2017 edition, are related to the "Understanding the organization and its context", "Understanding the needs and expectations of interested parties", "Leadership and commitment", "Actions to address risks and opportunities", "Environmental aspects", and "Management review" [12]. With the EMAS' revision organizations should determine the organizational context of their environmental management system and identify the interested parties and their relevant needs and expectations. For EMAS this means that external and internal issues that can affect the ability of the organization to achieve the goals established for its EMS should be determined. Issues such as climate, water quality, political, legal, etc. should be considered. These factors can potentially affect the EMS and if it is the case they should be included in the environmental review [13]. In this situation, as mentioned for ISO 14001, a SWOT and/or a PESTEL analysis could be applied. The identification of interest parties and their relevant needs is also similar to ISO 14001. In addition, it should consider a life-cycle perspective when assessing the significance of their environmental aspects. However as in ISO 14001:2015 it is not necessary to conduct a full life cycle assessment.

Finally, organizations should determine the risks and opportunities related to their EMS to help prevent undesired effects or accidents, that are obstacles to the intended organizations' outcomes and that don't contribute to a continuous environmental performance. Main changes are in Annex I (Environmental Review) and Annex II (EMS Requirements). Annex III (Internal Environmental Audit) has been only slightly modified and Annex IV (Environmental Reporting) has not been changed [13].

### 4. Comparison between ISO 14001:2005 and EMAS (revision 2017)

Figure 1 summarizes the main formal and system similarities and differences between the two standards. Several aspects were considered in this analysis, namely regulatory, geographical applicability, goal, organizational, organization's context, leadership, legal compliance, environmental aspects, employee involvement, external communication, and internal audit. The main differences are highlighted in orange.

The main drivers to adopt ISO 14001 are external stakeholders' pressure, application to green investments while the implementation of EMAS is mainly influenced by internal motivations [14,15]. Since ISO certification has no structured link to authorities the commitment to improve environmental performance is weaker than in EMAS registration. In ISO certification the strongest improvement in environmental performance occurs in the initial phase

of certification [16]. The new revision of ISO 14001 puts emphasis on organizational environmental performance which can be an opportunity to increase sustainability given the fact that is worldwide accepted standard.

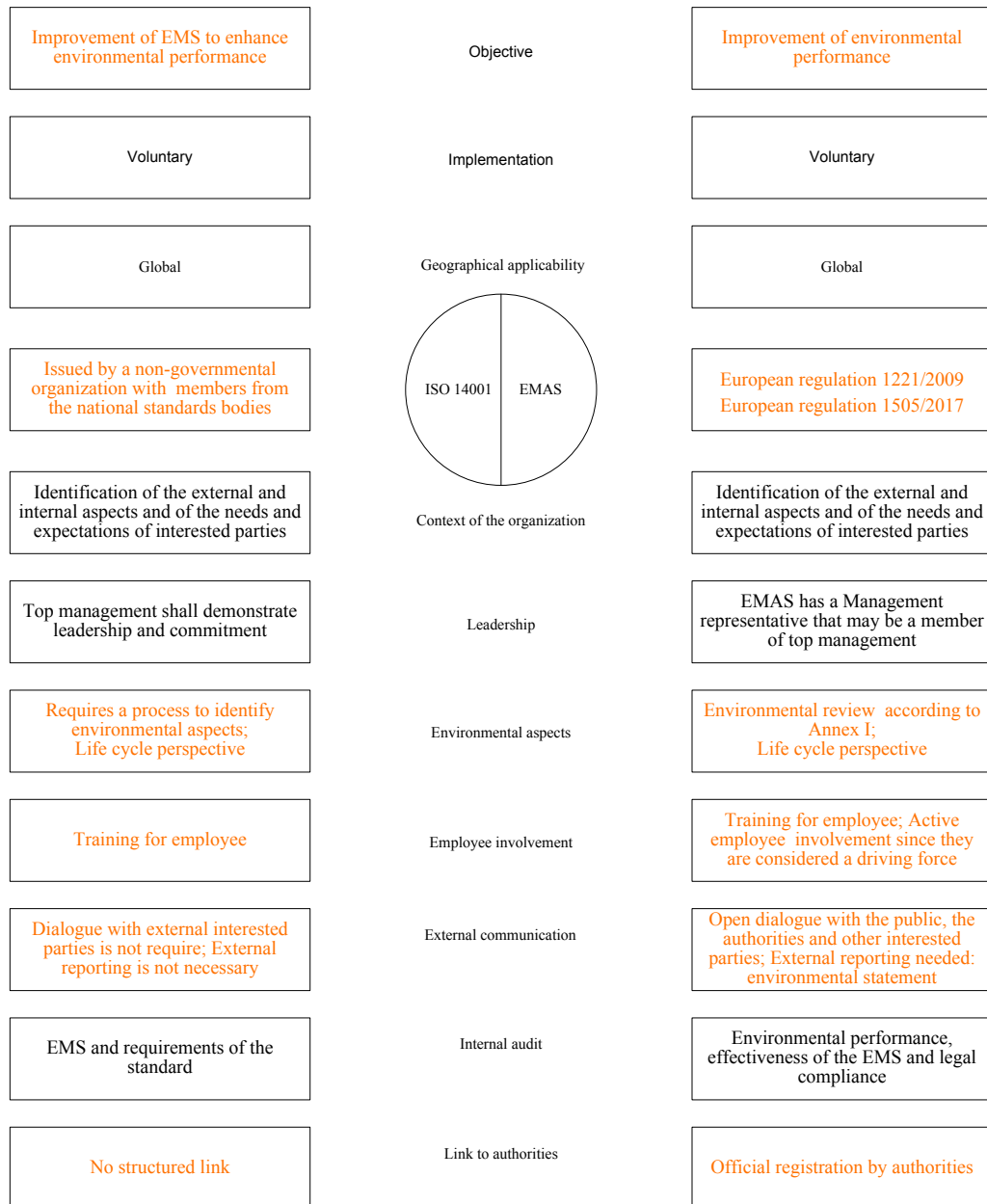


Fig. 1. Formal and system similarities and differences

## 5. Conclusions

EMS are useful tools for organizations to manage their environmental aspects. The new revisions of ISO 14001 (2015) and EMAS (2017) maintain the previous trend. EMAS contains all the requirements of ISO 14001:2015, having additional items such as the Environmental Statement and employee involvement. The two standards include new

items such as the context of the organization, the needs and expectations of interested parties and the life cycle perspective which are also relevant to SD.

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