

# EMAS and ISO 14001 in the German industry – complements or substitutes?

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## ABSTRACT

The two environmental management system (EMS) standards EMAS and ISO 14001 have been available in Europe for the last 15 years. ISO 14001 has been taken up at a much larger scale but many firms in the German automotive and engineering industry have certified their EMSs according to both standards. Two research questions are addressed: (i) What explains why companies adopt both EMAS and ISO 14001? (ii) Are EMAS and ISO 14001 complements or substitutes? Based on 21 interviews with industrial and institutional representatives, this study finds that, first, the two standards are adopted for completely different reasons: while ISO 14001 is often done as a response to external pressure, EMAS tends to be motivated internally. Second, it is argued that EMAS and ISO 14001 are likely in a situation of direct competition at present which may well turn into complementarity in the future.

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## 1. Introduction

Since the 1990s, new environmental policy instruments have developed which encompass a range of market-based instruments and voluntary regulation. Environmental management systems (EMS) belong to the 'more flexible policy instrument(s)' (Zito and Egan, 1998) that arose in the wake of what Banerjee has termed 'corporate environmentalism', i.e. the 'the recognition and integration of environmental concerns into a firm's decision-making process' (Banerjee, 2002; see also Hillary and Thorsen, 1999). The mid-90s saw the emergence of the two EMS standards that remain dominant until today: the European Eco-Management and Audit Scheme (EMAS) and the International Organization for Standardization's ISO 14001. Both standards are comparatively successful in the German automotive and engineering industry which makes Germany an interesting place for researching their relationship. Two research questions are addressed in this study. First,

(i). *what explains why companies adopt both EMAS and ISO 14001?*

In the interviews that were conducted, this was addressed by asking what motivated the adoption of EMAS and ISO 14001, respectively, and how the two decisions were related at the firm. The second research question is which of two hypotheses can be confirmed:

(ii). *EMAS and ISO 14001 are complementary, i.e. implementation of one makes implementation of the other more likely (complementarity hypothesis).*

(iii). *EMAS and ISO 14001 are substitutes, i.e. companies find one more compelling than the other and do not have an incentive to implement both (substitution hypothesis).*

It is found that the two standards are adopted for completely different reasons: while ISO 14001 is often done in response to external pressure, EMAS tends to be motivated internally. Further, it appears that EMAS and ISO 14001 are likely in a situation of direct competition at present which may well turn into complementarity in the future. The following Section is to establish the context of existing research that helps understand EMS standards and their adoption. From the existing literature, expectations are deduced about the motivations of firms to get their EMSs certified and about the relationship between the two standards. It will also show the gaps in the existing literature. The third Section describes the chosen methodology which combines a deductive literature review and an inductive, qualitative approach based on semi-structured expert interviews. The findings are presented in Section 4; Section 5 discusses them and shows the contribution of this study. The conclusion summarises the main points and concludes with questions that may be interesting for further research.

## 2. Uptake and diffusion of standards

This Section reviews the literature relevant for understanding what motivates adoption of the two standards and their relation.

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First, the two EMS standards ISO 14001 and EMAS are reviewed and put in context of the standards literature and the literature on innovation diffusion. Second, external and internal factors identified by previous researchers to motivate environmental activities and adoption of standards at firms are discussed. The last part looks at the expectations derived from this literature and the gaps in it.

### 2.1. Two EMS standards

Standards have been defined as ‘pieces of general advice offered to a large number of potential adopters’ (Brunsson and Jacobsson, 2000b). Standards are voluntary but can act as a form of regulation or governance, especially when they become institutionalised. Indeed, they can become coercive when third parties demand organisations to comply (Brunsson and Jacobsson, 2000a). If standards are adopted by a critical mass of firms, adoption becomes self-enforcing with the possible consequence that standards get locked-in.

EMAS and ISO 14001 are examples for such ‘pieces of general advice’, both serving the purpose of helping companies to implement EMSs that fulfil certain criteria. There are three major differences between the two. First, ISO 14001 is managed by the International Organization for Standardization (ISO) and its equivalents at the national level, such as the German DIN. ISO 14001 certification is available from private accreditation organisations, such as the TÜV in Germany. In contrast, EMAS has been created by the European Commission which manages it in cooperation with the competent bodies at the national level. Thus, EMAS is an instrument of public institutions whereas ISO 14001 certification is sold by private accreditation providers. Second, EMAS’ requirements go beyond those of ISO 14001. For instance, a firm is required to continuously improve its environmental performance under EMAS and to publish an environmental report to demonstrate this improvement. ISO 14001 only requires continuous improvement of the management system. Lastly, EMAS is only available in the EU and has been validated less than 8000 times (EMAS, 2010a). By contrast, over 188,000 ISO 14001 certificates have been issued worldwide, of which almost 48,000 in Europe (ISO, 2008).

Fig. 1 shows that in Europe, ISO 14001 is adopted at a much larger scale than EMAS. Whether this evidence supports the substitution or complementarity hypothesis is not straightforward since EMAS numbers are not declining as ISO 14001 numbers are increasing (Perkins and Neumayer, 2004), but they are not proportionally rising either.

Rogers’ diffusion of innovations model (Rogers, 1995) describes the adoption of dominant innovations as following an S-shaped curve. The idea is that new innovations are taken up by a small

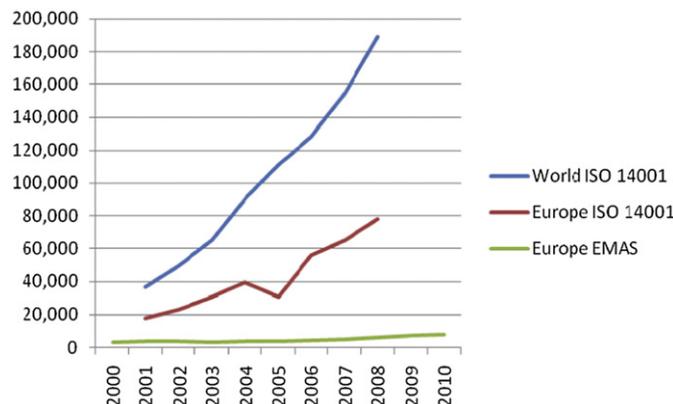


Fig. 1. ISO 14001 worldwide, and ISO 14001 and EMAS in Europe 2000–2010. Data sources: EMAS, 2010a; ISO, 2005, 2008.

number of innovators at first but once the number of adopters reaches a certain threshold, adoption becomes self-sustaining and fast-increasing: the curve becomes steeper. Growth rates are expected to slow down again towards saturation when the curve levels off. If EMS standards are understood as process- or organisational innovations (Franken and Franken, 2011) Rogers’ model may help analyse their adoption curves. ISO 14001 might follow such a curve (the larger curve in Fig. 2), assuming that the turning point is yet to be reached. EMAS saw a decline in registrations in the early 2000s but numbers have gone up again when it became easier for smaller enterprises and non-industrial entities to get validated. Hence, the EMAS adoption rate among big industrial firms could look like the smaller curve in Fig. 2 which is being crowded out by the bigger (ISO 14001) curve if hypothesis (iii) holds true. In Germany, EMAS validations are slightly decreasing every year while ISO 14001 adoption still rises (DIHK, 2010; ISO, 2005, 2008). If the standards act as complements however, as suggested in hypothesis (ii), the two adoption curves should run more or less parallel.

### 2.2. Drivers of standards adoption

Many authors have distinguished external and internal factors driving corporate decisions about standard implementation. In the following, this distinction will be maintained although it should be noted that internal and external factors are likely to interact (Perkins and Neumayer, 2010).

#### 2.2.1. External factors

The most relevant external factors for this study are (1) the organisational field, (2) the institutional environment of a firm, and (3) complementary standards such as ISO 9001.

The organisational field in which a firm operates, i.e. its competitors and partner firms, influences corporate decisions and strategies (Bansal and Bogner, 2002; O’Neill et al., 1998). Institutional theory is helpful to illuminate external factors influencing corporate decision-making. Müller et al. (2009) show that firms often use standards such as ISO 14001 to gain legitimacy, which is supported by Schaefer (2007) who also shows that institutional forces such as customer requirements and public image are increasingly important drivers for EMS adoption. Also Delmas and Terlaak (2001) suggests the extent to which companies rely on their reputation as an important driver. DiMaggio and Powell’s isomorphism framework (1983) explains how organisations in a field put each other under pressure and Oliver (1991) shows how companies may react to this pressure. Once a field has reached a certain degree of integration, companies stop basing their decisions on efficiency gains or competitive advantage but instead react to mimetic, normative, and coercive pressure. The result is that organisations start to resemble each other more and more which might be particularly so for organisations with similar strategic

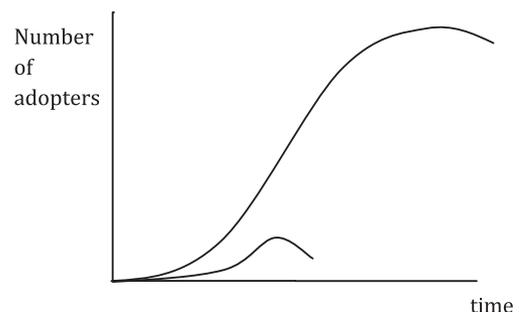


Fig. 2. The expected adoption curve for hypothesis (iii), substitution. Based on: Rogers, 1995.

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