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# The mutual influence of Environmental Management Systems and the EU ETS: Findings for the Italian pulp and paper industry

Federica Gasbarro \*, Francesco Rizzi, Marco Frey

*Sant'Anna School of Advanced Studies, Institute of Management, Piazza Martiri della Libertà, 33, 56127 Pisa, Italy*

## KEYWORDS

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**Summary** The European Emissions Trading Scheme (EU ETS) is designed to be a flexible and efficient mechanism to encourage carbon-intensive industries to reduce CO<sub>2</sub> emissions cost-effectively. Similarly, Environmental Management Systems (EMSs) are well-established tools designed to improve the efficiency of the environmental performance of companies. Up to now, knowledge of the mutual influences of strategic planning, ETS management and EMSs is still incomplete, and their implications are not fully understood. This study tries to identify whether the involvement of a firm in the ETS with the adoption of an EMS favors the generation of corporate strategic synergies in terms of organizational management and environmental planning. Due to a relatively short time frame and the need for exploratory research, a multiple case study emerged as the most suitable approach. Hence various Italian pulp and paper companies involved in the EU ETS were interviewed and analyzed. We found that organizations that integrate ETS management and EMS tend to establish satisfactory standards and procedures that are relevant for environmental monitoring and compliance. However not all ETS-related activities are integrated into EMSs. In addition, despite some mutual synergies, these are not sufficient for determining corporate environmental planning.

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## Introduction

The European Emissions Trading Scheme (EU ETS) is considered a flexible policy instrument to cut greenhouse gas (GHG) emissions in order to achieve Kyoto's reduction targets. The ETS is a market-based policy instrument based on the cap-and-trade system which offers, in theory, the

opportunity to meet environmental targets in the most cost-effective way. In other words, setting a cap on the permitted amount of emissions, corresponding to allocated allowances, and introducing a market for allowances grant flexibilities to companies to define their strategy (Rogge, Schneider, & Hoffmann, 2011a). Then, in equilibrium, the market price of carbon is supposed to reflect the scarcity of allowances and the marginal abatement costs which are equalized across companies. Therefore, overall abatement costs are minimized (Tietenberg, 2006).

\* Corresponding author. Tel.: +39 050 88 2759.

E-mail addresses: [f.gasbarro@sssup.it](mailto:f.gasbarro@sssup.it) (F. Gasbarro), [francesco.rizzi@sssup.it](mailto:francesco.rizzi@sssup.it) (F. Rizzi), [frey@sssup.it](mailto:frey@sssup.it) (M. Frey).

This possibility of tailoring a cost-effective strategy to meet the carbon emission targets implies at the same time the opportunity for a company to protect competitiveness and shareholder value. But developing such a strategy and day-to-day business decisions requires a rethinking of information flows, capital expenditure and organizational changes (Sandoff & Schaad, 2009). In fact, on the one hand, a successful implementation of a carbon market implies multiple challenges (e.g. to improve monitoring, control and planning skills, to achieve long-term predictability of carbon prices, etc.). On the other hand, it would allow a predictability of investments, which would result in an efficient participants' management of investments, i.e. to manage resources, roles and responsibilities to define whether to invest in new equipment to reduce carbon emissions, or to buy additional allowances (Egenhofer, 2007). In fact, the price for allowances also sets monetary incentives to adopt new solutions for energy-efficient and carbon-efficient improvements. But the price of allowances is practically influenced by the ETS design, e.g. rules of allowance allocations, cap definition, and use of credits from other Kyoto Mechanisms (Schleich, Rogge, & Betz, 2009). In other words, by avoiding its distorted implementation (e.g. the potential effects of the allocation of allowances for free to new entrants, banning banking between different trading phases, etc.) and price volatility, the ETS is expected to provide incentives to innovation (European Commission, 2005; Rogge et al., 2011a; Schleich et al., 2009).

Hence, in order to effectively manage this system, companies are expected to implement cross-functional activities (Sandoff & Schaad, 2009), or develop useful and specific interdisciplinary functions.

Correspondently, an Environmental Management System (EMS) is considered a beneficial tool for organizations that wish to integrate environmental management in the overall corporate management system, not only to comply with existing regulations but also to take into account and eventually respond to changing knowledge and technology (Bansal & Bogner, 2002). Additionally, it is beneficial in order to implement better organization and documentation of environmental activities and procedures (Morrow & Rondinelli, 2002). Even though the relationship between the implementation of an EMS and environmental innovation is still unclear (Ziegler & Seijas Nogareda, 2009), some authors reported a positive influence of an EMS on environmental innovation (Radonjic & Tominc, 2006; Radonjic & Tominc, 2007), together with environmental regulation and organizational changes, and on detecting cost-saving potential by reducing information deficit (Horbach, 2008), especially in the case of EMSs in maturity stage (Rennings, Ziegler, Ankele, & Hoffmann, 2006).

Against this background, this paper aims to analyze the mutual influence of environmental voluntary regulation and the ETS in terms of organizational management and environmental planning.

In fact, it is still unclear whether ETS-related activities are allocated to existent departments and functions; for example, to those involved in EMSs, or companies setting up new ones. To this end, we provide an analysis of how ETS management has been implemented in companies adopting an EMS. In detail, the analysis focuses on the identification of the persons in charge of ETS-related activities

within companies having EMSs. Another objective of the research is understanding whether the ETS is able to influence corporate organization and to trigger investment planning to a greater extent than a pre-existing EMS program.

We addressed these questions by carrying out a multiple case study of the Italian pulp and paper industry. This industry has been very receptive to environmental voluntary regulations (see, as an example, the project Life PIONEER "Paper Industry Operating in Network: an Experiment for Emas Revision", 2003–2006), and features organizations with installations representing the most important European emitters in terms of emission size. In fact, installations according to the Community Independent Transaction Log's classification are classified in five categories: zero emitters (0 kt CO<sub>2</sub>-eq), mini (<25 kt CO<sub>2</sub>-eq), small (25–50 kt CO<sub>2</sub>-eq), medium (50–500 kt CO<sub>2</sub>-eq) and large (>500 kt CO<sub>2</sub>-eq). While mini installations under 10,000 tCO<sub>2</sub>/year (about 3400 participants) represent 32% of the total number of installations covered by the EU ETS, their emissions amount to nearly 1% of the emissions covered by the ETS; installations under 25,000 tCO<sub>2</sub>/year represent 55% of the total but emit only 2.4% of all the EU ETS emissions (Egenhofer, 2007). Italian pulp and paper installations feature mini, small and medium sized installations.

Because the aim of our research was to explore the generation of synergies at corporate strategic level in terms of organizational management and environmental planning between the ETS and EMSs, and to explain causal relationships, a qualitative approach seemed appropriate (Yin, 2002).

This paper is structured as follows: the following section presents a critical review of the literature on the EU ETS and on the environmental voluntary regulation; grounding on the resulting open research questions, the next two sections introduce the case study methodology and present our findings respectively; finally, the last section discusses these findings and concludes with research and policy recommendations.

## Literature review and research framework

Compared to EMS, which has become widespread among organizations since 1996, the ETS is a relatively new concept in environmental management. In fact, the EU ETS came into force in 2005. The Scheme, introduced by the Directive 2003/87/EC, is a crucial tool in EU carbon policy to achieve the emission reduction targets of the Kyoto Protocol. It applies to the largest carbon-intensive industry sectors of EU member states (e.g. fuel combustion and oil refining, mineral/cement, steel, pulp and paper, etc.). The Scheme is based on a cap-and-trade system that is organized in trading phases. The first was a pilot phase between 2005 and 2007, while the current phase coincides with the Kyoto commitment period (2008–2012). The third trading period (phase 3) will last from 2013 to 2020. According to the EU ETS, during phases 1 and 2 each member state is assigned to national installations that are, subject to the Directive, a number of allowances corresponding to emission targets adopted in a specific National Allocation Plan (NAP). These companies have to surrender as many allowances as emitted. If a company emits more allowances than what have been allocated, it can buy extra allowances on the carbon market to avoid

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