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A cluster-based approach as an effective way to implement the Environmental Compliance Assistance Programme: evidence from some good practices

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Small and medium enterprises (SMEs) are to be considered a crucial target if policy makers really want to pursue sustainable development. These companies are responsible for a large share of business environmental impacts, but they show a low awareness about it and on environmental legislation. Our article aims at demonstrating how an innovative approach to environmental management, the “cluster approach”, can be an effective tool to improving the compliance of SMEs and, as a consequence, their environmental performance. The local experiences, analysed in our work, show the effectiveness of the cluster approach to strengthen the environmental competence and know-how at the local level, as well as the improvement of environmental performances of both individual SMEs and of the entire productive areas. How to develop the cluster approach and include it structurally in policy-making should be the question for future research and experimental initiatives, such as the on-going ECCELSA project.

Keywords: cluster approach; environmental regulation; environmental management; SMEs; ECAP

Introduction

Small and medium enterprises (SMEs) are defined as enterprises which employ less than 250 employees and which have an annual turnover not exceeding €50 million, and/or an overall balance sheet not exceeding €43 million (European Commission 2003). There are some 23 million SMEs in the EU providing approximately 75 million jobs (66% in private employment and up to 80% in some industrial sectors such as textile, construction or furniture) (European Commission 2005). Moreover, micro-enterprises¹ account for almost 93% of the total number of SMEs, 6% are small enterprises² and less than 1% are medium-sized enterprises. Small and medium-sized enterprises represent a large part of EU economy: some being 99% of all enterprises and 57% of economy value added (European Commission 2005). As such they also play a primary role in shifting the EU economy to more sustainable production and consumption patterns.

SMEs are active in many sectors across the EU: 22.2% in the service sector (i.e. business to business services), 20.4% in personal services (i.e. business to consumer

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services), 20% in retail distribution, 11.9% in manufacturing, 11.6% in construction, 8.1% in wholesale trade, 5.5% in transport and communication and 0.2% in extraction and energy. The presence of SMEs in different economic sectors varies between Member States. SMEs are far from being a homogenous group. However, they have a number of features in common, and they do certainly encounter similar problems in relation to environmental compliance and performance.

SMEs contribution to the environmental impact

Since they represent such a large percentage of economic activities, SMEs have a significant impact on the environment. The environmental problem does not fully emerge if one considers individual firms, although in some cases there can be significant impacts on local environments and communities exerted by a single SME, but pertains their combined and cumulative impact.

Experience in applying and enforcing environmental legislation in the Member States has shown that it is too complex and burdensome for companies and public authorities to determine the exact SMEs' contribution to pollution (e.g. air pollution), in terms of the "environmental burden" from different types of pollutants (e.g. CO₂, SO_x, NO_x, etc.). The first and most relevant barrier is the inability to monitor the environmental performance of SMEs, owing to the lack of data (which do not even exist in many cases). In order to provide a general but reliable datum, we can quote the Environmental Compliance Assistance Programme (ECAP) that reports a contribution amounting to 70% of the industrial pollution in the EU (European Commission 2007). There are many studies in the literature attempting to provide "insights" into the environmental problems emerging from SMEs. These studies focus on specific environmental aspects. For instance, a recent report (Marshall 1998) estimated that SMEs account for 60% of total carbon dioxide emissions from businesses in the UK and concluded that there is substantial room for improvement in energy efficiency and emission reductions. Another survey carried out in France (ADEME 2007) showed that SMEs are to be held responsible for 40–45% of all industrial air emissions, water consumption and energy consumption, as well as for 60–70% of industrial waste production.

The European Commission states in the ECAP that although some smaller companies have taken the lead in managing their own environmental impact in a well-structured and effective way, the majority of SMEs are still characterised by a lack of awareness of their environmental impact and, especially, concerning the ways in which such issues can be effectively managed. A recent UK study (Environment Agency 2002) shows that only 7% of businesses in the UK believed their activities could harm the environment, but when prompted with a list of activities, this figure rose to 41%. This is a clear symptom of a low degree of knowledge by SMEs on what their environmental impact is. In many cases, SMEs are persuaded they do not have any impact at all on the environment. This emerges, for example, from a survey among Polish SMEs (Polish Environmental Partnership Foundation *et al.* 2007) emphasising that 86% of the interviewees declare that their companies do not have a negative impact on the environment or that the impact was not significant at all.

Not only do SMEs have a scarce knowledge of their environmental aspects, but the main problem is that most of them do not know enough about environmental legislation to ensure that they are compliant. The Institute of Directors (2006) carried out a survey reporting that members involved in sectors such as construction, mining, transport and manufacturing which "heavily exposed" to environmental regulations showed relatively

low levels of awareness. It is quite surprising, for example, that 59% of members in manufacturing knew “not much” or less of the environmental regulation applicable to their activities.

All the above-mentioned studies show that low environmental compliance by SMEs is due to the lack of knowledge and awareness of their own activities and of environmental legislation, inability to tackle their environmental impact and sometimes the excessive administrative and financial burden of environmental compliance. Compliance is further hindered by the perception that environmental protection is costly and has little benefit for the business.

The role of EMSs in achieving legal compliance

Many studies show that the majority of SMEs have little awareness of their own environmental impacts and of how to manage them (IEFE Bocconi *et al.* 2006). Moreover, the literature emphasises that most SMEs are “vulnerably compliant”, since they are not always able to achieve an environmental performance that is high enough to ensure that they are compliant.

When environmental legislation is applicable to SMEs, they tend to presume that they are complying and, as a result, full compliance is often the outcome of external action following an inspection, rather than an on-going process of checking that legal requirements are being met (Fairman and Yapp 2005). At the same time, SMEs often do not have the necessary legal and environmental expertise to cope with environmental legislation.

These considerations have induced the European Commission to launch a programme to help SMEs comply with environmental legislation. The new ECAP, promulgated by way of EC COM(2007) 379, defines a compliance assistance programme, providing specific support for small and medium enterprises (European Commission 2007). The complexity of the issues involving SMEs’ compliance and their environmental performances, other than their ability to fully and timely respond to the “new challenges” (i.e. the objectives expected by the Kyoto Protocol), which would allow them to perceive the benefits in terms of competitiveness and innovation, requires a multiple approach, capable of putting into action a set of complementary measures.

With the ECAP, the European Commission proposed a series of actions to supporting SMEs in complying with the environmental legislation, such as: improving design and implementation of policies, providing more accessible tailor-made environmental management schemes, as well as financial assistance and a multi-annual financial programme, building local environmental expertise for SMEs, improving communication and providing more targeted information. Among these actions, a particular attention has been devoted to the environmental management systems (EMS). The European Commission, in fact, states that the implementation of an EMS and explicit designation of responsibility for environmental matters may have a much more positive effect on a company’s environmental involvement than a single inspection or compliance check.

These considerations rely on a wide range of evidences from existing studies that analyse the benefits of EMS adoption (Aragon 1998, Madsen and Ulhoi 1999, Patton and Baron 1995, Van Der Veldt 1997, Watson 1996).

Just to mention one of these studies, Biondi *et al.* (2000) identify in a better legal compliance and in the capability of continuously monitoring compliance one of the most relevant benefits of EMAS registration. This benefit is also connected with other forms of EMS certification (Hamschmidt and Dyllick 2001). For instance, state that legal compliance is perceived as a relevant benefit deriving from ISO 14001 certification

(59% of the sample), ranking at the second place right after the systematisation of existing environmental activities.

The EVER study, carried out on behalf of the European Commission, also provided very consistent outcomes, as far as this benefit is concerned (IEFE Bocconi *et al.* 2006). According to the results of this study, in fact, formal EMS (such as EMAS) provides considerable benefits in the area of legal compliance: quite interestingly, the three most important benefits perceived by the interviewed EMAS-registered organisations are connected with the monitoring and management of legal compliance. Greater awareness of regulatory requirements is identified as a fairly important or important benefit by 70% of the EMAS adopters, better compliance by 69% of them and better planning of actions for legal and regulatory compliance by 67%.

As we have emphasised, SMEs certainly have to struggle against their lack of resources and to fill a cultural gap as regards environmental matters. Several studies have highlighted the existence of several types of hindrances, heterogeneous in nature and forms, encountered by SMEs in the EMS implementation, such as internal or external, organisational or economic, general or category-specific (e.g. SMEs) and so on.

For instance, the cost of implementation and maintenance (in case of formal EMS implementation such as EMAS and ISO 14001), such as external consulting and verification costs, seems to be a relevant barrier, especially for SMEs, where financial resources are more restricted (Biondi *et al.* 2000, Hillary 2004).

Focusing on internal barriers, we can mention, for instance, the availability of management time, or the adequacy of human resources (e.g. personnel with proper skills, expertise and technical background (Biondi *et al.* 2000). This is confirmed by the incessant call, emerging from many studies, of measures capable of simplifying and supporting the implementation and maintenance of EMSs by SMEs (e.g. Ammenberg *et al.* 1999, Hillary 2004).

A solution for overcoming barriers and constraints: the cluster approach

Networking and cooperation between organisations emerges from several studies and empirical evidences as one of the most important factors fostering the spreading of formal EMS (such as EMAS). Many authors (*inter alia.*: Biondi *et al.* 2000, Steger 2000, Hillary 2004) emphasise that working with groups of companies is a useful and efficient way of adopting EMAS particularly for SMEs. Moreover, the European Commission has recently confirmed the key role of networking to overcome the constraints and barriers for EMS adoption between SMEs (European Commission 2007). The Commission has, in fact, highlighted its commitment to promote and encourage the use of EMAS in industrial clusters or districts of SMEs, using specific cluster- or supply chain-oriented approaches, because these approaches can reduce consultancy and audit/verification costs for SMEs and facilitate additional knowledge sharing and experience exchange among participants.

The effectiveness of the networking approach particularly emerges among organisations operating in the same sector (such as the industrial sector, but even service sectors such as tourism or public institutions operating at different levels) and among organisations operating in the same region (or territorial area).

In the first case, enterprises can cooperate by identifying and assessing similar environmental aspects and by finding technological and operational solutions that can be applied to similar production processes and products, as well as by defining organisational structures suitable for the same kind of production cycles.

In the second case, cooperation is facilitated by the “physical proximity” and there are synergies both in improving the environmental impact on the same local ecosystem

and in interacting and communicating with the same stakeholders (local population, authorities, etc.).

In some cases, a network among SMEs within a “cluster” is created, in order to foster information exchange and the dissemination of experience, as well as to define and apply common solutions to similar environmental, technical and/or organisational problems, or to share environmental management resources (Iraldo and Frey 2007). A specific kind of cooperation within a cluster of organisations takes place in the supply chain: for example, when a large customer is willing to support small suppliers in the EMS implementation process, then all the smaller organisations involved in the supply chain can benefit greatly from networking. This approach proved to be effective in some Member States as Germany (“Konvoi” approach), Spain (cooperation in the tourism supply chain), Nordic Countries (Denmark and Sweden) and particularly in Italy by means of the so-called APO “Ambiti Produttivi Omogenei”, it has shown a real effectiveness in promoting the environmental compliance of SMEs.

The Italian experience is also particularly relevant from the methodological point of view. An operational path has been, in fact, outlined and experimented by several industrial clusters. It consists of several steps leading the firms belonging to the same cluster, and their local stakeholder, to implement an EMS at the cluster level, mirroring the main requirements set by the Regulation EC/761/2001 for individual organisations.

The initial step is the set-up of an EMS promotion committee at the cluster level. This committee is composed of both public (e.g. province or municipalities) and private (e.g. trade associations, NGOs, enterprises, firms managing public infrastructure as sewerage and purification system) actors, and it is in charge of defining the strategic guidelines for the cluster environmental policies and of implementing some “joint resources”, in order to guarantee a coordinated and integrated management of environmental issues within the cluster.

The second step is the initial environmental review of the cluster. The review identifies the most relevant and critical environmental aspects for the cluster and its specific production. The aim of the environmental review is to help the involved organisations to identify and assess their own environmental aspects, according to EMAS Regulation and ISO 14001 standard.

As a third step, the promotion committee defines and shares a cluster environmental policy, becoming a reference for the EMS policies of all the SMEs in the cluster. The environmental policy sets the guiding principles and the overall priorities based on the most significant environmental aspects and impacts, resulting from the previous review. From the cluster policy, a collective and cooperative environmental programme and related improvement objectives and targets are defined in each cluster, pursuing the principle of continuous improvement.

Once the cluster programme and the shared environmental objectives and targets have been adopted and recognised, by means of a sort of “cluster EMS”, the promotion committee, on a voluntary basis, provides the local SMEs with many resources and procedures that can be shared and collectively exploited at the cluster level. For instance, the committee provides organisations with continuously updated guidelines and indications on how to identify and access the applicable legal requirements related to their environmental aspects (e.g. a legal requirement register is published, including a list of relevant sources, periodical updates on newly introduced laws and requirements, etc.).

The last step concerns external communication initiatives and tools. Through these initiatives and tools, interested parties, stakeholders and general public are continuously informed on the significant environmental aspects, policy, programmes, objectives and

targets, activities and resources for environmental management in the cluster and how these change over time. The relevant information is provided by means of an environmental report concerning the whole area or cluster.

Good practices

As we mentioned in the previous paragraph, the cluster approach developed in some Italian experiences could be a useful tool to overcome the difficulties of SMEs when adopting EMAS and ISO 14001 and, therefore, to enable SMEs to use these EMSs to improving their legal compliance. Partnership approaches among SMEs appear to be highly successful, combining the respective expertise of both public and independent organisations, but they are rarely applied effectively owing to lack of initiative, coordination and incentives. EMAS registration has proven its effectiveness by improving the environmental compliance of the local SMEs, as ascertained by the European Commission (2007). In particular, the “cluster approach” has shown that some of the key elements of EMAS can be further developed and strengthened in the territorial dimension, so as to empower the local small and micro-companies’ capabilities to effectively and efficiently manage environmental issues and, consequently, guaranteeing compliance. In the recent years, many experiences concerning the so-called “cluster application” of EMSs have been carried out in Italy. Some of these initiatives originated by EU-funded projects (e.g. “PIONEER” Life project, “ESEMPLA” Interreg III C project – subproject ECOSIND, PHAROS Life project, “SENOMI” Life project in Lombardy) and others have been financed by the Italian regions (ISO 14001 for seaports in Liguria, EMAS for the chemical district in Lazio, EMAS cluster of tannery district in S. Croce sull’Arno). Local initiatives have been carried out, too. Many industrial clusters have been engaged in experiences concerning the implementation of a “cluster approach” to EMSs and proved that these can be an effective way to promote, carry out, disseminate and strengthen legal compliance among SMEs. Some of them have already achieved a sort of “cluster-based” certification/registration promoted by the Italian Government by means of the EMAS Competent Body (“EMAS APO” by the Italian EMAS Competent Body), others are still developing this path. Currently, the industrial clusters that obtained EMAS “cluster registration” (EMAS APO) in Italy are: the Chemical cluster of Ravenna (Emilia Romagna Region), the Furniture District of Livorno (Friuli Venezia Giulia Region), the Agropastoral cluster of Nuoro (Sardegna Region), the Tanning District of Vicenza (Veneto Region), the Ham production cluster of San Daniele (Friuli Venezia Giulia Region), the Dolomiti National Park – tourist cluster of Belluno (Trentino Alto Adige Region) and the Paper industrial cluster of Capannori (Tuscany Region). Many SMEs operating in these clusters achieved individual EMAS registration thanks to the support provided by the cluster joint resources and support initiatives, described in the previous paragraph.

Among these, one of the most innovative is the paper-producing territorial cluster of Capannori (Province of Lucca). This cluster developed its cluster approach thanks to a Life-Environment project, the PIONEER project – “Paper Industry Operating in Network: an Experiment for EMAS Revision”, completed in May 2006. The paper-producing industrial cluster of Lucca, in the region of Tuscany is extended on a geographical surface of 750 km², including the territories governed by 12 municipalities (11 located in the Province of Lucca, and the 12th in that of Pistoia). More than 130 paper-producing or processing companies (most of whom are SMEs) are located in the area, with a high level of aggregation, comprising a considerable density per km², and with an occupational capability of more than 5800 workers employed in the paper sector. In this area, concentrating more than 80% of the

Italian production of tissue paper, the industrial activities are deeply rooted in the social and institutional local context, and the production sites are mixed and integrated with many other civil, commercial, logistic, administrative and service activities. The methodology of the PIONEER project encompassed the implementation of the different steps envisaged by the EMAS Regulation at the cluster level, thus to create a common basis to tackle the local environmental problems and supporting the whole of individual organisations operating in the cluster that intended to use collective resources to achieve an individual EMAS Registration. The project produced interesting results in terms of high participation in EMAS by a relevant number of organisations (22). Several tools have been developed during the project to facilitate the adhesion of the SMEs to EMAS. An example of them is the “register of environmental legal requirements”, applied to the companies located in the cluster. Each organisation can download the register for free and use it as a part of its own EMS. In this way the SMEs have a facilitated access to the management of environmental compliance. Furthermore, many training initiatives are carried out in the cluster to improve the capacity of the local organisations to effectively manage environmental issues and comply with the relevant legal requirements. The PIONEER experience showed that there is a high number of synergies that can be obtained at the managerial and technological level to promote the inclusion and spreading/circulation of innovative elements based on the partnership among the different firms operating within the same area. It is a question of exploiting the “coopetition” attitude (cooperation between firms which also compete), and the collaboration between enterprises and the other economic and institutional actors.

Since firms are similar and have to tackle the same environmental problems, it is then possible to rely on other synergies already existing at the cluster level (in this case, at the management level). It is possible to exploit the advantages connected to the identification of shared environmental aspects, the existence of the same “targets”, the environmental problems of the same areas and the existence of the same social and institutional fabric with which to interact.

At the international level, an interesting model is the Swedish “Hackefors Model”. It was developed by a private company, Altea AB, which applied it to its own industrial district: the Hackefors district (IEEP *et al.*, 2006). The target audience is a cluster of SMEs. Usually, participating companies belong to the same sector of industry or to the same company group. The model originated in the Hackefors industrial district in Sweden in 1997 and it is a network approach to EMS implementation. All participating companies appoint an environmental manager; together these form the EMS group. A steering committee is selected within this group while a central coordinator appointed. The coordinator is responsible for the network and the joint elements of the EMS, including joint documentation. The coordinator acts as a hired and shared environmental manager of the group. A motivated and well-trained coordinator appears essential to the success of the approach. Each SME develops its own EMS, although a large part of the documentation is identical to all companies (the EMS manual). Centralised handling and steering of many of the EMS documents saves the SMEs much of the administrative work. The approach involves monthly meetings with “homework”, training for environmental managers and employees, as well as dedicated enterprise visits. This model has been reproduced in 40 different clusters in several other Swedish regions, and in 2004 the number of firms with ISO 14001 certification, as a result of this model, was 600.

Finally, another interesting on-going initiative is the ECCELSA project (“Environmental Compliance based on Cluster Experiences and Local SME-oriented Approaches”), cofunded by the EC with the Life+ Program. The project began in January 2009, it involves 10 clusters of SMEs located in five Italian regions (Toscana, Lombardia.

Liguria, Lazio, Emilia Romagna) and it is coordinated by the Sant'Anna School of Advanced Studies. The Eccelsa project aims at:

- developing the “cluster” approach, so far applied only to some specific environmental policy contexts, to make it a general and widely applicable method, capable of improving the local and territorial governance for sustainability and the environmental performance of the SMEs operating in the clusters, with the specific aim of favouring and facilitating the adoption of the Environmental Compliance Action Plan as defined by EC COM 2007/379, and support the adoption of the envisaged national implementation plan;
- testing this method as a new strategic approach to policy and governance in supporting the environmental compliance with respect to the new challenges that especially small and medium enterprises face;
- proving the effectiveness and efficiency of this approach, by way of measuring the impacts that it is able to produce in the environmental performance of the clusters (signalled by at least 50% of the relevant KPI- Key Performance Indicators);
- proposing result-oriented, empirically based and pragmatic methodology and tools addressed to public and private actors operating at the local level, to support cooperative policy actions to tackling the new challenge of environmental compliance;
- favouring communication and dialogue between these actors within a cluster, in order to foster and strengthen the local capacity to build upon new environmental regulation and policy and make it simpler and more affordable for small and micro-companies, thanks to cooperative actions, to integrate policy tools, have a better coordination in implementing them, etc.;
- providing policy-makers, at the EU and national level, with a guideline on how to use the “cluster approach” effectively, how to fully integrate it in future environmental policies, in order to prevent difficulties and/or overcome barriers for SMEs and offer an opportunity for capacity-building in local governance.

The ECCELSA project proposes an approach that the EC defines strategic (COM 2007/379), which is that of the “clusters” (especially in terms of network creation, access to information, resource sharing, knowledge exchange, better dialogue on a local level, continuity and competitiveness) and its key instrument: the EMS. The project aims at contributing to improve the degree of knowledge and compliance with the environmental legislation applicable to the SMEs. In doing so, the ECCELSA project, also through the involvement and the commitment of public and private local actors (such as intermediary organisations), proposes a methodology that supports the environmental governance and the policy-making process at the cluster level. As mentioned above, in the ECCELSA project are involved 10 different clusters of SMEs, while the objective of the ECCELSA project is to reach 50% of the SMEs operating in the selected clusters, by way of the whole set of actions foreseen by the project, including the communication process and the dissemination actions within the clusters. More specifically, it has to be considered that some project activities do actually foresee the direct involvement of SMEs in “operative” actions (see, for example, the 50 compliance audits). In conclusion, the ECCELSA project intends to define and implement a series of complementary measures in order to assist SMEs in strengthening their legislative compliance, and the awareness concerning the environmental impacts, which can jointly represent a method capable of supporting the environmental policy and governance at different levels.

And the fact that the measures are complementary, in a wider sense than the subject of mere compliance, should set the basis for that changing in behaviour hoped for in many acts and communitarian political declarations, towards the implementation of an eco-efficient society and a sustainable and competitive economy, in which the environmental considerations are fully integrated both in the processes and in the products.

Conclusions

SMEs are to be considered a crucial target if policy-makers really want to pursue sustainable development. These companies are responsible for a large share of business environmental impacts. The conventional approach to environmental policies has not been effective in stimulating SMEs towards environmental management. In spite of the great bulk of legislative and normative measures addressed to SMEs, these companies still underestimate their role in improving the environmental performance of the whole productive system. Moreover, SMEs are missing the opportunities to use innovative environmental management tools that can favour and facilitate their capability to guarantee legal compliance. Today only 6% of the SMEs adopt this tool, compared with a great majority of large companies (European Commission 2007). EMSs are the key to better manage compliance. So even if there are tools to effectively manage compliance, SMEs are not able to use them for the same reasons that are hindering their compliance: lack of human, technical and economic resources. Our work aims at demonstrating how an innovative approach to environmental management, the “cluster approach”, can be an effective solution to this paradox. By way of the “cluster approach” many SMEs have been supported in applying an EMS and, as a consequence, to comply with legislation imposed through the old and conventional “command and control” approach. How to develop the cluster approach and include it structurally in policy-making should be the question for future research and experimental initiatives, such as the on-going ECCELSA project.

Notes

1. Within the SME categories, a micro-enterprise is defined as an enterprise that employs fewer than 10 persons, and whose annual overall turnover and/or annual balance sheet does not exceed EUR 2 million (European Commission 2003).
2. Within the SME categories, a small enterprise is defined as an enterprise that employs fewer than 50 persons and whose annual overall turnover and/or annual balance sheet does not exceed EUR 10 million (European Commission 2003).

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