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**A cluster-based approach as an
effective way to implement
the ECAP (Environmental
Compliance Action Program):
evidence from some good
practices**

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1. Introduction

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

SMEs are active in a range of sectors across the EU: 22.2% in the service sector (ie business to business services); 20.4% in personal services (ie business to consumer 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. In Germany and the UK, for example, almost 60% of SMEs are engaged in producer and personal services, with less than 10% in manufacturing; whereas in Malta and Slovenia the manufacturing sector accounts for the highest percentage of SMEs (19.2% and 26.7% respectively). SMEs are far from being a homogenous group. However they have a number of features in common, and do certainly encounter similar problems in relation to environmental compliance and performance.

2. 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 detailed contribution made by SMEs 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 incapacity to monitor the environmental performance of SMEs, owing to the lack of data (that in many cases does not even exist). In order to provide a general but reliable datum, we can quote the ECAP that reports a contribution amounting to 70% of the industrial pollution in the EU. There are many studies in literature attempting to provide ‘insights’ into environmental problems emerging from SMEs. These studies are focused on specific environmental aspects. A recent report [2], for instance, 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 emissions reductions to be carried out by these companies. Moreover, studies based on estimates conducted for the Netherlands and the UK suggest that the commercial and industrial waste from SMEs represent on average 50% of the total [3]. Another survey carried out in France [4] 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.

As the European Commission states in the ECAP, although some smaller companies have taken the lead in managing their own environmental impacts in a well structured and effective way, the largest part of SMEs are still characterised by a lack of awareness on their environmental impacts and, especially, concerning the ways in which such issues can be effectively managed. A recent UK study [5] shows that only 7% of businesses in the UK believed they undertook activities that 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 impacts can be.

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 [6] emphasizing 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. Another study showing the total lack of awareness by SMEs [7] reports that up to 84% of the Belgian industrial SMEs do not feel they really contribute to soil contamination, 44% believe that they do not produce any polluting emission into the air and 23% claim not to produce any solid waste.

Not only SMEs have a scarce knowledge on their environmental aspects, but the main problem is that most of them do not know enough about legislation applied on these aspects to ensure that they are compliant. The Institute of Directors [8] carried out a survey reporting that members involved in sectors such as construction, mining, transport or manufacturing that are 'heavily exposed' to environmental regulation showed relatively low levels of awareness. It is quite surprising, for example, that 59% of members in manufacturing knew 'not much' or less on environmental regulation applicable to their activities. For construction, mining or transport, the corresponding figure was even lower: 52%, and only 26% of small businesses in manufacturing knew 'a great deal' or 'quite a bit' about the recent REACH Regulation.

All the above mentioned studies show that low environmental compliance by SMEs is due to lack of knowledge and awareness of their own activities, ignorance of environmental legislation, lack of capacity to tackle their environmental impacts, 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.

3. The role of EMSs for 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 [9]. Moreover, 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.

Where 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 after an inspection rather than an on-going process of checking that legal requirements are being met [10]. At the same time, SMEs often do not have the necessary legal and environmental expertise to cope with environmental legislation.

These considerations induced the European Commission to launch a Program to help SMEs comply with environmental legislation. The new ECAP (Environmental Compliance Action Programme), promulgated by way of EC COM(2007) 379, defines a compliance assistance programme, providing specific support for small and medium enterprises. The complexity of the issues involving the SMEs' compliance and their environmental performances, other than their capacity to fully and timely respond to the "new challenges" (e.g. the Kyoto objectives), which would allow them to perceive the benefits in terms of competitiveness and innovation, need a multiple approach, capable of putting into action a set of complementary measures.

With the ECAP, the European Commission proposed a series of actions for supporting SMEs to comply with 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 and improving the communication and 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 influence on the environmental engagement of the company than a single inspection or compliance check.

These considerations rely on a wide range of evidences from existing studies that analyze the benefits of EMS adoption [11-15].

Just to mention one of these studies, Biondi *et al.* [16] 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 *et al.* [17], 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 on behalf of European Commission, also provided very consistent outcomes, as far as this benefit is concerned [9]. According to the results of this study, in fact, formal EMS (such as EMAS) provide 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 was identified as a fairly 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 typologies 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), like external consulting and verification costs, seems to be a relevant barrier, especially for SMEs where financial resources are more restricted [18, 16].

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 [16]). This is confirmed by the incessant call, emerging from many studies, for measures capable of simplifying and supporting the implementation and maintenance of EMSs by SMEs [e.g.: 18-19]

4. 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 diffusion of formal EMS (such as EMAS). Many authors [*inter alia.*: 16,18, 20] 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 for overcoming the constraints and barriers for EMS adoption between SMEs [21]. 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 approach can reduce consultancy and audit/verification costs for SMEs, and facilitate additional knowledge-sharing and experience exchange amongst participants.

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

In the first case, enterprises can co-operate 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, co-operation is facilitated by the 'physical contiguousness' and there are synergies both in improving the environmental impact on the same local eco-system, and in interacting and communicating with the same stakeholders (local population, authorities, etc..).

In some experiences, a network has been created among SMEs within a 'cluster', in order to foster information exchange and experience diffusion and to define and apply common solutions to similar environmental, technical and/or organisational problems, or to share environmental management resources [22]. A specific kind of co-operation within a cluster of organisations takes place in the supply-chain: when a large customer, for example, 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 (co-operation in the tourism supply chain), Nordic Countries (Denmark and Sweden) but in particular 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 particularly relevant also from the methodological point a view. An operational path was, in fact, outlined and experimented by several industrial clusters. It consists in several steps that lead the firms belonging to the same cluster and their local stakeholder in the implementation of an environmental management system 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 cluster level. This Committee is composed both of public (e.g.: Province or Municipalities) and private (e.g.: trade associations, NGO, enterprises, firms managing public infrastructure as sewerage and purification system) actors and is in charge of defining the strategic guidelines for the cluster environmental policies and of implementing some "common resources", in order to guarantee a coordinated and integrated management of environmental issues within the Cluster.

The **second step** is the Initial Environmental Review referred to the Cluster. This review enables to identify the most relevant and critical environmental aspects for the cluster and the its specific production. The aim of the Environmental Review of the Cluster is to support 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 involved in the cluster. The Environmental Policy of the cluster sets the guiding principles and general priorities based on the most significant environmental aspects and impacts, resulting from the previous review. From the Cluster Policy a collective and co-operative Environmental Programme and relating 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 Environmental Management System", 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 it provides organizations with continuously updated guidelines and indications on how to identify and have access to the applicable legal requirements related to their environmental aspects (e.g.: a legal requirement register was published, including a list of relevant sources, periodical updates on newly introduced laws and requirements, etc.) and to determine how these requirements apply to their environmental aspects.

The **last step** concerns external communication initiatives and tools. By means of these initiatives and tools, interested parties, stakeholders and general public are continuously informed on 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.

5. Good practices

As we mentioned in the previous paragraph, the cluster approach developed in some Italian experiences could be an useful tool to overcome the difficulties of SMEs in the adoption of EMAS and ISO14001 and, therefore, to enable SMEs to use these EMSs for improving their legal compliance. Partnership approaches among SMEs appear to be highly successful, combining the respective expertise of both public and independent organizations, but are rarely applied effectively owing to lack of initiative, coordination and incentives. EMAS registration has proven its effectiveness in improving the environmental compliance of the local SMEs, as ascertained by the European Commission [21]. 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 to empower the local small and micro companies’ capabilities to effectively and efficiently manage environmental issues and, consequently, guaranteeing compliance. In the most 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 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 Environmental Management Systems and proved that these can be an effective way to promote, carry out, diffuse and strengthen legal compliance among SMEs. Some of them 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. Actually, the industrial clusters that obtained EMAS “cluster registration” (EMAS APO) in Italy are: the Chemical cluster of Ravenna (Emilia Romagna Region); the Chair District of Livenza (Friuli Venezia Giulia Region); the Agropastolar 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 common resources and support initiatives, described in the previous paragraph.

Among these experiences, one of the most innovative has been 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 methodology of the PIONEER project encompassed the implementation of the different steps foreseen by the EMAS Regulation at the cluster level, so to create a common basis for tackling the local environmental problems and supporting all the 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 a high participation in EMAS by a relevant number of organisations (22).. Many tools have been developed during the project to facilitate the adhesion to EMAS of the SMEs. An example 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.

At the international level, an interesting initiative is the Swedish “Hackefors Model”. The initiative was developed by a private company, Altea AB, which firstly applied it to the district it belonged: the Hackefors district [23]. 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 is a network approach to EMS implementation. All participating companies appoint an environmental manager; together these form the EMS group. From this group a steering committee is selected and a central co-ordinator appointed. The co-ordinator is responsible for the network and the common parts of the EMS, including common documentation. The co-ordinator acts as a hired and shared environmental manager of the group. A motivated and well-trained co-ordinator appears essential for the success of the approach. Each SME develops its own EMS, although a large part of the documentation is identical for 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 being certified to ISO 14001 as a result of this model were 600.

Finally, another interesting on-going initiative is the ECCELSA project (“Environmental Compliance based on Cluster Experiences and Local Sme-oriented Approaches”), co-funded by the EC with the Life+ Program. The project started in January 2009 and involves ten clusters of SMEs located in five Italian Regions (Toscana, Lombardia, Liguria, Lazio, Emilia Romagna) and it is coordinated by 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 foreseen national implementation plan. 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 the improvement of the degree of knowledge and compliance with 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.

6. 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 a great bulk of legislative and normative measures addressed to SMEs, these companies still undermine their role in improving the environmental performance of the whole productive system. Moreover, SMEs are lagging behind as concerns the opportunities to use innovative environmental management tools that can favour and facilitate their capability to guarantee legal compliance. Only 6% of the SMEs today adopts this tool, compared to a great majority of large companies [21]. 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 aimed 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 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.

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