



# The Role of Intermediary Organizations in Eco-Efficiency Improvements in SMEs

A Multi-Case Study in the Metal and Mechanical Engineering Industries in Germany\*



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## **ABSTRACT**

Corporate Sustainability (CS) links environmental and social issues to the corporate level by integration into conventional management. Thereby, companies can achieve sustainable organizational development and contribute to the sustainable development of society. One criterion of CS, among others, is eco-efficiency which aims to achieve environmental and economic excellence. By combining environmental issues with economic performance, aiming for eco-efficiency can be a practical starting point for small and medium sized enterprises (SMEs) reorienting their conventional management with small, not too radical steps. Considering the peculiarities of SMEs and inherent resource constraints, collaboration with intermediary organizations can promote this process. Through such collaboration SMEs have access to comprehensive and external expertise, can solve problems at the business level, establish new forms of partnerships and engage in learning networks. To identify the role of intermediary organizations in the process of aiming for eco-efficiency, this study chose a qualitative exploratory research using the multi-case study approach. Thereby drivers, barriers and matters related to adopting eco-efficiency through collaboration were identifiable. Owners and managers of SMEs operating in the metal- and mechanical engineering industries in Germany were interviewed. These companies took part in the ECOPROFIT®-scheme Germany, a partnership model between public and private organizations aiming to improve eco-efficiency. In this model local authorities act as intermediary organizations in terms of facilitating change and mediating between partners. The findings of this study suggest that eco-efficiency may be a suitable first step for SMEs to move towards CS as it presents a win-win situation. The role of intermediary organizations as initiators and facilitators to overcome challenges and barriers specific to SMEs is also indicated by the presented study.

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## 1. INTRODUCTION

Small and medium sized enterprises (SMEs) are increasingly challenged to contribute to the sustainable development of society (Jamali, Zambour, and Keshishian 2009; LePoutre and Heene 2006; Spence, Schmidpeter, and Habisch 2003). To translate abstract goals of sustainable development such as preserving biodiversity into tangible business objectives, SMEs can aim for Corporate Sustainability (CS) (Schaltegger and Burritt 2005). Thereby, environmental and social issues are linked to the business logic by integration into conventional management (Marrejiwk 2003). One important aspect of CS is eco-efficiency (Dyllick and Hockerts 2002; Schaltegger and Sturm 1998). It combines economic and environmental performance (Schaltegger and Synnestvedt 2002), and allows a more coordinated management of, for example, pollution or energy intensity. For SMEs reorienting their conventional management, eco-efficiency can thus be a first step towards CS in SMEs.

Aiming for eco-efficiency and further integrating sustainability related issues into conventional management can pose a central challenge to SMEs. This is due to inherent resource constraints such as lack of knowledge, time, and human resources (EUC 2007; Lee 2009; Perez-Sanchez, Barton, and Bower 2003) as well as peculiarities related to management, organizational structure and processes (Jenkins 2004; Spence 1999).

Seeking collaboration with stakeholders (Jenkins 2009, LePoutre and Heene 2006) such as intermediary organizations is one mechanism for SMEs to overcome the challenges and barriers imposed by SME peculiarities and resource constraints. Intermediary organizations, such as local authorities or universities, can build capacities at the individual and organizational level through mediating between partners and facilitating change (Lopez, Kreider, and Coffman 2005; Battaglia et al. 2010).

Thus, this paper will further explore why SMEs opt to collaborate with intermediary organizations to introduce eco-efficiency measures and if such partnerships lead to sustained integration of sustainability issues. By analyzing the challenges, drivers and barriers encountered while introducing eco-efficiency measures as well as the relevance of partnerships in particular, clues are derived with regard to reasons for SMEs to aim for certain objectives and, consequently adopt practices. Therefore, the research questions hereof are:

- (i) Which drivers and barriers do SMEs encounter when tackling eco-efficiency issues?
- (ii) What role can intermediary organizations play in the process of SMEs aiming to improve eco-efficiency?

The paper addresses these questions through an exploratory multi-case study approach from which propositions are derived. The remainder of the paper is structured as follows: *First*, a literature review on CS in SMEs and the role of collaboration with intermediary organizations is given. The *second* chapter, presents the methodology and research design. Chapter *three* shows the central findings of the qualitative research. Chapter *four* then discusses the findings. The paper ends with concluding remarks in chapter *five*.

## 2. LITERATURE REVIEW

### 2.1. CORPORATE SUSTAINABILITY AND ECO-EFFICIENCY IN SMEs

A large body of literature deals with CS in SMEs (Castka, Blazarova, and Bamber 2004; Jamali, Zambour, and Keshshian 2009; Jenkins 2009; Moore and Spence 2006; Preuss and Perschke 2010; Russo and Tencati 2009; Sarbutts 2003; Spence and Lozano 2000; Spence and Rutherford 2001; Schaper and Savery 2004; Sweeney 2007). CS issues addressed are as diverse as employee retention, environmental prevention, stakeholder management or community engagement.

In linking economic performance with environmental performance (Schaltegger and Synnestvedt 2002), eco-efficiency is particularly interesting for SMEs, which are – as more thoroughly analyzed later - characterized by limited resources and hence, may not be able to address issues not related to economic performance (Suh, Lee, and Sangsun 2005).

Eco-efficiency represents the ratio of economic value created to environmental impact added (Callens and Tyteca 1999; Figge and Hahn 2002; Schaltegger and Sturm 1998). It is either improved by reducing environmental impact whilst keeping the same economic value, or by expanding economic value whilst remaining on a constant level of environmental impact (Schaltegger and Sturm 1990, 1998; Schaltegger, Burritt, and Petersen 2003). This paper focuses on the former measures of reducing environmental impacts, for example by reducing resource usage (such as energy, materials, water) or by reducing pollution (such as emissions, waste).

Avoiding pollution and waste, thus reducing and minimizing environmental impacts is another way to describe eco-efficiency (DeSimone and Popoff 2000; Schmidheiny 1992; Seiler-Hausmann, Liedtke, and von Weizsäcker 2004). Energy, water, resource efficiency, material, waste or pollution intensity are dimensions of eco-efficiency (Verfaillie and Bidwell 2000; von Weizsäcker, Lovins, and Lovins 1997).

### 2.2. THE CHALLENGES SMEs ENCOUNTER IN AIMING FOR CS

However, as SMEs are neither a homogenous entity nor simply smaller versions of their larger counterparts (Tilley 2000, Welsh and White 1981), CS in SMEs adheres to certain challenges. These are discussed broadly in the literature (Jamali, Zambour, and Keshishian 2009; Jenkins 2004; LePoutre and Heene 2006; Longo, Mura, and Bonoli 2005; Luetkenhorst 2004; Russo and Tencati 2009; Spence 1999; Spence, Schmidpeter, and Habisch 2003; Perrini 2006; Perrini, Russo, and Tencati 2007; Vyakarnam et al. 1997) which suggests that SMEs: are owner-managed, and less bureaucratic leading to a rather informal management of CS; emphasize (informal) personal relationships shaping their stakeholder management approach; follow less formalized strategies and an ad-hoc management resulting in a reactive approach to CS issues.

Moreover, inherent resource constraints such as lack of time, financial and human resources as well as capabilities and knowledge (Beaver and Prince 2004; Bos-Brouwers 2009; EUC 2007; Lee 2009; Wong and Aspinwall 2004) are particular to SMEs. One potential mechanism to overcome such hurdles in implementing CS in SMEs is collaboration with intermediary organizations.

### 2.3. THE ROLE OF COLLABORATION WITH INTERMEDIARY ORGANIZATIONS

SMEs can seek collaboration or cooperation to overcome the challenges related to SME peculiarities and resource constraints (de Bruijn and Hofman 2000; Battaglia et al. 2010; Bos-Brouwers 2009; Hartmann, Hofman, and Stafford 2002; Jenkins 2006, 2009; LePoutre and Heene 2006; Murillo and Lozano 2009). This paper focuses on what role collaboration with intermediary organizations, in terms of mediators between partners and facilitators of change, can play to increase eco-efficiency in SMEs. Collaboration is understood here as a voluntary relationship between two or more actors, also describable as a partnership (Long and Arnold 1995). Thereby, SMEs are able to gain a more comprehensive view of environmental challenges, what sustainability entails, access external expertise and benefit from resource exchanges (de Bruijn and Hofman 2000; de Bruijn and Tukker 2002; Hartman, Hofman, and Stafford 2002; Hartman, Hofman, and Stafford 1999; Roome 2001). Clarke and Roome (1999) indicate that to be more proactive, companies can engage in multi-party collaborative initiatives to acquire knowledge outside of organizational boundaries. From a social capital theory perspective, Spence, Schmidpeter, and Habisch (2003) suggest that SMEs might collaborate and network to gain access to and exchange relevant information. LePoutre and Heene (2006) point out that SMEs are advised to seek cooperation, collaboration or network contacts, to reduce time and knowledge constraints, increase absorptive capacity, and knowledge. Battaglia et al. (2010) suggest that in a cooperative approach to CS in SMEs, intermediary organizations play a crucial role in diffusing practices and policies. Intermediaries, such as local authorities, can provide the necessary external impulses, motivation and advice to initiate or continue with, for example, environmental prevention in SMEs (Gombault and Versteeghe 1999). One form of collaboration with intermediary organizations are partnerships such as public-private-partnerships (PPP)s. Partners from the private and public sector collaborate for mutual benefit (for extensive discussion see for example Akintoye, Beck, and Hardcastle 2003; Kouwenhoven 1993; Osborne 2002). Malmberg (2003, 2004) argues that this form of collaboration is particularly beneficial as a more businesslike approach is adopted and capacity building is promoted. Through PPPs, SMEs can increase their knowledge, establish partnerships and learn new methods on how to integrate sustainability issues (Malmberg 2003, 2004) into conventional management. Martinuzzi, Huchler, and Obermayr (2000) argue that benefits from partnerships in the form of PPPs for SMEs include receiving external expertise, improving relations with local authorities, facilitating compliance, networking or identifying partners for future collaboration.

Thus, collaborating with intermediary organizations enables SMEs to locate, acquire, utilize and implement sustainability-related knowledge, alleviate given resource constraints and thereby promote the CS agenda in SMEs. To enhance the discussion on how to promote the CS agenda in SMEs, this paper presents a multi-case exploratory study research with a focus on a partnership model promoting eco-efficiency in SMEs.



### 3. RESEARCH METHODOLOGY

This study is based on qualitative exploratory research using the multi-case study research approach (Yin 2003). The taken approach is of interpretative nature (Bortz and Doering 2006). Glaser and Strauss (1980) suggest that through such an inductive qualitative approach the researcher can draw rich descriptions and possible explanations. This study capitalizes on qualitative and quantitative data of seven family businesses characterized as SMEs (in line with the EU definition with less than 250 employees; TCEC 2003) operating in the metal- and mechanical engineering industries in Germany.

#### *Research Sample*

The companies for the multi-case study were selected from a private database ([www.arqum.de/datenbank/](http://www.arqum.de/datenbank/)) related to the ECOPROFIT®-scheme. The basic idea of ECOPROFIT®, originated in Austria in 1991, is to integrate environmental measures into core business. The main goals include strengthening the company economically, improving competitiveness by increasing eco-efficiency, reducing industrial emissions and extending internal knowledge (ECOPROFIT® 2008; CPC n.d.; Martinuzzi, Huchler, and Obermayr 2000). In this scheme, local authorities, local companies and professional consultants collaborate in a self-proclaimed PPP model to involve SMEs in learning networks.

The private database gives sector-specific information about innovative eco-efficiency measures implemented by companies within a one-year eco-efficiency program of the ECOPROFIT® (*ECOLOGICAL PROject For Integrated Environmental Technology*)-scheme Germany. Data on a selection of companies are available for the years 1998 until 2010.

To ensure better comparability of the findings, this paper chooses a one-sector focus (Jenkins 2006) and concentrates on the same type of organization (in this case family businesses). The database lists 35 companies from the metal- and mechanical engineering industry, 29 from the mechanical engineering industry, and six from the metalworking industry, which have participated in the ECOPROFIT®-scheme. All 35 companies were addressed via Email/phone to ask for their participation in the interviews underlying the presented study. Seven companies agreed to participate (see Table 1; company codes C1-C7 give reference to individual companies).

Table 1: SMEs investigated

Company Code	Industry	Number of employees	Position of interviewee	Market and Customer Focus
C1	Mechanical engineering	65	Owner-manager	Competitive market with national customers and focus on regional customers
C2	Mechanical engineering	170	Management – Head of Purchasing	Niche market with international customers
C3	Mechanical engineering	230	Management – Head of Maintenance	Niche market with international customers
C4	Metalworking	24	Owner-manager	Competitive market with national customers
C5	Metalworking	45-50	Management - Salesmanager	Competitive market with European customers but focus on national customers
C6	Metalworking	85	Owner-manager	Competitive market with national and focus on regional customers
C7	Metalworking	93	Management – ead of Maintenance	Niche market with international and national customers

### *Data collection*

During the conducted research, various types of data including information from the private database, interviews, company websites and relevant press releases were collected. By triangulating this quantitative and qualitative data, validity (Eisenhardt 1989; Flick 2008) was increased.

### *Database*

To derive data about specific eco-efficiency measures implemented in the sample firms the private database was consulted. The database contains information on various categories of eco-efficiency measures that were taken in the companies (for example measures in the field of hazardous materials, energy consumption), the achieved benefits (for example monetary), the year of implementation, contact information of the company, and the responsible manager for involving in the ECOPROFIT®-program.

### *Interviews*

The 35 companies were contacted via phone and seven agreed (see Table 1) to take part in a phone interview on a separate date. To get interpretations of different hierarchical levels, the interviews were conducted with three owner-managers, three executive managers and one top manager and took place between June and August 2010. The final sample consisted of seven SMEs, with three from the mechanical engineering and four from the metalworking industry (see Table 1).

This research capitalized on semi-structured in-depth interviews as they allow gaining insight into the interviewee's perception by giving them the opportunity to answer freely without guidance (Kruse 2008). The interview guideline comprised three sections: company

structure, corporate sustainability and eco-efficiency, and the role of intermediary organizations.

The interviews were tape-recorded, transcribed and analyzed using a thematic approach where inductive categories were derived (Kruse 2008; Wolcott 2009). A case study profile was compiled for each interviewed company, enriched with external information (Eisenhardt 1989) available through company websites, press releases and ECOPROFIT®-material. The thematic analysis involved identifying themes and issues as stated by the interviewees and comparing them to other interviews and with the above described secondary data (Kruse 2008). These analyses were undertaken using the qualitative research software MaxQD

## 4. RESEARCH FINDINGS

The presentation of research findings is structured as follows: First, the eco-efficiency measures taken by companies in the sample are presented followed by the drivers and barriers. Finally, the role of collaboration and intermediary organizations for the measures undertaken is shown.

### 4.1. ECO-EFFICIENCY MEASURES TAKEN BY THE STUDIED SMES

Preliminary to the interviews, the implemented eco-efficiency measures of the studied organizations were analyzed to seek out the benefits SMEs attribute to eco-efficiency measures (see Table 2). From the database, it was possible to extract information about innovative measures of the companies categorized into: waste/waste disposal, industrial safety, procurement, emissions, energy, hazardous material, image, organization, production, compliance/law, raw materials, training, and water/sewage. The studied companies engaged most strongly in the categories waste/waste disposal, energy and hazardous materials (see Table 2). The benefits companies derived from measures are both economic and environmental, whereby a clear focus is put on monetary benefits.

Table 2: Areas of Eco-Efficiency Measures Implemented in the studied Organizations

Category of Measure	Measure Taken #	Companies Involved <sup>a</sup>	Stated Benefits
Waste/waste disposal	8	C1, C2, C3, C4, C5, C6	Monetary; Reduction of waste & water consumption
Energy	7	C2, C4, C5, C6	Monetary; Reduction of energy consumption
Hazardous materials	5	C2, C3, C7	Increased safety; Monetary; Reduction of environmental risks
Organization	4	C3, C6	Monetary; Test procedure
Waste/sewage	3	C4, C6, C7	Monetary; Saving of water
Emissions	2	C4	Noise reduction
Compliance/Law	1	C5	Increased compliance
<b># Number of times listed in the database</b>			
<b><sup>a</sup> Each company can undertake multiple measures in multiple categories</b>			

### 4.2. DRIVERS AND BARRIERS TO SUSTAINABILITY AND ECO-EFFICIENCY MEASURES

In the remainder of this chapter, the findings from primary data derived from the interviews and company documents are presented.

As shown in Table 3, the studied companies most frequently related to cost-efficiency, proactive contact by external initiative and a desire for continuous improvement as central driving factors. The focus on cost-efficiency as a driver demonstrates that the studied companies are especially prone to take measures related to economic consideration. This further highlights the importance of offering win-win solutions by, for example, combining economic and environmental performance when engaging SMEs in corporate sustainability.

Moreover, it is astonishing that the studied companies consider the “proactive contact by external initiative” as the second most important driver to start taking eco-efficiency measures (see Table 3). Therefore, stimulating change through external initiatives might be necessary to actually engage SMEs in the CS agenda.

Table 3: Drivers for Tackling Sustainability Issues

Drivers – Identifiable main Themes	Company Responses <sup>a</sup> #	Example <sup>b</sup>
Cost-efficiency	6	“It’s all about costs, costs, costs. That’s all that counts” (EM)
Proactive contact by external initiative	5	“I was motivated by hints given by the city where we were contacted personally” (OM)
Continuous improvement	4	“To see if you can do more here” (M)
Avoid negative environmental impacts	3	“In the area of environment see what you can avoid” (EM)
Create common culture in company	3	“To keep it all stable here” (EM)
Benchmarking with other organizations	2	„To find out what the others are doing“ (EM)
Create monetary benefit	2	„In retrospect it’s a money benefit“ (OM)
Improve company image	2	“Today you can use it as an image advantage” (OM)
Compliance with environmental legislation	2	“The reason for me to join [...] I thought that somewhere legal compliance is not given in our company (OM)
Company as part of the community	2	“You have closer contacts to the surrounding, regional” (OM)
Pressure on suppliers	1	“It’s extreme when you deliver to the large companies” (EM)
Improve energy efficiency	1	“We changed several things [...] you save a lot” (EM)
Social Responsibility of company	1	“That it’s our social responsibility as entrepreneur” (OM)
Create new products	1	„We are constantly creating new products.“ (OM)
Become part of a network	1	“Be in a functioning network with others to exchange” (OM)
Environmental alignment of organizational development	1	“Basically we’ve been environmentally orientated for a long time, firstly due to personal reasons of the owners” (OM)
<b># Number of times mentioned by the interviewee</b> <sup>a</sup> Interviewees mentioned several themes more than once <sup>b</sup> Cited in parentheses is the source of the quotation <b>OM: Owner-manager</b> <b>EM: executive staff</b> <b>M: management</b>		

The central perceived barrier in handling eco-efficiency and sustainability related issues (see Table 4) was the lack of resources (such as personnel and time). Surprising was that a significant number of interviewees considered sustainability as irrelevant to the sector – the following statement serves as an example of this attitude:

„There are only few environmentally harmful measures that are relevant here [referring to the sector]. That’s more relevant in the chemical sector or pharmaceutical, that’s where it makes sense. But here with us [...] in the sector are only few things damaging the environment.”

Table 4: Barriers in handling Sustainability Issues

Barriers – Identifiable main Themes	Company Responses <sup>a</sup> #	Examples <sup>b</sup>
Lack of resources – personnel, time	8	„It’s mainly that there are too few people. Lack of time” (M) “Honestly, time is missing” (OM) “There is no one to take care of it” (EM)
Irrelevant to sector	3	“It’s not asked, not wanted, not demanded here” (EM)
Lack of knowledge about relevant sustainability issues	2	“On the one hand time and on the other hand knowledge is missing (M)
Costs without equivalent benefit	1	“It only costs money” (OM)
Irrelevant to customers	1	“No one of our customers wants it” (OM)
<b># Number of times mentioned by the interviewee</b> <sup>a</sup> Interviewees mentioned several themes more than once <sup>b</sup> Cited in parentheses is the source of the quotation <b>OM: Owner-manager</b> <b>EM: executive staff</b> <b>M: management</b>		

The limitation of resources as major barrier to implementing eco-efficiency directly resonates with the theoretical underpinning of this work. The data shows that even though eco-efficiency inheres a win-win situation in terms of simultaneously aiming for economic and environmental improvements, SMEs’ lack of resources (and lack of understanding of eco-efficiency) may hinder implementation of such measures.

#### 4.3. INTERMEDIARIES AND COLLABORATION FOR ECO-EFFICIENCY

Part three of the interview picked up on the theme of collaboration with intermediary organizations (see Table 5). Capitalizing on external support mechanisms in the form of intermediary organizations such as local authority initiatives is deemed relevant by all studied companies. In this context, the research also inquired after the relevance of company or industry networks which were considered less relevant in comparison to concrete external support. The interviewees overall stated that acquiring knowledge externally and receiving support during the implementation phase is crucial to aim for CS-related issues like eco-efficiency.

Table 5: Relevance of collaborating with intermediary organizations in the studied companies

Intermediary organizations	Company Responses #	Networks	Company Responses #
Intermediary organizations are relevant	7	Networks are relevant	4
Intermediary organizations are irrelevant	0	Networks are irrelevant	3
<b># Number of companies</b>			

For some interviewees, it was particularly important that the external initiative goes beyond consulting to engage in actual implementation:

„Guidelines are nice, but after two to three times they land in the rubbish bin [...] it becomes interesting when external consultants not only give advice but also are responsible for the implementation.”

#### 4.4. EFFECTS BEYOND THE DURATION OF EXTERNAL INITIATIVES

The studied companies overall showed that a range of environmental measures were implemented after the participation in the ECOPROFIT®-scheme (see Table 6). Such measures included the installation of photovoltaic solar cells or introducing an ecological water management. Considering that the studied companies received individual consulting phases and were accompanied in the implementation processes, it is surprising that although most companies did take further environmental measures, they remained of unsystematic and ad-hoc character and were limited in scope (see Table 6). Hence, indication from this exploratory research of SMEs in the metal- and mechanical engineering sector suggests that sustained integration of environmental issues is not guaranteed in such a collaborative model. Involving SMEs in learning networks beyond the measures taken in the ECOPROFIT®-scheme could help to ensure that the learning process is continued without straining resources extensively.

Table 6: Environmental measures taken beyond the ECOPROFIT®-scheme in the studied companies

Company Code	Further measures taken	Application of specific instruments	Examples of measures and instruments
C1	Yes	Yes	“Control of relevant data; ecological water management; collaboration in further initiatives; eco-check”
C2	No	No	/
C3	Yes	No	“Energy Contracting”
C4	Yes	Yes	“Collaboration in further initiatives; Area of waste disposal; ISO 9001”
C5	Yes	No	“solar cells on the roof”
C6	Yes	No	“continuous improvement of products and processes”
C7	No	No	/

Thus, the participation had only in part led to a more formalized management of CS issues, as the majority of the studied companies did not implement specific instruments to manage sustainability-related issues (see Table 6). Possible instruments could have been more formalized instruments such as a life-cycle-assessment, eco-checklist or eco-efficiency indicators (BMU, econsense, and CSM 2007). None of the companies followed a CS strategy or management system. However, considering that SMEs usually pursue a less formalized and ad hoc management of CS issues, less formal methods such as car-sharing models, taking measures to preserve biodiversity or drafting an environmental mission statement could have been further, even though less radical, improvements.

## 5. DISCUSSION

The evaluation of the challenges, drivers and barriers SMEs encountered while aiming for eco-efficiency and the reasons to collaborate with intermediary organizations is based on alleged behavior. Therefore, rather than drawing generalizable conclusions, which this kind of data does not allow, this paper will put forward propositions based on an iterative process between afore discussed literature and collected data.

### ***Eco-efficiency as Initial Point towards CS***

SMEs operate in a less formal manner and generally lack formal CS tools due to a lack of time, financial resources and capabilities (for example Russo and Tencati 2009). However, SMEs are more flexible and can thus adapt to market changes and conquer niches for sustainability products (see for example Jenkins 2009; Schaltegger and Wagner 2008). Therefore, on the one hand peculiarities of SMEs related to management, organizational structure and processes can be a barrier – such as lack of resources – but on the other hand be a driver – such as flexibility and adaptability.

Such peculiarities also became apparent in this data. The studied companies identified a lack of resources such as personnel and time as a central barrier. Moreover, the majority of the sample companies did not implement sustainability-related management instruments. Thus, their management of CS was overall of informal character, as can be expected from SMEs. However, as a contrast to expected flexibility and pro-activity, a reactive management approach was also reflected in the response by some companies that the sector does not demand CS engagement.

However, aiming for eco-efficiency provided SMEs with the necessary win-win situation, by combining economic and environmental performance (Schaltegger and Synnestvedt 2002). Cost-efficiency was identified as the central driver to engage in the CS agenda. By aiming for eco-efficiency, the studied companies were furthermore, able to initiate processes of continuous improvement and were able to avoid negative environmental impacts. Hence, by aiming for eco-efficiency SMEs were able to reap the benefits and build capabilities for integrating environmental issues into conventional management. This argument can further be supported by considering that eco-efficiency measures are less radical than, for example, the creation and introduction of a new business model. As a consequence, the incremental steps taken during the introduction of eco-efficiency might be less disruptive to an organization wishing to start their sustainability engagement.

*Proposition 1: The peculiarities of SMEs and inherent resource constraints influence the CS agenda, whereby eco-efficiency is a practical starting point for SMEs to aim for CS.*

### ***Collaboration with Intermediary Organizations***

SMEs that are included in networked systems, for example through collaboration in clusters, find it easier to overcome the challenges and remove the barriers related to SME peculiarities and resource constraints (see for example Battaglia et al. 2010). Roberts et al. (2006) suggest that SMEs can increase their CS activity by identifying ways to collaborate.



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The findings indicate that to be included in such a networked system, collaboration with intermediary organizations can indeed play a crucial role. The proactive contact by an external initiative was central to initiate change, gain a comprehensive view on environmental issues (see for example de Bruijn and Tukker 2002; Hartman, Hofman, and Stafford 2002) and integrate environmental issues into conventional management (see for example Martinuzzi, Huchler, and Obermayr 2000). Even though the studied companies overall showed that a range of measures were implemented after the participation in the ECOPROFIT®-program, these remained of ad-hoc nature.

Thus, to ensure that measures are of a sustained nature and that progress towards comprehensive CS (such as corporate sustainable development) is made, external facilitation needs to be provided on a long-term basis. If an SME is not able to develop the necessary capabilities to integrate sustainability issues, they can make use of knowledge and capacities of other stakeholders (de Bruijn and Hofman 2000). Thereby, through collaboration, SMEs have access to comprehensive and external expertise, can solve problems at the business level, and engage in learning networks. Thus, external facilitation could support SMEs in implementing processes that aim for a long-term organizational learning for sustainability (see for example Siebenhüner & Arnold 2007). Activities undertaken by the intermediary organization could include fostering knowledge transfer by providing concise knowledge packages, encouraging exchange of experiences amongst SMEs or translating new academic findings into applicable formats. Hence, to promote the CS agenda collaboration with intermediary organizations can play a role as they alleviate resource constraints by stimulating change, providing external knowledge and supporting the implementation phase.

*Proposition 2: Sustaining change can be achieved by collaborating with intermediary organizations that organize an effective and efficient knowledge transfer.*

## 6. CONCLUDING REMARKS

The analysis of this paper suggests that collaboration with intermediary organizations helps SMEs to overcome inherent resource constraints such as lack of time, personnel and lack of knowledge. Eco-efficiency measures can be a good starting point for SMEs as they combine economic and environmental performance. Moreover, implementing such measures through the aid of intermediary organizations involves SMEs in a learning network and can give impulses for further measures. Hence, aiming for eco-efficiency can be a first step towards managing a broader range of sustainability issues. However, collaboration with intermediary organizations that only focuses on one specific criterion of CS such as eco-efficiency, may not aid SMEs in introducing a more formalized or systematic management of broader sustainability issues, as eco-efficiency may remain the only area of interest. Therefore, external initiatives also need to install processes that ensure a follow up on measures taken in SMEs, in particular showing future paths towards CS.

Considering the small sample size of this study and its exploratory nature conclusions drawn are not generalizable. Not having included the operational level in the studied companies, nor the employees' point of view is another limitation of this analysis. Future research into how collaboration, partnerships and network relationships promote the CS agenda in SMEs is necessary. Research into how learning networks for SME function and the role of intermediary organizations other than local authorities (for example universities) is promising. Focusing research on innovative formats transferring knowledge between SMEs and intermediary organizations is favorable to further promote the CS agenda in SMEs.

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