

A typology of environmental capabilities of SMEs

**A typology of environmental capabilities of SMEs: uncovering capabilities for a transition towards sustainability**

Polina Baranova

Derby Business School, University of Derby

Author contact details

Address: Derby Business School, Kedleston Road, University of Derby, Derby, DE22 1GB, UK

Email: [p.baranova@derby.ac.uk](mailto:p.baranova@derby.ac.uk)

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### **Abstract**

The transition to a low carbon economy demands new business strategies for maintaining competitiveness, benefiting from and contributing towards the ‘clean’ growth. An ongoing study of the regional SMEs operating in the East Midlands reveals the patterns in which SMEs approach capability building towards sustainability. This developmental paper presents a conceptual view of how these patterns can be theorised and empirically tested further. The paper outlines a theoretical avenue aiming to further our understanding about environmental capabilities. The paper concludes with a number of practical recommendations towards developing environmental capabilities of SMEs in the context of a transition towards sustainability.

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## Introduction

Much of the research and business literature about the shift towards a low carbon economy is focused on large companies and large scale change initiatives in cities, regions and whole countries (Rifkind, 2011; Whiteman et al., 2011; Uyarra et al., 2016). Much less is published on the practices, challenges and benefits for small and medium sized enterprises (Altham, 2007; Gadenne, Kennedy & McKeiver, 2009; Hillary, 2004). This is surprising, given that small and medium sized enterprises (SMEs) represent the dominant form of business organisation globally. In Europe there were 21.2 million SMEs in the non-financial business sector in 2013, accounting for 99% of all enterprises in this sector, 67% of total employment and 58% of total value added generated (European Commission, 2014)<sup>1</sup>. Globally, SMEs make up over 95% of the firms, account for approximately 50% of GDP and 60%-70% of total employment, when both formal and informal SMEs are taken into account. The present study, which analyses the data from a growing regional network of regional SMEs, presents conceptual developments in the area of capability-building towards sustainability of this dominant business organisation form.

## Sustainability transitions

Sustainability transitions is a body of knowledge that studies a set of radical, mutually reinforcing and long-term changes in the economic, technological, socio-cultural and institutional domains of a system that serves a function to the society . It puts at the core transition as a means of change (Wieczorek & Berkhout 2009, Elzen & Wieczorek 2005). The literature on sustainability transitions has expanded over the last ten years and according to the Sustainability Transitions Research Network (STRN, 2010) “the starting point for transitions research is a recognition that many environmental problems, such as climate change, loss of biodiversity, resource depletion (clean water, oil, forests, fish stocks), are formidable societal challenges, whose solution requires deep structural changes in key areas of human activity, including our transport, energy, agrifood, housing, manufacturing, leisure and other systems” (2010, pp.3-4). Furthermore, one of the challenges for sustainable development is associated with a need to change the existing systems, which are often difficult to ‘dislodge’ as they are characterised by various lock-in processes that lead to path dependent developments.

The emerging research on sustainability transitions have been developing helpful concepts and theories aimed at understanding how to unlock processes, and stimulate path-breaking changes towards more sustainable systems. A broad co-evolutionary approach is advocated (Markard et al, 2012), which highlights multi-dimensional interactions between industry, markets, technology, policy, culture and civil society.

A number of authors have recently discussed an introduction of the capability-building approach to the literature on sustainability transitions in an attempt to empathise the significance of considerations for capability at individual, group and institutional levels for transition towards sustainability (Rauschmayer, Bauler, Schöpke, 2015). A notion of capabilities for green growth has been linked to a competitive success (Dangelico &

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<sup>1</sup> Small and medium-sized enterprises are defined by the European Union as businesses that have fewer than 250 employees and either a turnover of less than or equal to €50 million or a balance sheet total of less than or equal to € 43 million (European Commission, 2003).

Pontrandolfo, 2015). ‘Sustainable competitiveness’ concept was introduced by the World Economic Forum (WEF, 2015) to stress the importance of productivity as a driver of prosperity and sustainable growth.

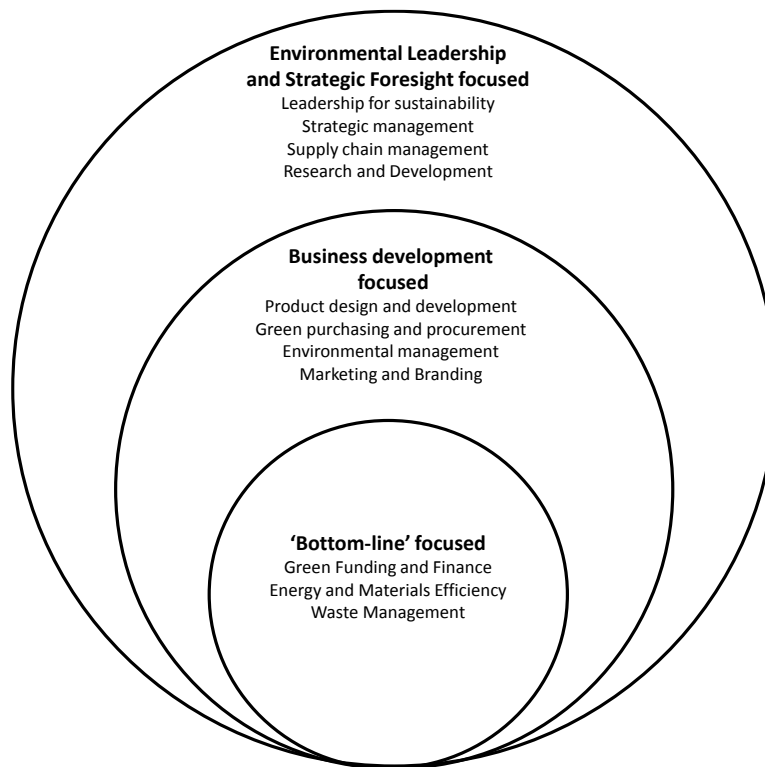
### **Environmental capability**

A firm’s environmental capabilities are capabilities that allow a firm to reduce its ecological footprint (Baranova & Meadows, 2017). As a part of a firm’s strategic capabilities, they are significant for the success of the firm’s environmental strategies (Rugman & Verbeke, 1998; Klassen & Whybark, 1999; Aragon-Correa & Sharma, 2003; Buysse & Verbeke, 2003). These capabilities include, for instance, environmental management skills and routines, product/service design with a focus on sustainability, waste management, resource efficiency skills and practices and others that focus on the reduction of the ecological footprint of the firm. It is noted that the concept of ecological footprint (Hart, 1995) is defined sufficiently broadly to include the impact of the firm’s activities in supporting a reduction in the ecological footprint of the firm’s key stakeholders such as its suppliers and customers.

The existing literature on capability building is dominated by studies which emphasise capabilities as being internally generated, with heterogeneity primarily arising from imperfections in factor markets (Barney, 1986), distinct organisational skills and routines (Nelson & Winter, 1982), causal ambiguity and uncertain imitability (Dierickx & Cool, 1989) and deliberate investment in learning and making improvements (Zollo & Winter, 2002). In this study it is argued that, while an internal focus on capability-building is critical, it has to be inclusive of the external perspective on capability building (Gulati, Norhia & Zaheer, 2000). This includes capability development through becoming a part of the green supply chains, as well as broader networks, which support decarbonisation efforts and broader sustainability initiatives.

More recently, a typology of environmental capabilities in the context of SMEs has been developed by Baranova and Paterson (2017). They outline a link between perceived value of environmental capabilities for an enterprise and the type of environmental capabilities an enterprise is willing to develop (Figure 1). This paper offers further advances in the development of theoretical and empirical insights towards strengthening this conceptual development.

Figure 1: Typology of environmental capabilities of SMEs (Baranova and Paterson, 2017)



## Study and methods

The current study is designed to explore environmental capabilities of SMEs operating in D2N2 (Derby, Derbyshire, Nottingham, Nottinghamshire) LEP region. An initial stage of the study involved a survey designed to gather information about the needs for environmental capabilities of the regional SMEs. A total of 120 responses were received and analysed in autumn 2015. Following from this initial data gathering stage, a process of environmental capabilities needs assessment (ECNA) was developed, which involves a short exploratory survey followed by a semi-structured interview. Thus far, a total of fifteen SMEs have undergone the assessment process. The information gathered as part of this process is used to develop complex case studies featuring SMEs working in various sectors in the region, including construction, engineering, retail, energy and logistics. As data collection is ongoing, a total of 15 case studies developed thus far form a part of exploratory study about the nature of environmental capabilities in SMEs.

## Capability building focus and sustainability

Based on the data analysed thus far, the following patterns of environmental capabilities in SMEs are identified:

### *'Bottom-line' focused environmental capabilities*

The majority of SMEs studied recognise the need for what is referred to as 'bottom-line' focused environmental capabilities (Baranova and Paterson, 2017). These capabilities are perceived to have positive impact on the financial bottom line of an SME either through opportunities to cut costs or attracted additional financial resources to the business. It is viewed

by the SMEs we study, that these capabilities are able to generate the return on investment short term and may not require sustained efforts either in attaining or developing these capabilities 'in house'. The examples of these capabilities, which are often requested by SMEs for project assistance in the first instance, include: access to green funding and finance, energy and materials efficiency (opportunities to reduce costs through energy usage and materials usage) and waste management. These areas seem to attract the most attention, as they are perceived to have the biggest benefit to an enterprise, where resources are scarce (Chen & Hambrick, 1995; Dean et al, 1998; Welsh & White, 1981).

### ***Business-development focused environmental capabilities***

The second category of environmental capability is focused on business development. These are often associated with opportunities for consolidation and a gradual expansion of an enterprise. They require either the introduction of new ways of working, often accompanied by new process and systems, or changes from the established practices in the following areas: purchasing and procurement, product design, environmental management, intellectual property management, marketing and branding. A short-to-medium term perspective is necessary in relation to acquisition and/or development of these capabilities in order to gain return on investments. They require sustained efforts in maintaining the expertise in these areas, which is often not readily available in micro and small sized firms.

### ***Environmental-leadership-and-strategic-foresight focused environmental capabilities***

The third category of environmental capability is linked to SMEs demonstrating aptitudes for environmental leadership and strategic foresight. These SMEs actively engage in sustainability practices and care for the natural environment forms an important part of the firm's business strategy. They often have the necessary environmental management accreditations, brand associated with sustainability and they readily engage with various networks. They demonstrate the confidence in developing relationships with various stakeholders, including much larger organisations. And where they exist as part of a supply chain, they generally consider themselves as proactive partners. Thus, environmental practices often span outside the organisational boundaries and involve capability building with external partners (Gulati, Norhia & Zaheer, 2000). To achieve success in developing these capabilities, a long-term perspective is exercised alongside the continuous efforts to reduce carbon footprint.

As a result of this ongoing study of the regional SMEs, the following recommendation towards developing environmental capabilities in SMEs can be offered:

### ***Access to funding and finance***

The access to finance and funding is seen by the SMEs as a major area where they require capability development. This is not surprising, as the lack of finance and the ability to attract funds from the external sources is seen as one of the major limiting factors preventing SMEs to engage in sustainability initiatives (Lewis & Cassell, 2010; Perry & Towers, 2009; Torugsa et al., 2012). The ability to attract the external funds is high on the agenda of the regional SMEs, which indicates that SMEs often struggle to develop a business case for sustainability (Moor & Manring, 2009). Thus, developing a strategic view of sustainability initiatives, which

consider not only cost cutting, as a main short-term gain of the green investment, but longer-term benefits contributing to business development as well as strengthening firm's sustainability orientation.

### ***Greening of the regional supply chains***

A large number of SMEs are part of the vast supply chains and networks at a regional, national and supranational level. Development of the sustainable sourcing approaches and effective carbon management across supply chains is vital. Recent studies confirm (Gimenez & Sierra, 2013; Lee & Klassen, 2008; Foerstl et al., 2010) that being a part of the supply chain that encourages sustainable sourcing and conduct has a positive impact on sustainability orientation of the supply chain participants. Lee and Klassen (2008) found, in a case study of SMEs, that a combination of evaluation and collaboration provides synergies that help suppliers build their organisational capabilities that enable them to improve their environmental performance and that of their customers (i.e., the buying firms). In a similar vein, Reuter et al. (2010) confirmed that a combination of assessment and collaboration strategies generates the greatest effect for the greening of supply chains.

### ***Eco-innovation***

SMEs have a significant potential to develop innovative solutions for green products and services as well as sustainable business products. Innovation in these areas could provide a source for differentiation alongside the cost savings, which could be achieved through adaptation of the low carbon strategies. Capability building for low carbon innovation is an emergent area of business activity, where both public and private sectors are supporting investment in low carbon technologies. For SMEs to succeed in this arena, they need to be supported in terms of finance and leadership for eco-innovation, which requires a long-term perspective, tolerance of failure and risk-taking. A combination of differentiation and cost effectiveness could contribute towards sustainable competitive advantage (Lynch, 2011), thus positively affecting the business continuity of an SME.

### ***Sustainable Business Models***

SMEs need to be open to the creation and redesign of existing business models, which encompass sustainability. This proposition requires a deep understanding of value chain dynamics as well as customer needs and behaviours. Furthermore, SMEs need to keep abreast of developments in technology, design, and infrastructure which are creating the space for new solutions to emerge. They need to engage proactively in creating platforms for collaboration and open innovation with suppliers, customers and other partners (e.g. designers and software companies). Such efforts would inevitably require leadership ambition, strategic foresight and the capacity for capability building to encourage innovation, market development and growth through collaborative strategies.

### **Conclusion and Recommendations**

The present study asserts that SMEs are significant contributors to the shift towards a low carbon economy. To fulfil their significant role in supporting sustainable transition as a dominant form of business organisation in the regions, SMEs need to recognise a strategic significance of the opportunities presented by the shift towards a low carbon economy. These

opportunities go beyond accessing regional and national supply chains, developing new niches for low carbon goods and services and achieving competitive success through eco-innovation. They are often linked to re-shaping the purpose of an enterprise towards becoming a more sustainable business, where a care for the natural environment 'becomes part of a firm's DNA'. This type of an organisational transformation towards sustainability is often associated with developing a number of strategic capabilities (Borland et al., 2016).

This paper argues that development of these capabilities, defined as environmental capabilities of a firm (Baranova and Meadows, 2017), is linked to the prevailing capability building focus of a firm. Such a focus is assigned by the key stakeholders of an enterprise, often an SME owner(s). The typology of environmental capabilities of SMEs needs further empirical exploration, for instance depending on a firm's size and the relational dynamics with a wide range of firm's stakeholders. The next stage of data analysis will consider these aspects, hence contributing to a growing body of knowledge about capability building for sustainability.



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