Systems resilience and SME multilevel challenges: A place-based conceptualization of the circular economy

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Abstract

This article presents a place-based systems perspective of the sustainability of small and medium-sized enterprises, exploring the multilevel challenges in transitioning towards a circular economy. We develop a conceptual model showing that, as circular economy systems and their resilience reside at the intersection of business, societal and ecosystem value, place-based coordination and cross-institutional organizing matter. Using the case of Devon and Cornwall in the south-west of England, we argue SMEs who recognize the role of placed-based societal identities and ecosystems not only become more resilient, but their considerations for community welfare and labour are intertwined with geographic-specific natural capital and the circular economy. Yet place-based circular systems are characterized by tensions and trade-offs, suggesting survival of one is dependent on the circulation of resources in another. Our contribution is to theorize the role of SMEs in place-based circular system resilience, understanding the organizational mechanisms of local cooperation and value sharing.

Keywords: Sustainability, triple bottom line, place, circular economy, SME, systems resilience

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1. Introduction

Firms and society as a whole face unprecedented global challenges, including political instability, resource depletion, economic volatility, protest movements, climate change-induced natural disasters, and disruptive technologies (George *et al.,* 2016). The focus of business sustainability has often been to respond to such challenges within the logics of existing economic models, as a continuing shift in ordinary strategic concerns from current stakeholder demands, where the full scope of the issue cannot be realized (Hoffman, 2019). The premise of this paper is that a more fundamental shift in understanding business sustainability is required. This case-informed conceptual article argues that small and medium-sized enterprises (SMEs) are part of a geographical place (Shrivastava & Kennelly, 2013; Guthey *et al.,* 2014) that involves economic, social and environmental dimensions (Wagner 2009; Savitz, 2013; Yadava & Sinha, 2016). We put forward circular economy (CE) as a place-based systems approach to sustainability that comprises three value cycles – business, societal and ecosystem – aiming to establish and maintain long-term systems resilience in a particular geography.

In times of rapid, often global, economic, social and environmental changes, the question of organizational resilience is particularly pertinent (Desjardine *et al.,* 2019). We define resilience as the ability an organization has to recover from difficulties and adapt to change (van der Vegt *et al.,* 2015; Ortiz-de-Mandojana & Bansal, 2016). Systems resilience, therefore, is how firms or groups of stakeholders adopt new practices and increase interdependencies that, together, help build stability and flexibility against shocks from the external environment (Desjardine *et al.,*

2019). While organizations large and small are beginning to recognize the value of circular business practice in building resilience (Gelhard & von Delft, 2016; Zamfir *et al.,* 2017; Ormazabal *et al.,* 2018), considerable challenges remain over long-term implementation, which affects rate and spread of adoption (Bansal, 2005; Wright & Nyberg, 2017; Fehrer & Wieland, 2020). This is especially the case with an important dimension of CE: the scaling of circular business practice beyond the focal organization by involving suppliers and other partners (Bansal, 2003; Bansal & DesJardine, 2014, Lee & Raschke, 2020). This challenge is of particular interest because CE does not only involve change within organizations in isolation, but concerns understanding system-wide adaptations, creating lasting positive impacts for all stakeholders. It means responding to the challenges that confront the 21st century as a whole and in a manner which supports business, benefits society, and protects the environment from issues such as pollution and climate change (Howard-Grenville *et al.*, 2014).

We argue that scholars of CE and business sustainability lack understanding in three related areas. First, CE adoption by SMEs is not well understood, the majority of whom do not get beyond waste reduction in their sustainable business practice (Dey *et al.,* 2020). While considerable literature exists for large corporate firms on CE (EMF, 2013; 2015), small firms operate differently, often with less capacity. Second, we argue that the resilience of SMEs is more dependent on their embeddedness in local social and environmental systems. A whole systems approach is hence needed, understanding the tensions and trade-offs between different system components (Bansal *et al.,* 2020). Third, SMEs are embedded in their surrounding geography or 'place', where transitioning towards a resilient CE system requires a range of local sustainability factors and levels to be taken in consideration (Shrivastava & Kennelly, 2013; Guthey *et al.,* 2014). The aim of this article is to develop a conceptual model that provides answers to two related

questions: (1) *how can we conceptualize SMEs resilience through the adoption of CE systems practices to deliver long-term economic, social and environmental value?* (2) *What are the tensions and trade-offs in the transition towards place-based CE systems?*

After the literature review, we present the case of Devon & Cornwall: two adjoining counties based in the rural south west of England, using a place-based approach to understanding SME sustainability and resilience. Next, we develop an analytical framework from the data, followed by the discussion section whose conceptual model characterizes the tensions and trade-offs in circular business practice and systems resilience (Whiteman & Cooper, 2011; Desjardine *et al.,* 2019; Bansal *et al.,* 2020). We conclude with our contribution, theorizing the role of SMEs in place-based circular system resilience, understanding the organizational mechanisms of cooperation and value sharing across local stakeholders, and contributing to wider engagement in the sustainability agenda through accruing business, societal and ecosystem value.

2. Literature: SMEs' challenges in sustainable business

Sustainable business originates from some of the earliest research in sustainability, principally Elkington's 'triple bottom line' concept (Elkington, 1997; 1998). In essence, it means for organizations to be truly sustainable, all three components must be adopted, in terms of business growth, societal wellbeing and protecting the natural environment. However, typical managerial behaviour is to adopt a trade-off approach to the challenges of corporate sustainability, for example, where one or other social or environmental concerns are dropped from the agenda for reasons of efficiency or constrained resources (Hahn *et al.,* 2010). SMEs, in particular, find it difficult to truly follow a triple bottom line approach and manage crises, given the entrepreneurial precarity and resource constraints they face (Goworek *et al.,* 2020; Veronica *et al.,* 2020; Muñoz-

Pascual *et al.,* 2019; Eggers, 2020). While sustainability remains a dominant theme in the literature, it is often presented as a broken promise and criticized as 'does it all add up?' in terms of real world business implementation (Milne & Gray, 2013; Elkington *et al.,* 2004: 81). More recently, the circular economy (CE) has emerged as a systems approach that aims to rethink the role of business within society and the environment.

2.1 Taking a systems-view: towards a CE approach

Sustainable business practice requires long-term commitments (Bansal & DesJardine, 2014; Ortiz-de-Mandojana & Bansal, 2016). This suggests adopting a coordinated approach that involves multiple players and cooperation from private, public and non-profit stakeholders (George *et al.,* 2016). This requires moving away from a resource-based theory where competitive advantage is comprised of resource heterogeneity and immobility and confined by traditional boundaries of the firm (Wernerfelt, 1984; Barney, 1991). Hence, a systems view is required by SME owners and managers to cope with present-day environmental challenges, which include a wider societal scope (e.g. changes in customer expectations, local labour markets, social deprivation) and threats to local natural resources and ecosystems that the firm may depend on.

Recently, authors have adopted a CE approach to understanding firm's capabilities in transitioning towards a sustainable business paradigm (Parida *et al.,* 2019; Confente *et al.,* 2020; Kristoffersen *et al.,* 2020). While the CE concept remains contested and open to interpretation (Friant *et al.,* 2020; Korhonen *et al.,* 2018a), the core idea of the CE is to move away from a linear, so-called 'take-make-use-dispose' economy, transitioning towards more circular businesses practices that keep the value of materials for much longer (Lieder & Rashid, 2016). One of the key objectives of the CE is for no waste to occur at all, as waste would be seen as a resource that can be reused, remanufactured and recycled again and again (Greyson, 2007).

While many large firms have been thought leaders in CE innovation – working, for example, with the Ellen MacArthur Foundation (EMF, 2013), SMEs face a particular set of barriers and challenges for CE adoption (Rizos *et al.,* 2016; Ormazabal *et al.,* 2016). SMEs owners and managers often feel they do not have the capacity to go beyond business-as-usual, struggling as it is to comply with ever-changing legal and compliance frameworks. Hence SMEs often interpret the CE within a resource efficiency frame, which is not necessarily new or innovative (De Jesus & Mendonça, 2018). That is, SMEs are, perhaps not surprisingly, focused on their cost base, eager to improve their profitability and longer-term financial sustainability.

However, as Hoffman (2019) notes, this kind of approach is not going far enough, as it still focuses on the business-as-usual assumption that competitive advantage is built in terms of differentiation against others. Given the multiple environmental challenges faced, including climate change and biodiversity loss, nascent CE approaches may only be slowing the rate at which the planet will reach 'system collapse' (Hoffman, 2019: 5). A new model is needed for business to implement sustainable systems which tackle the adoption issues surrounding scale and scope of the problem (Korhonen *et al.,* 2018b), or in the words of Hoffman (2019: 5):

> '…sustainability solutions are a property of the system as a whole, not one company or one product. So, looking to the future of corporate sustainability, exemplars and leaders will be measured by the extent to which they change the broader systems of which they are a part.'

While beneficial to the planet long-term, pursuing sustainability may represent a risk to firms short-term due to the costs involved (Dey *et al.,* 2020), despite the potential to develop business resilience. We hence argue that it is important to consider the relationship between firms and resilience.

2.2 Firms and resilience

Resilience in the past has most commonly been discussed at the individual or managerial level, with a small but increasing number of studies around the response of business organizations and societies to potential risks or threats from phenomena such as natural disasters e.g. volcanic eruptions, tsunamis (van der Vegt *et al.,* 2015; Ortiz-de-Mandojana & Bansal, 2016; Desjardine *et al.,* 2019). Resilience at the firm level of analysis is defined as 'the ability of a system to persist despite disruptions and the ability to regenerate and maintain existing organization' (Gunderson & Pritchard, 2002: 6). It also reflects the ability of organizations or systems to adapt, in other words 'to absorb and recover from shocks, while transforming their structures and means for functioning in the face of long-term stresses, change and uncertainty' (van der Vegt *et al.,* 2015: 972). Other benefits mean resilient business organizations are able to preserve their core functions and recover better from adversity, which helps in survival during environmental disturbances (Desjardine *et al.,* 2019; Ortiz-de-Mandojana & Bansal, 2016).

Desjardine *et al.* (2019) argue that strategic practices are likely to contribute more to organizational resilience by creating interdependencies among stakeholders, building stability. For example, during the COVID-19 pandemic, governments competed for access to scarce resources such as personal protective equipment, whereas managers who made strategic sourcing decisions and created supplier portfolios in different countries with different risk profiles, were better able to manage overall disruption exposure (Mena *et al.,* 2022). Strategic practices may also encourage interdependencies among diverse actors that help to build flexibility in adapting to changing situations. The switching to direct home delivery of food boxes helped to save small agricultural businesses in the UK during the height of the pandemic, when their traditional customers i.e. pubs & restaurants, were closed (Worstell, 2020). Stability and flexibility, therefore, become the

hallmarks of firms seeking to gain greater resilience. Hence, there are two common ingredients of resilience: a systems perspective, and an emphasis on stability and flexibility. The systems perspective assumes that the environment operates as a system comprised of numerous interconnected elements, where the complexity of connections among elements often makes the outcomes of a disturbance difficult to predict (Desjardine *et al.,* 2019). An example where interdependence was problematic is the production of CO_2 from fertilizer production, which stopped due to high energy costs and therefore limited supply of the gas used in food packaging (Mason *et al.,* 2021). Ortiz-de-Mandojana & Bansal (2016: 1615) argue that social and environmental practices help firms sense and seize long-term opportunities and mitigate threats which contribute to their resilience, defined as 'the ability of organizations to anticipate, avoid, and adjust to shocks in their environment.'

Resilience should not be viewed in solely positive terms, however, where a fully resilient system may become highly inefficient and stagnant. Goerner (2015) and Ulanowicz *et al.* (2009) argue there are trade-offs between efficiency and resilience: if there is too much efficiency, then there is not much resilience. Yet, if the system is fully focused on resilience and diversity, then there is little efficiency. Hence, a more nuanced argument emerges as a question of finding the optimal point between the two (Goerner, 2015).

A key failing of the literature on corporate sustainability is that it follows the win–win paradigm, according to which economic, environmental and social sustainability aspects can be achieved simultaneously (Hahn *et al.,* 2010; Beckmann *et al.,* 2014; Van der Byl & Slawinski, 2015). In their analysis of trade-offs, Hahn *et al.* (2010: 217) argue that tensions and conflicts are the rule rather than the exception, and that 'turning a blind eye to trade-offs thus results in a limited perspective on corporate contributions to sustainable development'. As a starting point for more

systematic analysis of trade-offs in corporate sustainability, their framework identifies different levels (i.e. individual, organizational, industry, societal) and dimensions (outcome, process, temporal) to characterize and highlight such tensions. Rather than embark on a quest for win-win solutions, they suggest research should assess and evaluate trade-off situations in order to identify strategies that yield substantial corporate contributions to sustainable development.

While this makes an important contribution, organizational resilience is also 'intrinsically dependent upon the resilience of broader, social-ecological systems in which the firm is embedded' (Williams *et al.,* 2019: 1). Cross-scale, therefore, refers to both the wider environment (i.e. concerns over loss of natural habitat), and social context (livelihoods of local people) within which firms operate. Hence, long-term organizational resilience cannot be well managed without an understanding of the feedback effects across the various 'nested systems', the sum of which represents a specific geographical region or place (Williams *et al.,* 2019: 1).

2.3 Towards a place-based view of SME resilience

While a wider array of sustainability-focused literatures has often focused on place (e.g. geography, agri-food, sociology, architecture, anthropology etc), a place-based approach is still in its infancy in business sustainability research (Guthey *et al.,* 2014; Shrivastava & Kennelly, 2013; DeBoer *et al.,* 2017). Taking place seriously, according to Shrivastava & Kennelly (2013), challenges the view of multinational, place-less corporations moving their operations across the globe at will, without any consideration of their impact on communities and ecosystems. They urge for more place-based analyses of business activities in order for companies 'to enter into authentic relationships with places and people, and to develop the requisite fields of care without which appropriate stewardship of both the natural environment and other components of place may be impossible' (Shrivastava & Kennelly, 2013: 97).

Whiteman and Cooper (2000) and Guthey *et al.* (2014) particularly emphasize the sense of place managers develop within specific landscapes and local contexts. They argue that the physical relationships (with rivers, mountains, fields etc) and cultural embeddedness (within communities) that a place enables are invaluable for managerial cognition and the sustainability of value chains. Systems and resilience perspectives of sustainability, hence, need to be studied within the boundaries of particular geographical places, which afford deeper understandings of the concrete, material and meaningful everydayness of sustainability challenges, as they are faced by managers, workers, politicians, citizens, community activists, consumers and other actors.

As Guthey *et al.* (2014) outline, place is a multi-level and multi-dimensional concept that incorporate geographical aspects (e.g. topography, local ecosystems), historical and institutional relations (e.g. specific economic, social, political and cultural relations), as well as an embodied, often unconscious, sense of place, involving emotions and meanings that are built over long periods of time, sometimes involving many generations. Firms, particularly small-scale companies and entrepreneurs, are embedded in this matrix of relations and local identity (Gill & Larson, 2014; Leick *et al.,* 2020; Muñoz & Kimmitt, 2019). The craft beer industry is a good example of how start-up entrepreneurship is closely linked with specific, geographical places and local traditions (Gatrell *et al.,* 2018). The success of local, craft beer brands shows that consumers increasingly value a sense of place in terms of how they interact with the marketplace.

Particularly within the context of sustainability and resilience challenges, a focus on place is essential (Hansen & Coenen, 2015). This is because sustainability and resilience are relational concepts that only make sense within concrete, material places. This is illustrated by Guthey & Whiteman (2009) in their study of winemaking in California. The quality of the wine, and hence the success of winemaking businesses, is inextricably linked to the health of local ecosystems (e.g.

the quantity and quality of the water available) as well as social systems (e.g. availability of labour, skills, knowledge, governance systems). The idea of industrial symbiosis is also linked to place and CE, where, as a subset of industrial ecology, it resembles a form of brokering to bring typically local firms together in innovative collaborations, finding ways to use the waste from one process, as raw materials or nutrients for another (Chertow, 2007). It is clear that within these place-based systems there are always multiple tensions and trade-offs (Marsden, 2013; Paruchuri, *et al.,* 2018); places are hence constantly changing (Guthey & Whiteman, 2009), requiring governance effort to ensure inclusivity and justice (George *et al.,* 2015; George & Reed, 2017).

In this article, we argue that a place-based perspective is essential for us to understand the multilevel challenges and trade-offs of business sustainability and resilience. There is a lack of understanding in the business literature of the place-based system dynamics of sustainability transitions, particularly understanding the role of SMEs within wider social and eco-systems. We will now turn to introducing our case illustration before building our conceptual model of circular economy system resilience, enabling the creation of business, societal and ecosystem value within specific geographies.

3. Systems approaches to analysis of business sustainability

In seeking to understand business sustainability in depth across SMEs, we use circular economy as a place-based systems approach to sustainability that comprises three value cycles – business, societal and ecosystem – aiming to establish and maintain long-term systems resilience in a specific geographic region. After the case illustration, we raise the emerging themes which support these value cycles, including clean production, cooperation & symbiosis, and policy & legislation, as well as outline our approach to analysing data**.**

3.1 Illustrative case: Devon & Cornwall

Our case covers the counties of Devon and Cornwall, which together comprise the Southwest (SW) peninsula in England, UK. The counties are characterized as predominantly rural areas of outstanding natural beauty (e.g. wild moors, rugged coasts), largely dependent on small business ventures, involving agriculture, fishing, food production and tourism, yet suffer from low incomes per household, particularly in Cornwall (ONS, 2015; Ballas *et al.,* 2017). Given the reliance on natural resources as a major source of the region's income and pressure on environmental protection from rising levels of human activity, the SW peninsula is a relevant and insightful region to study how concepts such as circular economy can impact on SME business sustainability. Our chief area of focus is the agri-food sector: dairy processing (e.g. milk, cheese, clotted cream), baking (Cornish pasties, sausage rolls), and brewing (cider, beer), representing SME dominant sectors typical in their local outlook and strong association with the region's unique character.

To build our analytical framework, we engaged with nine SMEs situated in Devon and Cornwall, chosen for their participation in the local agri-food sector and general interest in sustainability. While some firms had started to explore and adopt sustainable practices around efficiency and waste reduction, none were familiar with the concepts of systems resilience or circular economy. Waste streams were initially explored around materials, water and energy within firms, which showed clear connections between local farm produce and the wider ecosystem (e.g. soil, rivers, forests, moorland). The bakeries, dairies and breweries studied also appeared closely connected to local socio-economic conditions, and often struggled with the seasonal nature of business due to the high dependency on tourism during summer months and the pressures that placed on labour and production capacity. A variety of approaches towards food processing and sustainability were adopted by SME managers (3Rs: 'Reduce, reuse, recover', Waste hierarchy,

Lean, ISO14001), which affected how value was perceived in the business. For example, whether a material was seen as a waste product or potential resource determined its treatment in production and subsequent relationship exchange (e.g. transactional, cooperative), which, ultimately, led to a decision to dispose or recycle. The SW therefore represents a region of contrasts: economically poor yet rich in wild countryside, where the relative wealth of visitors highlights the low incomes of the local population and difficulties around business sustainability:

> 'When you're talking about the food industry in the south-west, you know you're talking about the south-west experience. People come here for an experience …for quality. The issue is economic inequality actually. It's highly seasonal [and] precarious' (Manager, Brewco-1).

A typical justification for including sustainability as part of food production by firms in the region is the opportunity for the business to save money through waste reduction. While some of the dairy and baking firms didn't consider themselves as mass market operators, all operated a shift-based system to maximize efficiency of productive output. Survival therefore is never far away from management's agenda, particularly for small, family owned enterprises reliant on seasonal trading (e.g. ice cream) and migrant workers required for fruit and vegetable picking. A combination of factors including Cornwall being one of the poorest regions in northern Europe (Ballas *et al.,* 2017), food as a highly competitive trading sector with modest profit margins, and the legacy of the 2009 recession, means a typically mercantile approach dominates the sector: 'the way you sell sustainability into the business is financial' (Sustainability manager, Bakeco-1).

3.2 Place-based systems approach to analysing data

Our approach to the research incorporates elements of engaged scholarship (Bansal & Corley, 2011) and ecological sense-making (Whiteman & Cooper, 2011). In seeking to explore the

mechanisms of business sustainability through CE adoption we met with SME staff and inspected the business's premises, engaging in all parts of the operation and talking with workers. Our scope widened as, in addition to agri-food SMEs, we engaged with a broad cross-section of actors across the SW region including farmers, politicians, charitable and NGO representatives. We realized an opportunity to delve deeper into the phenomena of business sustainability and investigate the intriguing associations between resilience, place-based systems and multilevel contexts (Christianson & Whiteman, 2018). As the study progressed, we developed emergent research themes in our analytical framework (Figure 1), as an iterative and inductive approach to theory building (Gioia *et al.,* 2013). Exploring these themes and their complex interconnections assisted in the conceptualizing and theorizing process, enabling us to make sense and give meaning to systems resilience, value and sustainable business in relation to a specific geographical settings or place (Guthey *et al.,* 2014). This deep dive into the experiences of informants enabled us to connect with the realities of working as an SME in the SW region, compare practice with theory, and thereby build a better case narrative (Eisenhardt & Graebner, 2007; Corley & Gioia, 2011).

> Insert Figure 1 about here <

4. Analytical framework

The case illustrates how closely firms in the agri-food sector are connected to natural resources and local socio-economic conditions in the SW peninsula. Yet, challenges arise not only from uncertainty caused by the seasonal nature of business related to agriculture and tourism across the region, but also the variety of approach adopted towards food processing and sustainability by firms, resulting in wasted opportunities and failure to recognize their value. These challenges

around SME adoption of circular systems to support sustainable business in the SW agri-food sector are now explored in detail.

4.1 Productivity & clean production

A number of so-called clean production initiatives operate at food processing plants across the region, including the 3Rs and waste hierarchy. Some policies, however, are set up at corporate group level and do not fit with local production priorities in the SW. While clean production is a term familiar to most firms, it is often adopted for legislative compliance purposes, to avoid penalties from the council or government. Hence 'eco-efficiency' has limited short-term effectiveness in terms of sustainability and only meets the demands of big customers such as national supermarkets, thereby contributing towards a third party's targets for financial savings. The association with clean production as a means of addressing the region's longstanding environmental agenda (i.e. maintaining clean air, pristine beaches, unspoilt moorland) is often lost in the more immediate demands to improve small business productivity and reduce costs. A dichotomy exists, therefore, that is difficult for firms to resolve based on the desire to achieve combined economic, social and environmental goals. This dilemma stems from both identifying with the SW as an attractive rural region, while contributing to high levels of carbon emissions and other associated transport costs related to the remote location:

> 'Cornwall is on the edge of the pond. It is a considerable distance from its key markets, so materials have to be brought in, which adds extra cost. All our finished product has to be taken out of Cornwall to reach those markets.' (Director, Bakeco-2).

4.2 Energy-water-nutrients nexus

Despite the impact of extended transportation, the potential for saving waste across energy, water and materials use by plants is recognized across SW firms as an enabler for productivity and

cleaner production. A hallmark of traditionally produced Cornish food is that a high proportion of ingredients (e.g. milk, potatoes, swedes, onions) originate from nearby farms within the county, thereby saving on logistical costs and vehicle emissions. However, as firms have grown and introduced more automated processes (one is licensed to produce 120 tons of baked product per day), demand for basic commodities such as flour has outstripped local supply, resulting in firms moving towards global sourcing and procurement practices.

Business growth does not always mean loss of the locally produced, hand finished and sustainable manufacturing ethos on which many firms have built their reputation. For example, one SME has committed to the installation of a solid fuel burner using dried solids from the slurry taken from its water treatment plant as fuel, reducing energy bills by 30 per cent. Another has taken to drawing water from its own borehole for use in cheese production, using 80,000 liters a day for cooling, slurry preparation and cleaning, before being processed and returned to the fields as natural fertilizer. Slurry – the combination of water and solids in solution – is the result of cleaning food processing equipment and a rich source of nutrients that can be spread on the fields of nearby farms. One firm's strong connection to the land and tradition of innovation born out of entrepreneurial farming techniques has helped to maintain strong connections with sustainable business practice. The origins of its international reputation in making cheese can be traced back 300 years on the family-owned farm, using an extensive cattle grazing system to ensure the grass flavors and enriches the cheese:

> 'I am very much driven by that vision my father had, and so I want to make world class cheese with excellence in farming…finding a way that actually delivers profitability and sustainability. If it is not economically sustainable, it is not sustainable in any shape or form: ecologically [or] socially sustainable' (Managing Director, Dairyco-1).

What emerges is a connection between the three fundamental elements of food production: the 'energy-water-nutrients nexus', which recaptures value and keeps it in the system while protecting the environment from pollution and resource depletion. How firms worked together to maintain interfirm relationships involved various types of cooperation including symbiosis.

4.3 Cooperation & symbiosis

Whilst the majority of SME business transactions in the SW agri-food sector involve conventional payments in exchange for delivery of goods and services, a number of alternative exchanges involving symbiotic forms of cooperation were observed. Industrial symbiosis was seen through the spreading of slurry, both as a by-product of food production, and as effluent from livestock to fertilize the fields of local farms. Use of animal waste as fertilizer is a practice that dates back thousands of years. Yet, its use in food production in the SW region today demonstrates the benefit of reintegrating circular approaches into a post-industrial linear society, where 'waste' is often discarded regardless of nutritional value:

> 'What it means is to see how we can get more of the inputs cycling round the system, rather than things going in a linear fashion, and really to see if we can work with our supply base and customers to see what we can do to work with that (Managing Director, Dairyco-1).

One example of symbiosis is the donation of stale bread by a bakery for use in beer brewing by a local brewery, where the yeast enzymes in the bread make for excellent fermentation properties. A regular delivery van service has been set up between the two firms, which benefits both brewer and baker, the latter glad to have a regular source of disposal for its out-of-date food. Other examples of cooperation include the collection of cardboard and plastic packaging used in transporting food materials on pallets, although the reuse or disposal of non-recyclable plastics poses a problem for all firms. Like plastics, some food commodity suppliers (e.g. lard, cooking

oil) are often significant players in the global market and reluctant to respond to requests from small firms to switch from single-use plastic wrapping used throughout the food industry. The problem of using plastic highlights the wider difficulties of firms seeking to shift towards circular practices, which seek to ban or design out single use materials, particularly when faced with established global stakeholders operating at scale with little incentive to change.

One concept based on interfirm cooperation we encountered was the idea for a public-private food knowledge hub. The high proportion of SMEs engaged in baking activity in the SW prompted one of the pasty manufacturers to apply for public funds to investigate the launch of a local baking center of excellence or 'knowledge hub'. The hub means any firm in the food supply chain can use common facilities to display their produce to customers, develop new recipes or techniques, and share best practice in sustainable production, training and recruitment. In terms of relationship, it suggests traditional firm rivalries can be put aside in favor of developing common interests in the region, through a critical mass of organizations coming together in the pursuit of knowledge co-creation.

4.4 Technology and legislation

Investment in clean technology and the introduction of locally relevant sustainable legislation is considered important by SW firms, particularly in the post-Brexit period. However, the decision in 2017 by one local council to vote to leave the European Union was questioned by business leaders in the region, given that Europe had been the source of millions of euros funding for new projects across agriculture, education, tourism, highways and digital infrastructure. The relative poverty of the SW in comparison to other areas means government-funded sustainable policy opportunities (e.g. subsidized solar panels, wind turbines, free business consulting) attracts considerable interest from firms seeking to develop their business in the region. Yet, there is also

recognition from councilors that further legislation on grants and investment policy must be made, which goes beyond new technology and includes the genuine interests of local communities:

> 'Cornwall is a very poor county: the second poorest in northern Europe. We have a lot of challenges around income [per household] and providing services to the population' (Recycling Officer, Council-1).

Initiatives around clean technology have not solved the issues of sustainable business improvement for the agri-food sector. In the past, significant investments were made by government into large schemes involving solar power and anaerobic digester plants, but were only partially successful. One such plant installation is still highly reliant on public funding and is dependent on digestible nutrients in the form of organic matter frequently shipped by road across considerable distances to feed it. Smaller water treatment plants, heat exchangers, and solid fuel burners, which produce energy, are now considered a better investment by firms seeking to both reduce their costs and sustainably make use of nutrients onsite which would otherwise be wasted or lost to the system. Investment in clean technology schemes therefore work best when considered as part of a circular business strategy that adopts an integrated approach to energy-water-nutrients recapture. Such plans are beginning to be taken more seriously by firms and government representatives. In the words of one councilor:

> 'If you asked me ten years ago, circular economy would be around buying local… If you ask me today, it's taken on a whole different dimension. So, I'm thinking much more around: where's the energy coming from? Where's the money ending up? What waste can we reuse, or reduce what you're using?' (Rural Development Officer, Council-1).

On 23rd March 2020, the UK government passed emergency laws restricting movement of people due to the Coronavirus which effectively put the country into lockdown. Tens of thousands of British citizens died prematurely as a result of the pandemic, with other countries reporting a

similar, tragic story. While the majority of UK business was required to close to minimize spread of the virus, sectors such as banking, health, food and agriculture were permitted to trade albeit under strict quarantine laws. Although the agri-food sector in the SW struggled with high staff absenteeism and cancelled orders, many SMEs continued to operate and supply food. Examples of innovative behavior emerged illustrating the ability of SW firms to adapt and even thrive in the face of adversity. Those with more distributed networks of customers (e.g. retail, wholesale, supermarkets) fared better than those reliant on one major customer group, such as hospitality (e.g. pubs, restaurants, hotels). One small cider maker reported a sudden rush of orders from one source, with other customers forced to cancel:

> 'Weird times…suddenly had a run of orders for local farm shops, whilst pubs and other customers are in lockdown' (Manager, Brewco-2).

A producer of Cornish yogurt was able to continue operating despite 20 per cent of staff forced to stay at home in self-isolation, because of the shortened supply chain involving local dairy farms supplying milk and consumer demand remaining high from food stores in the area. Furthermore, a supplier of specialist coffee in Devon significantly increased sales during the crisis, expanding its standard product offering by setting up an online distribution deal for their ground coffee with a new partner:

> 'The last few weeks have been manic as we've launched [new product initiative]. COVID has really increased sales!' (Owner, Coffeeco-1).

With 200 billion pounds of support pledged by ministers to assist UK business, the government now faces the challenge of bringing the country out of the pandemic as quickly and safely as possible. For the SW, this means new policy and legislation is required that responds to the crisis by treating Devon and Cornwall as one interconnected region, engaging with them

together to minimize harmful long-term socio-economic effects, yet maximize sustainable business opportunities.

In summary, what emerges is a complex picture of inherent contrasts and dichotomous behavior towards tackling the challenges of sustainable business in the region. SMEs are proud of their SW heritage and, while most accept the idea of sustainability, are fearful of succumbing to the tough business conditions of extended distance, seasonality, and socio-economic hardship accentuated by pandemics, recessions or natural disasters. The beauty of the surrounding environment is often incorporated into business identity, yet the prospect of growth often means prioritization of cost reduction and productivity than natural habitat protection. Despite clear evidence of low incomes and social inequality in the region, responsibility for tackling poverty through policy and investment has not been resolved, and is often passed between SW business, local councils and central government. The beginnings of a transition towards more sustainable and circular practice in the agri-food sector are emerging however, based on examples of circular thinking and more cooperative or symbiotic behavior. How these themes are linked to place, systems resilience, value, and sustainable business, is discussed next.

5. Discussion: conceptualizing place-based circular system resilience

Based on our illustrative case, we now develop the analytical framework to conceptualize SMEs' CE practices that deliver long-term economic, social and environmental value. We give sense to the mechanisms that reinforce sustainable business, value and systems resilience through a place-based perspective, and those that limit or trade-off development through firm isolation, cost considerations and vulnerability. Systems notation is used to support our framework with representations of what we observed during researching our illustrative case (Senge, 2006; Lyneis,

& Sterman, 2016). The section concludes with a conceptual model and propositions on multilevel SME challenges, providing greater insight into systems resilience from stability and flexibility, and our contribution to place-based perspectives of the CE.

A typical approach observed at SW firms was the use of waste management initiatives as justification for cost reduction in production. This meant the broader aims of sustainability (e.g. habitat protection, community welfare) were often overlooked in favor of short-term gains for the organization. In other words, an eco-efficient approach was being adopted by SME managers where savings from water reuse, energy capture or material return schemes were treated as a welcome yet unconnected bonus to the core activity of food processing. Firms that had recently experienced a period of continuous growth seemed particularly prone to this cost focused and production orientated mind-set, which emphasized existing market logics and firm rivalry.

> Insert Figure 2 about here <

Figure 2 illustrates the trade-off between business efficiency and adopting a wider systems resilience approach. It first depicts the vicious cycle of efficiency (Figure 2a), showing why it can be so difficult for firms to break out of isolated, cost focused and firm centric behavior towards more sustainable business practice (Bansal, 2005; Wright & Nyberg, 2017). Where benefits are not distributed to partners and retained by the focal firm, this leaves it vulnerable and reactive in the event of shocks to the system e.g. material shortages, price rises, drought, flood etc. Such firms are also at risk due to the transactional nature of their business relationships with customers and suppliers, which may lack the flexibility (e.g. payment deferral, contingency stocks) to cope with more widespread disruptive events such as global pandemics. While sustainable business practice is hard to assimilate at the best of times, it should not be traded for short-term cost efficiencies

(Aragón-Correa *et al.,* 2008). Building strength and depth into relationships will pay dividends later during periods of stress through adoption of more cooperative interfirm exchanges.

We observed another, more progressive type of organizational behavior during fieldwork. Figure 2b depicts sustainable business value, where firms adopt waste free production as a primary goal, supported by water-energy-nutrient valorization. Placing greater value on basic resources such as water, energy and food, helps the firm to promote opportunities for cleaner growth while considering the impact on the wider environment (e.g. onsite water treatment, shared digester plants, donations to food charities). Hence, increased resilience comes not only as a result of industrial symbiosis with other firms and sharing of circular practices across supply chains, but from the virtuous circle of rich collaborative relationships that go beyond traditional price-based negotiation towards responding to new business opportunities. Circular nutrient reduction, reuse and recovery for example, offers scope for proactive improvement in environmental protection and pollution prevention, than simple notions around waste and waste management, which offer only basic compliance or control of the harmful effects from business activity (Bansal, 2005).

While Figure 2 illustrates two polar examples of organizational behavior towards sustainable business, it does not address the social or environmental aspects in the system (Jesdardine *et al.,* 2019). SMEs often supported the idea of environmental sustainability and expressed concerns over labor and community welfare, but were unable to construct a complete picture of what such issues meant for them or the region, or how to tackle these challenges together as part of a triple bottom line approach (Elkington, 1997; 1998). Grasping the concept that CE-enabled sustainable business is superior to eco-efficiency, therefore, represents an important step. Next, we consider these wider social or societal challenges.

The types of social practices observed included firms who enrichened existing relationships through new ways of working together, and expanding their business networks in the region in terms of variety of organizations e.g. suppliers, customers, competitors, government, charities. For some managers, the act of sharing circular practice (e.g. clean technology, process design) seemed counterintuitive to traditional competitive ways of thinking, yet it led to a string of further collaborations with the potential for wide reaching benefits across the SW community. Societal value therefore involves not just sharing good practice, but engaging in public-private collaboration to co-produce place specific knowledge, create policy, and garner investments relevant to the region (Figure 3). The food hub is an example of SMEs working together with local government support, leading to increased awareness of the capabilities which exist in the area. Councilors with knowledge of local issues such as poverty and unemployment were able to influence decisions such as location for the hub, thus offering security to local people seeking work, as well as developing new markets and increasing food production capacity for established supply chains. Engagement by firms in social activities via the hub involves greater reach into the community by offering work to vulnerable people. This means firms increasing their resilience through richer, more collaborative relationships, enhancing the structure of network interdependencies, and encouraging sustainable innovation (Ganco *et al.,* 2019).

> Insert Figure 3 about here <

The inherent tensions of adopting a more inclusive view of society in SW business are also represented in Figure 3. Similar to the trade-off between business efficiency and value, if the business devotes more resources to improving conditions in the local community, it may put at risk its own financial position. Hence, the cost of reform is shown as having a potential negative impact, where the costs related to change may inhibit policy development and investments in other

areas of the region, thus acting against the wider interests of society. Societal value enables SME managers to see staff beyond their role at work and in the context of the local community within which they live. Poverty and difficult living conditions begin to be perceived in terms of their potential impact on the business (i.e. source of labor, absenteeism). These social elements also include the sharing of good practice, where collaboration increases between supply chains and across other organizations such as public councils, NGOs and food charities. As knowledge around CE and sustainability is shared, awareness increases around welfare issues for the people living in the region. This tackles community related challenges through public-private collaboration and enables development of relevant policies better equipped to support the region. Thus, whilst acknowledging tensions around cost, Figure 3 reflects the links observed between the value of circular thinking and wider society where, with a deeper understanding, application and distribution of benefits, the overall effect is of increased resilience across the agri-food sector and SW region as a whole.

Some SMEs in our study had begun to realize the opportunities for cleaner growth and widen participation with other stakeholders in the region. For them, business and societal value became a reality through the direct and indirect benefits realized. Yet, connecting business interests with the concerns of social and environmental sustainability is an area in management research where studies remain rare (Jesdardine *et al.,* 2019). Only several firms we studied managed to make the link between business, society and ecosystem. Ecosystem means the whole natural environment together as comprised of land, air, and sea, in terms of human geography and the interaction between regions. Ecosystem value, therefore, completes the connection between business and society in terms of protecting natural capital, promoting biodiversity and acknowledging the benefits gained from ecosystem services i.e. agroecosystems, forests,

moorland, rivers, beaches etc. Our case underlines the importance of healthy ecosystems as vital to the SW region, representing the ultimate goal for CE enabled sustainable business, because of the dependence on attracting millions of visitors per year and their associated revenue streams. Ecosystem value provides the rationale on which specific elements around agriculture, food and people in the SW region come together, and ultimately determines business prosperity or failure.

One of the most difficult concepts for SME managers to grasp was the connection between the day-to-day business of food processing, with longer term and more abstract concepts such as the environment or ecosystem. Thus, Figure 4 illustrates the 'short-term versus long-term' effect as a trade-off observed during discussions with business, where managers struggle to reconcile the agenda of imminent business survival and coping with the coronavirus crisis, with protecting the environment for future generations.

> Insert Figure 4 about here <

From a place-based CE systems perspective, Figure 4 completes our conceptualization of circular business practice for the SW region, presented here as business, society and ecosystem as three balancing and reinforcing interconnected loops (Senge, 2006). Systems resilience lies at the center of the structure and represents the stability gained from accumulating value across the three levels. We also include in our model the limiting effect of trade-offs, such as short-term, cost focused, efficiency based thinking at the expense of achieving wider sustainability goals. If the balance between efficiency and resilience is misjudged, SME managers will fail to recognize the wider implications of engaging with society and ecosystem. Figure 4 shows where a relationship or connection with the land and people is made, it provides a stronger contextual base for managers to progress opportunities for cleaner growth, protect communities and wild habitats, and improve overall prospects with partners towards a more resilient and prosperous region. Seeing sustainable

business as a multilevel and path dependent process helps managers understand the challenges and share in the benefits of achieving long-term systems resilience (Bansal & DesJardine, 2014).

Our analytical framework demonstrates the dynamics associated with sustainable business as shown above, where the tensions caused by an inappropriate strategy or action in one part of the system can adversely affect another. These multilevel challenges are now summarized in Table 1, illustrating the role tensions and trade-offs (Hahn *et al.,* 2010) play at all stages of the CE adoption process within and between business, society and ecosystem. Tension reflects the inherent tendency of SME managers to remain at the present level to maximize value during development. Trade-off reflects the deliberate gaming of projected business outcomes involving scenarios of optimum results on behalf of the stakeholders involved, which is particularly pertinent to complex cases of sustainability (Hahn *et al.,* 2010; George *et al.,* 2016). Only by considering these tensions and trade-offs together at multiple levels and in context of the region or place can managers grasp the extent of challenges around business sustainability.

So far, we suggest that flexibility and stability play an important role in systems resilience as organizations transition towards more sustainable models of business practice (Desjardine *et al.,* 2019). We discuss the behaviors that do (and do not) comprise good circular practices, using a representation of business, societal and eco-system value to describe the mechanisms which either limit or reinforce systems resilience. We argue that multilevel challenges exist in a circular economy, not just in the recapture of nutrients by SMEs or supply chains, but where the system responds to specific place-based difficulties at business (i.e. price rise, material shortage), society (labor scarcity, welfare) and ecosystem level (pandemic, drought). Systems resilience from the perspective of our study, therefore, is the sum of business, societal and ecosystem value as

presented altogether, offering combinations of potential responses to emerging opportunities and threats from climate, economic, health related and other national emergencies.

> Insert Table 1 about here <

Our contribution is in offering an alternative perspective to the win-win paradigm of the triple bottom line with its traditional distinctions of economic, social and environmental sustainability (Elkington, 1997; 2004; 2020). We propose business, societal and ecosystem as an interconnected, balanced and dynamic system which, when the subsystems operate together, offers long-term resilience to small firms within a specific geographic location or place (Guthey *et al.,* 2014; Desjardine *et al.,* 2019). Our model in Table 1 includes the tensions and trade-offs that are inherent to the dynamic process of sustainable business development. Rather than starting with economic concerns and adding social and environmental elements as a hierarchy, we offer a path – indicated by the grey arrow in Figure 4 – where each value is dependent on the other. Hence, resilience stems from the stability offered by the interconnections between the three value types and does not reside in any one in isolation. Societal value is now as strongly bound to business value, as are both to the natural environment or ecosystem. Thus, building on Shrivastava & Kennelly (2013) and Guthey *et al.* (2014), we use ecosystem with the particular place-based characteristics of the SW peninsula (i.e. remote moorland, rugged coast, richness of the land, natural capital), as an equal stakeholder alongside people towards contributing to the prosperity of the SW region. This prevents any notion of the environment from becoming abstracted or sidelined, and subsequently disassociated through detrimental short-term actions by the firm. Hence, our first proposition:

Proposition 1: Systems resilience is where business, societal and ecosystem value are treated together as interconnected and dynamic elements by firms seeking stability from place-based circular business practice.

We define systems resilience as the ultimate expression of value (i.e. Figure 4), where the considerations for natural capital and labour match that of business economics in a specific place or region (Hart, 1995; Guthey *et al.,* 2014). Yet, in order to achieve systems resilience, SMEs must engage and cooperate not just with supply chain partners, but with other sectors, competitors, government and non-governmental organizations; all towards supporting the interests of natural ecosystems and societal welfare in an extended community. Systems resilience, therefore, implies not just creating networks that cross business sectors and social groups but whole regions where stakeholders subscribe to such values, becoming more flexible and resilient through richer, collaborative relationships. Our case points to participation by SMEs with food charities, animal welfare groups and soil associations, as well as creation of local knowledge hubs on food development and distribution. Hence, our second proposition:

Proposition 2: SMEs who develop rich networks of diverse relationships as part of business sustainability in their region stand to gain greater flexibility during climate, economic, health related and other types of disruptive emergencies.

Our study proposes an alternative approach for SMEs seeking sustainability through a place-based CE systems perspective. We theorize, any firm taking a linear approach by focusing on waste reduction and cost rather than value capture stands significantly less chance of achieving long-term sustainability (Bansal *et al.,* 2014; Dey *et al,* 2020). Adopting a place-based CE enabled systems approach means recognizing the value of connecting with stakeholders and the surrounding environment at multilevel, sharing circular good practice, and creating local regional

community awareness, which strengthens the connection or bond between natural resources and people. Hence, our third propositions:

> *Proposition 3a: SMEs seeking sustainability as an isolated cost reduction initiative stand less chance of successful adoption than those taking a place-based CE systems perspective.*
>
> *Proposition 3b: SMEs seeking sustainability enabled by a place-based CE systems perspective stand greater chance of navigating the challenges, tensions and trade-offs together as a multilevel approach to business, society and ecosystem value.*

Finally, we establish that firms attempting to realize benefits from CE systems and recognition of the value of a specific region or place using traditional market logics and cost targets may benefit short-term, but may not be successful in their aspirations towards sustainability (Shrivastava & Kennelly, 2013; Guthey *et al.,* 2014). Yet, the opposite is also true, where too much focus on long-term sustainability goals may jeopardize the firm's survival (Hahn *et al.,* 2010; Van der By & Slawinski; 2015). Hence, our final and more nuanced proposition is around SME managers considering the trade-offs towards finding the correct balance:

> *Proposition 4: A trade-off exists between short-term cost efficiencies and longer term value from social and environmental goals, which is dependent on the firm's ability to gauge the appropriate balance towards sustainability through place-based CE systems.*

6. Conclusion

Our contribution is in theorizing the role of SMEs in place-based circular system resilience, understanding the organizational mechanisms of cooperation and value sharing across local stakeholders, and contributing to the wider engagement in the sustainability agenda through accruing business, societal and ecosystem value (Zamfir *et al.,* 2017; Worstel, 2020, Williams *et al.,* 2021). We argue SMEs who recognize the role of placed-based societal identities and

ecosystems not only become more resilient, but their considerations for community welfare and labour are intertwined with geographic-specific natural capital and the circular economy (Shrivastava & Kennelly, 2013; Guthey *et al.,* 2014). Our conceptual model demonstrates the dynamics associated with sustainability, whose multilevel challenges illustrate the role tensions and trade-offs play at all stages of the CE systems adoption process (Desjardine *et al.,* 2019: Bansal *et al.,* 2021; Mena *et al.,* 2022). For practitioners we suggest that managers should adopt a more nuanced view between short-term cost efficiencies and longer term value from social and environmental goals, which is dependent on both an understanding of multilevel challenges and gauging the appropriate balance towards sustainability through place-based CE systems (Dey *et al.,* 2020). While this study is limited to one case illustration, its conceptualization of the SW region suggests our initial findings may be replicable and worthy of further development across other areas of the world, using the place-based CE systems approach to create more resilient and sustainable business practice for small firms.

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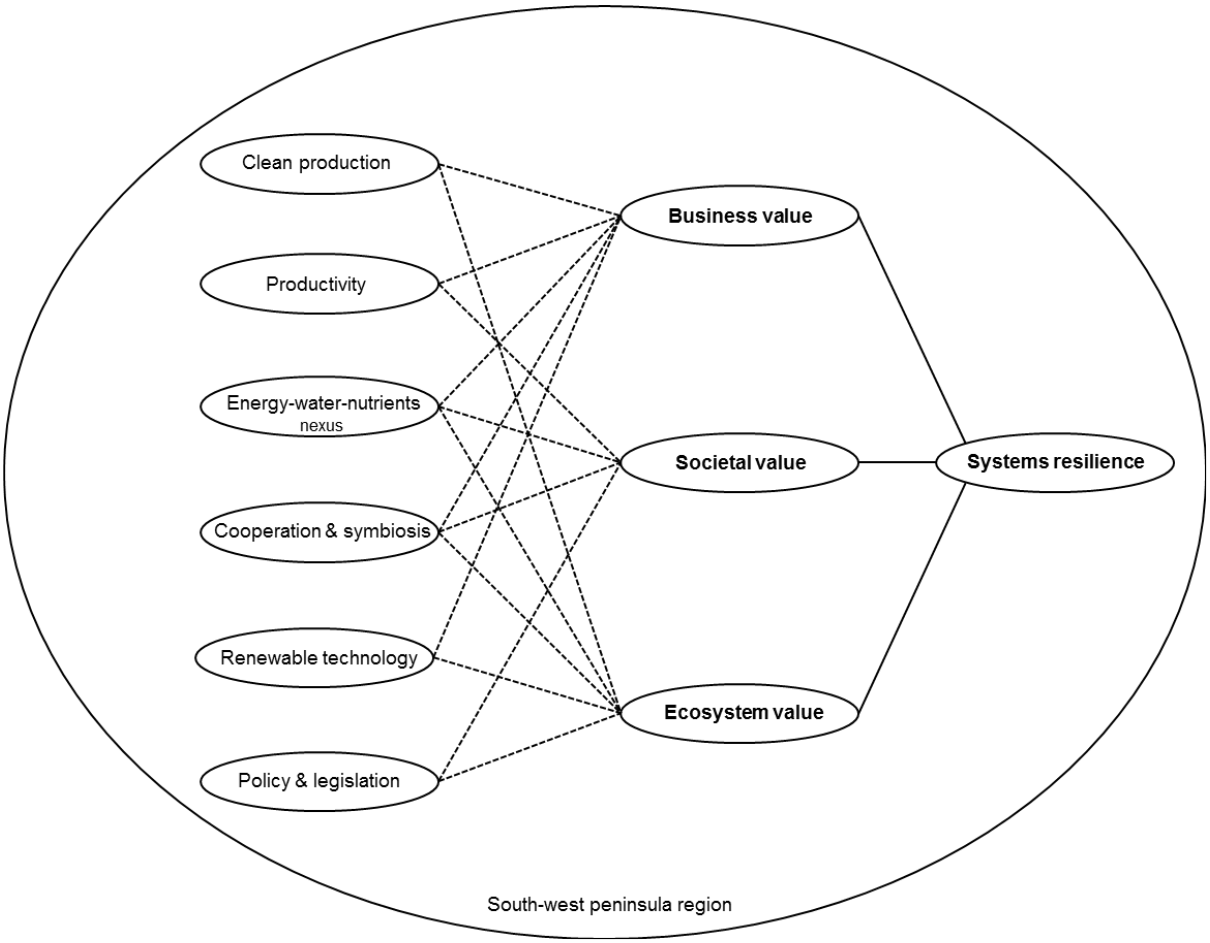

Figure 1. Analytical framework

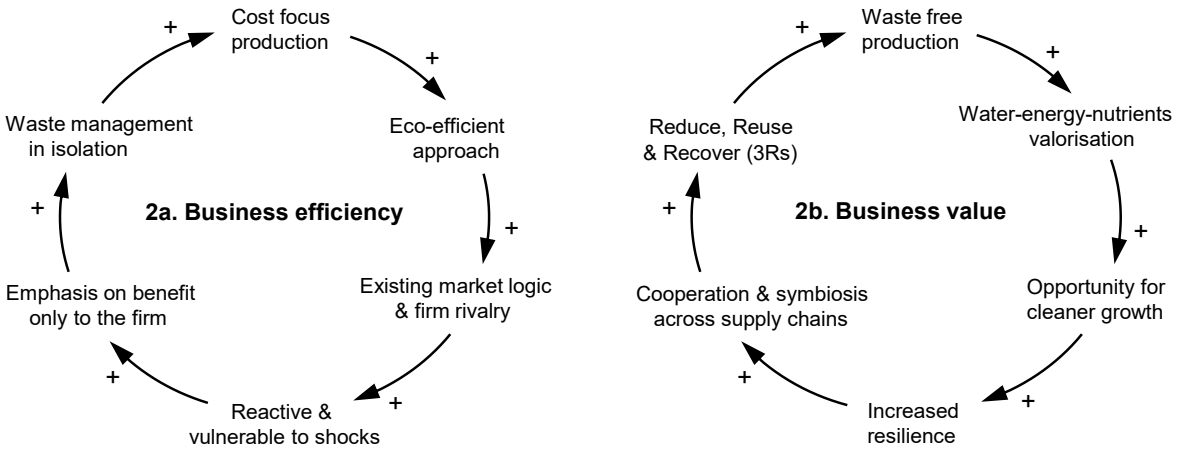

Figure 2. Business efficiency vs. value

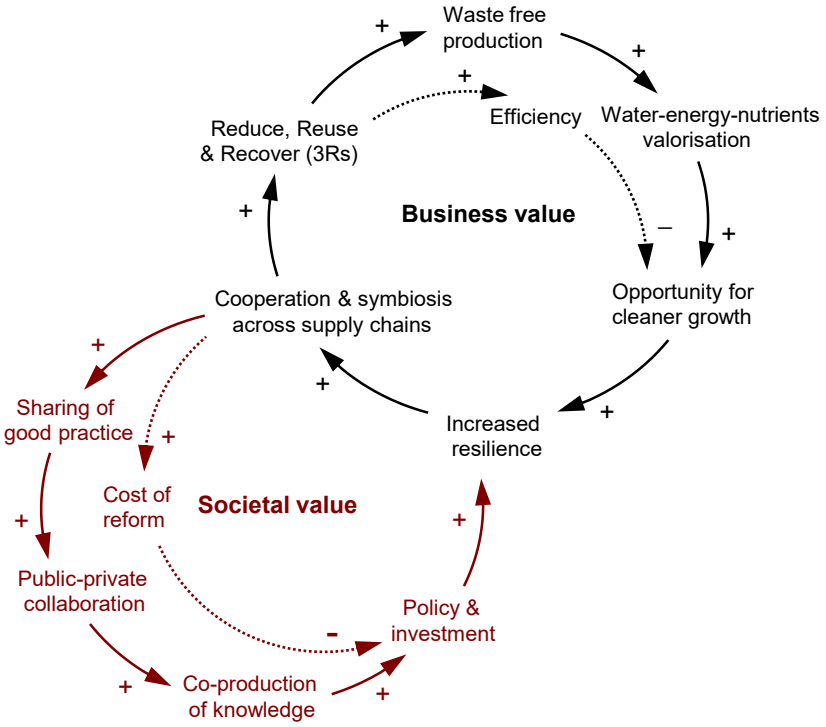

Figure 3. Business and societal value

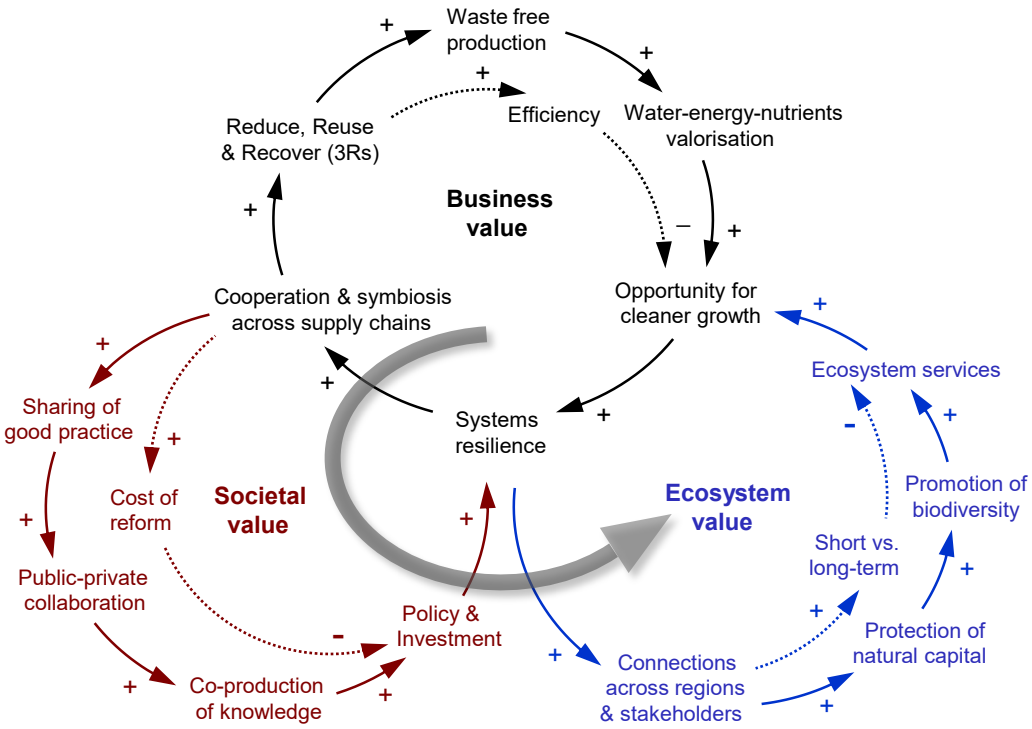

Figure 4. Business, societal and ecosystem value

	Context *Opportunities & threats*	***Process*** *CE adoption*	***Outcome*** *Win-win vs. trade-off*
Ecosystem value	- Commitment to ecosystem services. - Protection of natural capital. - Promotion of biodiversity. - Resilience against shocks, shortages, and climate related or other national emergencies. - Whole system flexibility and stability.	- Connecting across regions and all stakeholders. - Introducing new policy measures for the health of the region. - Combined sustainable business development and region regeneration. - Sharing of successful cases of business sustainability.	- **Win-win**: managers understand that the interests of business, society and the environment are interconnected. - **Trade-off**: short vs. long-term effect where managers fail to see the relevance to them of protecting the environment for future generations.
	Tension		*Trade-off*
Societal value	- Joint public-private collaboration on local welfare projects e.g. food banks. - Co-creation of labour policy and practice between business and regional councils. - Increased resilience to shocks and welfare issues across the region.	- Richer and more collaborative relationships between firms & councils - Sharing of circular good practice (e.g. 3Rs, clean technology, labour). - Co-producing knowledge to stimulate innovation and generate new investment for the region.	- **Win-win**: increased welfare and jobs for local workforce creates a virtuous circle of prosperity and demand. - **Trade-off**: costs related to welfare reform may inhibit policy and investments in other areas (e.g. business, environment).
	Tension		*Trade-off*
Business value	- Waste free production. - Water-energy-nutrients valorization. - Industrial symbiosis across supply chains enable more exchange of recycled & recaptured material. - Cleaner growth. - Increased firm resilience.	- Going beyond traditional price-based negotiation towards more proactive and innovation led firm relationships. - Quicker response by firms to see new business opportunities. - Avoiding 'waste management' and adopting 3Rs for better environmental protection and pollution prevention.	- **Win-win**: firm gains waste free production supported by resource valorization for cleaner growth. - **Trade-off**: short-term efficiency gains for the firm at the expense of achieving wider sustainability goals.

Table 1. Conceptual model of SME multilevel tensions & trade-offs in business sustainability