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Achieving sustainability together

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Achieving sustainability together

**Stakeholder collaboration for corporate sustainability
and the circular economy**

Manon Eikelenboom



Achieving sustainability together

Stakeholder collaboration for corporate sustainability and the circular economy

PhD thesis

to obtain the degree of PhD at the
University of Groningen
on the authority of the
Rector Magnificus Prof. C. Wijmenga
and in accordance with
the decision by the College of Deans.

This thesis will be defended in public on
Thursday 3 February 2022 at 16.15 hours

by

Manon Eikelenboom

born on 8 February 1994
in Renkum

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Preface

Growing up in the natural area of the Veluwe in the Netherlands increased my appreciation for nature. Experiencing how natural areas around the world are degrading, including issues such as pollution, biodiversity loss and deforestation, has had a great impact on me. For me, it is unacceptable that we, as humans, are depleting and destroying natural areas around the world. Therefore, from a young age I have always wondered how we can better protect and restore the natural world. However, I also realized that not only the natural world is suffering, as citizens around the world are encountering many difficulties such as dealing with poverty, migration and wars. Therefore, I have become increasingly motivated to explore how we can create a balance between environmental and social elements. Social and environmental elements are co-dependent, meaning that if we want to address environmental issues, we also have to take social elements into account, and vice versa.

During my studies, I learned that enterprises can play a key part in restoring the balance between the human and natural world through their interactions with both social and environmental elements. However, I also realized that doing so is an enormous challenge for many enterprises. While the concept of sustainability holds great promise for the future, most enterprises are still far from achieving this promise. Finding a balance between economic, social and environmental goals is not a straightforward task and requires making difficult decisions. What is beneficial for one goal, for example environmental protection, can be detrimental to another goal, for example the income of local fisherman. How can one enterprise make decisions about topics in which many different aspects, actors and consequences are involved? In my opinion, the answer to this question is that this is impossible. One organization cannot decide what is best and address all different aspects of sustainability by itself. Sustainability challenges are complex, involving many actors, including their interrelationships and interdependencies. Therefore, to address the sustainability challenges we face today, enterprises need to increasingly interact and collaborate with different stakeholders including businesses, governmental organizations, NGOs, citizens and knowledge institutions.

I noticed during my studies that shifting to a focus on collaboration is difficult for many enterprises, which are often used to operate in price competitive environments and focussed on capturing individual firm value. Furthermore, when starting my PhD, I discovered that there is not much literature that opens up the 'black box' of collaboration for sustainability. While collaboration among a diverse set of stakeholders is often seen as fundamental for developing sustainable solutions, doing so in practice is not always easy. The following quote, resulting from an interview I did for this thesis, reflects this issue:

While we all realize we have to collaborate and cooperate to successfully implement circular solutions, doing so remains a very frustrating and challenging process often not resulting in the desired outcomes.

While collaborations are often initiated with the best intentions, many fail due to conflicts such as disagreement and power imbalances. During the early stages of my PhD, I also noticed that there seems to be a reluctance among enterprises to interact and collaborate with diverse stakeholders, especially with local communities, due to a lack of faith in positive outcomes resulting from these collaborations. For me, this is a major concern as I expect that not collaborating with local communities may lead to a situation where sustainability is solely available and interesting for the 'elite' of society. I believe that if we want to make a change towards a society that is sustainable and inclusive, interacting and collaborating with local communities is essential.

This thesis includes my efforts in making steps to address the challenges enterprises face when interacting and collaborating with diverse stakeholders for sustainability. This thesis has also provided me with experience, competencies and knowledge concerning successful collaboration for sustainability. Not only enterprises have to figure out how to collaborate with diverse stakeholders, also academic scholars have to increasingly collaborate with diverse societal actors to assist in addressing sustainability challenges. This thesis provided me with the opportunity to do so, collaborating with fellow academics but also with businesses, governmental institutions and local communities.

I hope that this PhD thesis will offer readers new insights and guidelines regarding the causes and consequences of collaboration among enterprises and diverse stakeholders for sustainability. In the future, I would be open to new collaborations with academics and practitioners alike to further explore these topics and help to achieve sustainability together.

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List of abbreviations

AOM	Academy of Management
B2B	Business-to-Business
B2C	Business-to-Consumer
CFA	Confirmatory Factor Analysis
CE	Circular Economy
CS	Circular Strategy
EURAM	European Academy of Management
GDP	Gross Domestic Product
OLS	Ordinary Least Squares
NBM	New Business Models
NGO	Non-governmental Organization
RENT	Research in Entrepreneurship and Small Business
SD	Standard Deviation
SDG	Sustainable Development Goal
SEM	Structural Equation Modelling
SME	Small and Medium-sized Enterprise
VIF	Variance Inflation Factor



1

Introduction

1.1 Introduction

This PhD thesis focusses on investigating how incumbent enterprises¹ can assist in achieving societal sustainability. Societal sustainability is an increasingly adopted concept in both literature and practice and addresses how society can reach social, environmental and economic goals such as ending poverty and combating climate change (Engert et al., 2016). Achieving these goals is important in order to prevent environmental and humanitarian crises caused by, amongst others, environmental degradation, resource extraction, pollution and biodiversity loss. Regarding biodiversity loss, for example, the United Nations (2020) reports that nearly 1 million species already face extinction today, including many pollinating insects which puts the production of 75 percent of food crops at risk. Furthermore, global material consumption is rising, from 10.8 metric tons per capita in 2010 to 11.7 metric tons in 2017. Material consumption per capita in Europe and Northern America is 40 per cent higher than the global average, indicating the need to enhance resource efficiency and practices to reduce consumption in these areas (United Nations, 2020).

Enterprises are central actors for achieving societal sustainability and can fulfil this role by engaging in corporate sustainability and, for instance, transform unsustainable products and services (Hockerts & Wüstenhagen, 2010). Another approach enterprises can take to assist in achieving societal sustainability is by adopting circular principles, such as reuse, reduce and remanufacture, which can enable enterprises to close resource loops and keep them closed over time (Bocken et al., 2016). The Ellen MacArthur Foundation (2019) highlighted, for example, that the adoption of circular principles by enterprises could help reduce global emissions by 40% in 2050. However, in order to contribute to societal sustainability, enterprises have to make impactful changes and integrate the principles of corporate sustainability and the circular economy in their strategies (Stubbs & Cocklin, 2008; Urbinati et al., 2017). This is a challenging task which has not been achieved by many incumbent enterprises today. Research shows for example that the adoption of long-term strategic approaches towards circularity among enterprises is limited (Ormazabal et al., 2018) and that currently only 8,6% of resource flows and extracted material inputs are cycled back into the economy (Circle Economy, 2020).

In order to successfully integrate the principles of corporate sustainability and the circular economy at a strategic level, enterprises need new capabilities which are focussed on the generation, preservation and restoration of collective values in

¹ This PhD thesis focusses on incumbent enterprises, including existing businesses and organizations that are aiming to become more sustainable. This PhD thesis does not focus on start-ups that are born sustainable (Todeschini et al. 2017).

collaboration with diverse stakeholders in contrast to only capturing economic value for the individual enterprise and its shareholders (Jonker & Faber, 2018). Enterprises thus need capabilities that enable them to interact and collaborate with a diverse set of stakeholders to create joint value and transformative change (Fischer et al., 2020; Ghisellini et al., 2016).

The main argument of this PhD thesis is that enterprises cannot address the complex challenges involved in societal sustainability alone, but need to interact and collaborate² with a diverse set of stakeholders. As a result, this PhD thesis studies how enterprises can interact and collaborate with diverse stakeholders and investigates whether this can assist enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies and ultimately achieve wider economic, social and environmental objectives. To achieve this aim, the chapters in this PhD thesis focus on different research questions, which involve diverse levels of analysis, thematic focus points, contexts, theoretical foundations and methodologies (see table 1). Stakeholder collaborations are often complex and involve multiple dimensions, such as internal and external collaborations and individual and collective strategies (Savage et al., 2010). The adoption of multiple lenses and literatures is therefore crucial for understanding stakeholder collaborations.

The chapters in this PhD thesis focus on different research questions. The second and third chapters focus on investigating to what extent stakeholder interactions and collaborations can assist enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies and achieving economic, social and environmental objectives. The third and fourth chapters focus on investigating how enterprises can successfully interact and collaborate with local communities in circular strategies and approaches. In doing so, the chapters also focus on multiple levels of analysis to study stakeholder collaborations (Valkokari & Rana, 2017). The focus of second and third chapters is on the micro level, to investigate how stakeholder interactions and collaborations can assist the individual enterprise in integrating the principles of corporate sustainability and the circular economy. The focus of the fourth and fifth chapters shifts to the meso level, to investigate how diverse stakeholders can successfully collaborate to achieve collective actions and goals. Furthermore, the chapters have a different thematic focus as the second chapter focusses on corporate sustainability, whereas the remaining chapters focus on the circular economy. While there is overlap in the

² In this PhD thesis collaboration is seen as a cooperative, interorganizational relationship that is negotiated in an ongoing communicative process (Hardy et al. 2003). It includes both coordination, the joint determination of common goals, and cooperation, the implementation of those goals (Castañer & Oliveira, 2020).

concepts of corporate sustainability and the circular economy, both concepts have distinctive features (Geissdoerfer et al., 2017) which are taken into account in this PhD thesis.

The chapters included in this PhD thesis also focus on different contexts. The second and third chapters focus on small and medium-sized enterprises (SMEs) from diverse industries, as SMEs represent the majority of businesses in most European countries and can significantly contribute to societal sustainability (OECD, 2015; Tounés et al., 2019). Furthermore, the specific context of SMEs, including for instance a smaller resource base compared to large firms, provides unique challenges and has received limited attention in the literature (Bos-Brouwers, 2010; Graafland & Smid, 2016). The fourth and fifth chapters address the building sector, where the fourth chapter focusses on a social housing association and the fifth chapter on a multistakeholder initiative in a low-income neighbourhood. The building sector was chosen as a context as the sector contributes significantly to environmental challenges, including the production of 40% of global waste and 33% of global emissions (Hossain & Ng, 2018). Enterprises operating in this sector have been pressured to adjust their strategies and integrate the principles of corporate sustainability and the circular economy, a process which involves many challenges including for instance a low awareness of circular principles among stakeholders in the value chain (Leising et al., 2018). The fourth chapter focusses on a social housing association, which is a private non-profit-making organization with a social mission: providing low-income communities with affordable housing (Dewick & Miozzo, 2004). This focus was chosen as it provides a unique opportunity for studying interactions with local communities in the circular economy, due to the close relationships between housing associations and local communities.

The chapters included in this PhD thesis also draw on and develop different lines of research including strategic management literature, dynamic capabilities literature, multi-stakeholder network literature and social-ecological systems literature. Additionally, the chapters adopt different methodologies. The second and third chapters adopt quantitative methodologies as for both chapters a survey was developed and distributed among Dutch SMEs. The fourth and fifth chapters adopt qualitative methodologies, were the fourth chapter focussed on an in-depth case study in a social housing association and the fifth chapter on an action research inquiry.

Given that this PhD thesis is inherently interdisciplinary, transdisciplinary, and multi-method in nature, this introductory chapter offers an overview of the overall foundations. In what follows, section two will introduce the key concepts, including societal sustainability, corporate sustainability and the circular economy.

Table 1.1 Overview of the research questions, levels of analysis, thematic focus, contexts, theories and methodologies included in this PhD thesis

Chapter	Main research question	Sub question	Level of analysis	Thematic focus	Context	Theoretical foundations	Methodology
2	To what extent can stakeholder interactions and collaborations assist enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies and achieving economic, social and environmental objectives?	To what extent can integrative dynamic capabilities (processes that integrate the knowledge and resources of internal and external stakeholders) assist enterprises in achieving social, environmental and economic objectives?	Micro-level	Corporate sustainability	SME's	<ul style="list-style-type: none"> • Dynamic capabilities theory • Strategic management literature 	Quantitative, survey study
3	To what extent can stakeholder interactions and collaborations assist enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies and achieving economic, social and environmental objectives?	To what extent can circular network interactions assist enterprises in integrating the principles of the circular economy in their strategies?	Micro-level	Circular economy	SME's	<ul style="list-style-type: none"> • Multi-stakeholder network theory • Strategic management literature 	Quantitative, survey study
4	How can enterprises successfully interact and collaborate with local communities in circular strategies and approaches?	How can social elements be integrated in circular strategies through relationships with local communities?	Micro & meso-level	Circular economy	Building sector, social housing association	<ul style="list-style-type: none"> • Social-ecological systems theory 	Qualitative, case study
5	How can local communities be involved in multi-stakeholder initiatives for the design and implementation of circular approaches in a neighbourhood?	How can local communities be involved in multi-stakeholder initiatives for the design and implementation of circular approaches in a neighbourhood?	Meso-level	Circular economy	Building sector, multi-stakeholder initiative	<ul style="list-style-type: none"> • Multi-stakeholder network theory 	Qualitative, action research

Section two will furthermore explain the need for enterprises to integrate the principles of corporate sustainability and the circular economy in their strategies, highlight the importance of collaborations with diverse stakeholders, and introduce stakeholder theory. Section three will introduce the research aims and questions. Section four will address the research paradigm and explain the adoption of both quantitative and qualitative methodologies in this PhD thesis. Finally, section five will provide an overview of the individual chapters.

1.2 Key concepts and interactions

1.2.1 Societal sustainability

The most frequently used definition of societal sustainability was established by the Brundtland Commission of the United Nations in 1987, who defined it as *'meeting the needs of the present without compromising the ability of future generations to meet their own needs'*. Societal sustainability is thus a concept that is oriented to both the present and the long-term. The concept of societal sustainability has been operationalized through the 17 sustainable development goals developed by the United Nations in 2015. These goals include ending poverty and hunger, realizing decent work and economic growth, and combating climate change. Addressing these goals involves dealing with wicked problems. Wicked problems are characterized by ambiguous and uncertain settings and often involve conflicting views held by stakeholders when it comes to identifying the cause of and solution to a problem. As a result, wicked problems are difficult, if not impossible, to define and solve (Dentoni et al., 2018; Waddock, 2012). Wicked problems involve complex interdependencies, which means that they are volatile and evolve over time (Jentoft & Chuenpagdee, 2009). This implies that there are no "solutions" in the sense of definite and objective answers to wicked problems and that addressing them requires deep and broad system changes (Dentoni et al., 2018; Waddock, 2012). This PhD thesis is situated within the sustainability literature and acknowledges that addressing the sustainable development goals is of utmost important in order to achieve societal sustainability.

1.2.2 Corporate sustainability

It has been acknowledged that without the support of enterprises, society will not achieve the 17 sustainable development goals set by the United Nations (Hockerts & Wüstenhagen, 2010). Enterprises play a key role in achieving societal sustainability because they can cause negative impacts, due to unsustainable practices, but also have the potential to offer substantial positive implications, for example by addressing environmental degradation and social inequality (Hall et al., 2010). In order to add to societal sustainability, enterprises have to adopt the principles of *corporate sustainability*, which involves addressing and evaluating their economic, environmental and social performance over the long-term (Jamali, 2006). Economic performance refers to the financial goals and profitability of enterprises resulting

from the sales of goods and/or services, which is fundamental to financial success in the long term. Environmental performance considers the impact of enterprises on the quality and quantity of natural resources and ecosystems, including issues such as global warming and pollution. Lastly, social performance refers to the humanitarian context both in and outside of the enterprise, including issues such as save working conditions, poverty and inequality (Elkington, 1998; Jamali, 2006). Corporate sustainability thus requires enterprises to consider their own needs, while simultaneously protecting, sustaining and enhancing the human and natural resources that will be needed in the future (Engert et al., 2016). The adoption of the principles of corporate sustainability by enterprises, including balancing social, environmental and economic performances, is crucial for the sustainable future of our society and planet (Jamali, 2006).

1.2.3 The circular economy

Enterprises can also add to societal sustainability by adopting the principles of the circular economy. The *circular economy* has been defined as *'an economic system that replaces the 'end-of-life' concept with reducing, reusing, recycling and recovering materials in production, distribution and consumption processes and simultaneously generating environmental quality, economic prosperity and social equity to the benefit of current and future generations'* (Kirchherr et al., 2017). The circular economy recognizes that planetary resources are limited and that waste can be a useful resource (Murray et al., 2017). Researchers envisage the circular economy as having no net effect on the environment as it restores any damage done in resource acquisition, while ensuring that little waste is generated throughout the production process and in the life history of a product or service (Murray et al., 2017). This can be achieved through closing resource loops, by reducing waste and resource usage, and slowing resource loops, by developing long-lasting and reusable products (Bocken et al., 2016). Figure 1.1 represents how resource loops can be slowed and closed through preserving natural capital, optimizing resource yields in technical and biological cycles, and minimizing negative externalities.

The 4R framework of reduce, reuse, recycle and recover is often adopted to describe the different circular economy principles that can be adopted by enterprises (Kirchherr et al., 2017). Reduce refers to increasing efficiency in product manufacturing and usage by consuming fewer natural resources and materials. Reuse includes reusing discarded products which are still in good condition. Recycle addresses processing materials to obtain the same or lower quality. Finally, recover refers to the incineration of materials with energy recovery. Recently, extensions to the 4R framework have been made to include other circular principles as well, including refuse, rethink, repair, refurbish, remanufacture and repurpose (Potting et al., 2017). The adoption of the principles of the circular economy can assist enterprises in addressing the sustainable development goals, and SDG

12 concerning sustainable consumption and production patterns in particular (European Commission, 2014; Geissdoerfer et al., 2018). Circular principles can furthermore assist enterprises in achieving economic objectives, for instance through a reduction in costs due to the efficient use of materials, environmental objectives, for example through the mitigation of resource scarcity, and social objectives, for instance through the creation of employment (Murray et al., 2017).

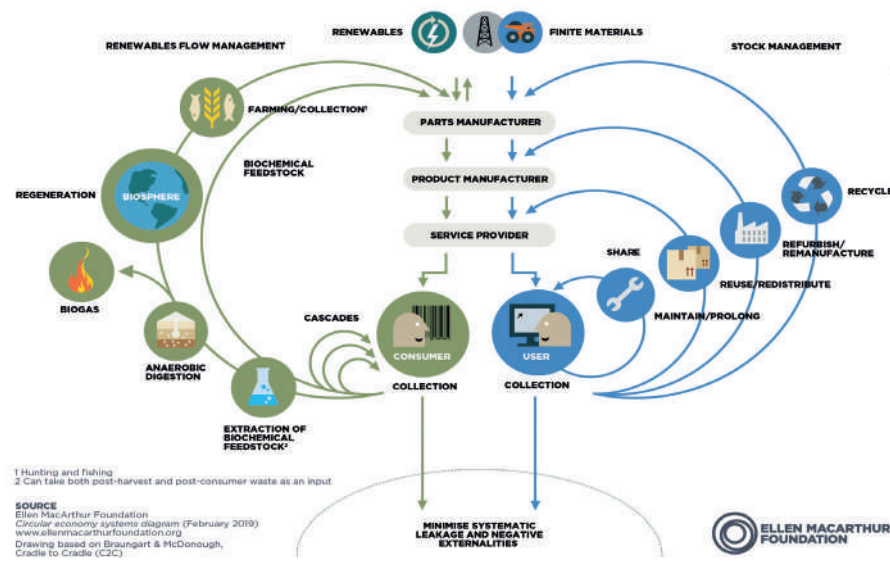


Figure 1.1: The butterfly model of the circular economy ^a

^a Source: Ellen MacArthur Foundation (2012)

The concept of the circular economy shares multiple similarities with the concept of corporate sustainability including concerns with the current state of industrial production and consumption, which might not only jeopardize future generations, but also present sources of unexplored competitive advantage for enterprises (Geissdoerfer et al., 2017). Apart from the similarities, the concepts also differ on multiple aspects including their origins, goals, motivations, systems prioritizations, and responsibilities (Geissdoerfer et al., 2017). For example, the concept of corporate sustainability is considerably older compared to the modern understanding of the circular economy, which was popularized by the Ellen MacArthur Foundation in 2013 (Murray et al., 2017). Furthermore, different goals and motivations are associated with the concepts, where the circular economy focusses on slowing and closing resource loops, whereas the goals of corporate sustainability are more open-ended and involve a multitude of goals which shift depending on the involved actors and their interests (Geissdoerfer et al., 2017).

In line with previous circular economy research (Bocken et al., 2014; Geissdoerfer et al., 2017), this PhD thesis adopts the perspective that the circular economy is one among several solutions enterprises can adopt to assist in achieving societal sustainability. By adopting the principles of the circular economy, enterprises can achieve improvements for different sustainability dimensions including resource productivity, job creation and GDP growth (European Commission, 2014). These circular principles can also be combined with corporate sustainability principles, for instance those that include social considerations, to add up gains and achieve synergies (Geissdoerfer et al., 2017). This PhD thesis therefore recognizes that the adoption of the principles of both the circular economy and corporate sustainability by enterprises is of fundamental importance in order to achieve societal sustainability.

1.2.4 Integrating the principles of corporate sustainability and the circular economy in enterprise strategy

While start-ups which built on the principles of corporate sustainability and the circular economy are flourishing in many industries, the promises of corporate sustainability and the circular economy have been hard to fulfil for incumbent enterprises (Baumgartner & Ebner, 2010). In many cases, incumbent enterprises take a fragmented and reactive approach to corporate sustainability due to a lack of integration of corporate sustainability principles in core business processes, and in strategies in particular (Baumgartner & Ebner, 2010; Engert et al., 2016). This leads to inconsistencies and limited economic, ecological and social effectiveness for incumbent enterprises and societies (Wagner, 2007). Most current business processes align with mainstream neoclassical economic theory, which proposes that the primary obligation of enterprises is to maximize economic profits for its shareholders (Brenner & Cochrane, 1991). Within this model, social and environmental objectives are typically subordinate to the primary goal of creating maximum economic value. Incumbent enterprises that align with the neo-classical paradigm of profit maximizations for a limited number of shareholders are ineffective in addressing sustainability challenges (Baumgartner & Ebner, 2010; Shrivastava, 1995). For example, Wright and Nyberg (2017) have shown that the primary goal of maximizing profits prevents enterprises from effectively addressing climate change, for instance because they disassociate their organizations from aspects of social and environmental discourses that threaten existing strategies.

Therefore, in order to add to societal sustainability, enterprises need to integrate the principles of corporate sustainability and the circular economy in their strategies (Baumgartner & Ebner, 2010; Urbinati et al., 2017). This requires making significant changes, where strategies are transformed rather than supplemented with social and environmental objectives (Schrettle et al., 2014; Stubbs & Cocklin, 2008; Urbinati et al., 2017). Enterprises need to move beyond short-term practices, such as 'low

hanging fruit' activities, and integrate the principles of corporate sustainability and the circular economy at a strategic level where they become a central part of the enterprise instead of an optional extra (Potting et al., 2017; Urbinati et al., 2017). This is due to the fact that effectively adding to societal sustainability demands new ways of doing business in the long-term (Lieder & Rashid, 2016). Corporate sustainability research has emphasized that enterprises need to shift their strategic focus from maximizing economic value capture for the individual enterprise and its shareholders toward the creation of social and environmental value for a wider set of stakeholders (Baumgartner & Ebner, 2010). Circular economy research has also emphasized that enterprises need to shift their strategic focus toward value preservation, where various types of resource loops are organised in which value is created through recycling, conversion and the substitution of materials, and value restoration, where enterprises contribute to societal challenges (Jonker & Faber, 2018).

The first main conclusion and motivation for this PhD thesis is that, in order to successfully contribute to societal sustainability, enterprises need to integrate the principles of corporate sustainability and the circular economy in their strategies, where they become a central part of the business instead of an optional extra (Potting et al., 2017). This requires shifting from a strategic focus on value capture toward a focus on value creation, preservation and restoration.

1.2.5 The need for interacting and collaborating with diverse stakeholders

While enterprises are increasingly stressing sustainability as a central strategic concern (Borland et al., 2014) and are more recently also perceiving the circular economy as an opportunity (Eikelenboom & de Jong, 2021), integrating the principles of corporate sustainability and the circular economy in enterprise strategy remains a difficult challenge (Witjes et al., 2017; York & Ventkataraman, 2010). This is due to the fact that enterprises need to change their strategies within the rapidly changing and unpredictable context of societal sustainability (O'Neil & Usbarasan, 2016). Furthermore, in order to successfully integrate the principles of corporate sustainability and the circular economy in enterprise strategy, economic, social and environmental objectives, and their interrelations, have to be addressed (Baumgartner & Ebner, 2010; Figge et al., 2002). This can be challenging as decisions related to social, environmental and economic objectives may not always present themselves as potential win-wins but rather in terms of trade-offs (Epstein & Roy, 2001).

In order to deal with these challenges and successfully integrate the principles of corporate sustainability and the circular economy in their strategies, enterprises need new capabilities. The focus of most organizational capabilities has been on the ability of enterprises to strengthen their competitive advantage and improve

their financial performance (Barney, 1991; Helfat & Raubitschek, 2000; Teece et al., 1997). These organizational capabilities, including for instance sensing and seizing capabilities, focus on capturing economic value for the individual enterprise and its shareholders. Few of these capabilities can be continued for the long-term as they have caused significant environmental damages (Hart, 1995). Therefore, it has been identified that enterprises need distinct capabilities in order to contribute to societal sustainability (van Kleef & Roome, 2007; Wu et al., 2012). To move from maximizing economic value capture for the individual enterprise and its shareholders toward societal and environmental value creation, preservation and restoration, enterprises need to develop new capabilities that assist them in reformulating their strategies (Annunziata et al., 2018). This PhD thesis proposes that organizational capabilities related to the ability of enterprises to interact and collaborate with a diverse set of stakeholders, also referred to as collaborative capabilities, are of key importance. Both the sustainability and circular economy literature view collaboration between stakeholders as desirable and imperative for achieving their goals and ambitions (Geissdoerfer et al., 2017). There are two key arguments that explain why enterprises need to increasingly interact and collaborate with a diverse set of stakeholders.

First, corporate sustainability literature has emphasized that interacting and collaborating with a diverse set of stakeholders is fundamental in order for enterprises to deal with the wicked problems involved in sustainability challenges (Dentoni et al., 2018). The key argument for this is that no stakeholder can effectively respond to wicked problems independently from other stakeholders due to the complex interdependencies involved in these problems (Conklin, 2006). In order to take into account and respond to the different dimensions of wicked problems, stakeholder collaborations and collective actions are thus needed (Dentoni et al., 2018; Termeer et al., 2015). Interacting and collaborating with diverse stakeholders can furthermore assist enterprises in successfully balancing and sustaining economic, environmental and social objectives by evaluating the importance of these objectives for and their impact on different stakeholders and society at large (Fischer et al., 2020). Collaborative capabilities can enable enterprises to successfully interact with diverse stakeholders, address the knowledge and preferences of these stakeholders and continuously adapt to these preferences which may, in turn, assist them in successfully integrating the principles of corporate sustainability in their strategies (Dangelico et al., 2017; Klewitz & Hansen, 2014).

Second, circular economy literature emphasizes the need for stakeholder collaboration as value preservation and restoration are inherently collective values. This means that these values can only be realized when all actors in a value chain collaborate to create various types of resource loops through recycling, conversion and the substitution of materials (Jonker et al., 2020; Jonker & Faber, 2018). For example, in order for enterprises to close resource loops, manufacturers need to

adopt reusable materials and customers have to return products. The involvement of multiple stakeholders, such as suppliers, manufacturers and customers, in inter-firm networks is thus needed (Ghisellini et al., 2016). This means that enterprises need to organize circularity at an inter-organizational level instead of organizing in an organization-centric environment (Jonker et al., 2020). Collaborative capabilities can enable enterprises to successfully interact with diverse stakeholders, identify how knowledge, resources and responsibilities can be pooled and shared, take interdependencies into account, and identify collaborative approaches for value preservation and restoration (Ghisellini et al., 2016; Jonker & Faber, 2018; Reypens et al., 2016). These collaborative approaches may in turn assist enterprises in successfully integrating the principles of the circular economy in their strategies (Clarke & Fuller, 2010).

The second main conclusion and motivation for this PhD thesis is that capabilities which enable enterprises to successfully interact and collaborate with a diverse set of stakeholders are of fundamental importance for both corporate sustainability and the circular economy. These capabilities may assist enterprises in integrating the principles of corporate sustainability and the circularity economy in their strategies and achieving wider economic, social and environmental objectives.

1.2.6 How to collaborate with diverse stakeholders: a stakeholder view

Stakeholder theory has focussed on explaining how and why enterprises interact and collaborate with a diverse set of stakeholders. Stakeholder theory proposes that the purpose of an enterprise is not only to create value for its shareholders but also for a wider group of stakeholders (Freeman, 2010). This is caused by the fact that the stakes of enterprises are inherently connected to the stakes of other stakeholder groups. Enterprises have to manage their relations with different stakeholders, creating more value for a greater number of stakeholders (Freeman, 2010). This requires a series of rotating trade-offs where enterprises can take advantage of opportunities for shared value creation for two or more essential stakeholders, without subtracting value from other essential stakeholders (Freeman, 2010; Mitchell et al., 1997). The term *stakeholder* in this context is defined as '*any group or individual who can affect or is affected by the achievement of an organization's objectives*' (Freeman, 1984 p. 46). Stakeholders have often been divided into primary and secondary stakeholders, where interacting with the former is necessary for an enterprise's survival, while interacting with the latter is not (Clarkson, 1995). Primary stakeholders include for instance suppliers, customers, employees, partners and manufacturers.

Researchers have argued that enterprises who use this type of stakeholder management tend to overlook stakeholders who are affected by the enterprise in favour of those who can affect it (Roloff, 2008). Therefore, new ways in which

enterprises can interact and collaborate with diverse stakeholders have been identified. Sustainability research has for instance expanded the set of primary stakeholders by adding the environment and society, including stakeholders such as local communities and NGOs (Evans et al., 2017). Furthermore, new ways of interacting and collaborating with diverse stakeholders have been proposed, where all stakeholders are considered as equally important and engage in a mutual learning process (Khazaei et al., 2015). Such stakeholder interactions can take different forms including public consultations, stakeholder dialogues, and multi-stakeholder initiatives (Fadeeva, 2004). Most of these interactions transcend the boundaries of one sector and require enterprises to work in multi-stakeholder networks, including businesses, governments, knowledge institutions and civil society organizations (Roloff, 2008). Within these networks the focal enterprise is no longer the centre of the network. Instead, the involved stakeholders agree on a common issue or challenge as the focal point of the network (see figure 1.2). The term *stakeholder* in this context is defined as '*any group or individual who can affect or is affected by the approach to the issue addressed by the network*' (Roloff, 2008).

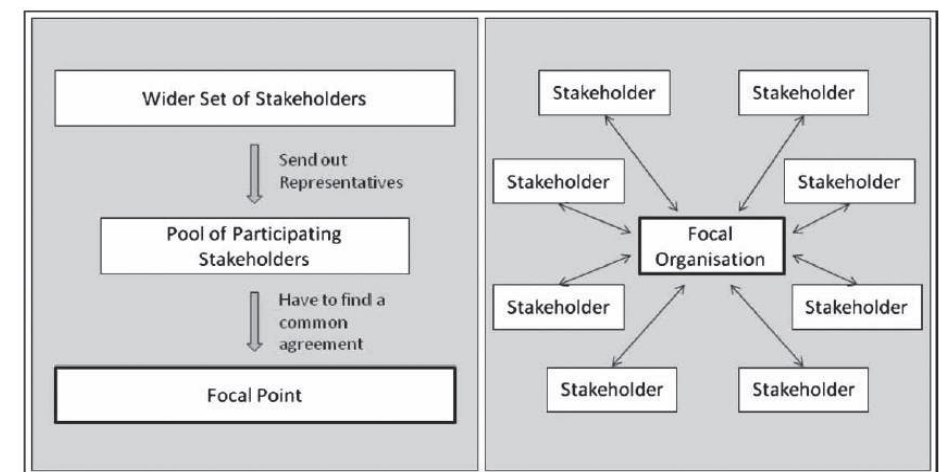


Figure 1.2: Multi-stakeholder vs. organization-focussed networks ^a

^a Source: derived in adapted form Feige et al. (2011)

The third main conclusion and motivation for this PhD thesis is that enterprises have to interact and collaborate with a diverse set of stakeholders, including the environment and society. In order to successfully interact and collaborate with this diverse group of stakeholders, enterprises may need to engage in 'new' types of interactions and collaborations, such as multi-stakeholder initiatives.

1.3 Research aim and questions

This PhD thesis focusses on two main research questions and four sub questions in order to address two gaps in the literature. First, while the importance of interactions and collaborations among a diverse set of stakeholders is increasingly emphasized in the both the corporate sustainability and circular economy literature (Geissdoerfer et al., 2017), it is still unclear if and how this can assist incumbent enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies and achieving economic, social and environmental objectives. Researchers have argued that, in order for enterprises to successfully adopt sustainable and circular principles, collaborative capabilities are needed (Ghisellini et al., 2016; Jonker & Faber, 2018; Reypens et al., 2016). Recent insights have furthermore highlighted that stakeholder interactions and collaborations may facilitate the development of sustainable strategies at the enterprise-level (Clarke & Fuller, 2010; Fougère & Solitander, 2020). However, research has also indicated that interactions and collaborations among a diverse set of stakeholders can result in higher levels of complexity due to the uncertain outcomes of these collaborative processes (Geissdoerfer et al., 2018). Furthermore, research remains in large part conceptual in nature and focusses mainly on new enterprises (Fougère & Solitander, 2020; Gond et al., 2012). Despite achievements, the question thus remains whether, and if so how, stakeholder interactions and collaborations can assist incumbent enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies. The first main research question that will be addressed in this PhD thesis is therefore:

Research question 1: To what extent can stakeholder interactions and collaborations assist enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies and achieving economic, social and environmental objectives?

This research question will be addressed in the second and third chapters of this PhD thesis, where the second chapter focusses on corporate sustainability and the third chapter on the circular economy. The chapters cover two different sub-questions:

Sub question 1: To what extent can integrative dynamic capabilities (processes that integrate the knowledge and resources of internal and external stakeholders) assist enterprises in achieving social, environmental and economic objectives?

Sub question 2: To what extent can circular network interactions assist enterprises in integrating the principles of the circular economy in their strategies?

This PhD thesis also addresses a second gap in the literature. Research into stakeholder collaboration indicates that this is a challenging task which requires active management (Senge et al., 2007) and potential challenges are increased when the focus is on sustainability (Gray & Purdy, 2018; Niesten et al., 2017). Individual stakeholders likely have different perspectives regarding sustainability and circularity, which intensifies challenges (Fischer et al., 2020; Mousavi & Bossink, 2017). Furthermore, 'new' ways of interacting and collaborating with diverse stakeholders, such as multi-stakeholder initiatives, likely involve several conflicts such as confusion and disagreement (Hovring et al., 2018; Reypens et al., 2019). Interacting and collaborating with a diverse set of stakeholders can thus be challenging for enterprises. While the task of interacting with diverse stakeholders and managing conflicts is an integral part of stakeholder theory (Freeman, 2010), it has only been scarcely analysed in the context of corporate sustainability and the circular economy (Fischer et al., 2020). Especially in the context of the circular economy, little is known about how enterprises can successfully engage in interactions and collaborations with diverse societal stakeholders. Recent research has critiqued the circular economy literature for being silent on the involvement of societal stakeholders, and local communities in particular (Inigo & Blok, 2019; Murray et al., 2017). This thesis refers to local communities as constituting of a variety of local actors including local residents and local community organizations (such as community centres) (Wallis et al., 2010). The lack of attention to local community involvement in the literature is an important limitation as circular approaches which are solely led by enterprises likely encourage a societal commitment to continued economic growth and mass consumption of non-essential goods, which may lead to negative social and environmental outcomes (Hobson & Lynch, 2016). Interacting and collaborating with local communities is thus important but may also bring additional challenges as local communities are likely to hold less power than other stakeholders and their knowledge about complex topics such as circularity is often limited (Edmunds & Wollenberg, 2002; Khazaei et al., 2015). The second question addressed in this PhD thesis is therefore:

Research question 2: How can enterprises successfully interact and collaborate with local communities in circular strategies and approaches?

This research question will be addressed in the fourth and fifth chapters of this PhD thesis. The fourth chapter will focus on a social housing association, while the fifth chapter will focus on a multi-stakeholder initiative. The chapters cover two different sub-questions:

Sub question 3: How can social elements be integrated in circular strategies through relationships with local communities?

Sub question 4: How can local communities be involved in multi-stakeholder initiatives for the design and implementation of circular approaches in a neighbourhood?

The following section will address the research paradigm adopted to investigate the research questions.

1.4 Research Paradigm and Methodology

In this thesis multiple different methods, including survey-based, case-based and action-research methods, were adopted to address the research questions. In doing so, the chapters align with different research paradigms, including perspectives on ontology (the nature of our beliefs about reality), epistemology (the nature of knowledge and the process by which knowledge is acquired and validated) and methodology (an articulated, theoretically informed approach to the production of data). This section adopts the notion of mode 1 and 2 science developed by Nowotny et al. (2001) to discuss the different research paradigms and methodologies adopted in this PhD thesis. Mode 1 science is theoretical, internally-driven by individual research disciplines and characterized by academic quality control. In contrast, mode 2 science is oriented towards application, transdisciplinary in nature and involves accountability to society as a whole. Table 1 includes a summary of the characteristics of mode 1 and mode 2 science. While the notion of mode 1 and mode 2 science has received criticism, such as its lack of novelty (Hessel & van Lente, 2008), it provides a useful structure to present the research paradigms and methodologies included in this PhD thesis.

Table 1.2 Characteristics of mode 1 and 2 science ^a

Mode 1 science	Mode 2 science
Academic context	Context of application
Disciplinary	Transdisciplinary
Homogeneous	Heterogeneous
Linear and stable	Non-linear and volatile
Academic quality control	Quality management on a broader set of criteria
Accountable to peers	Accountable to society

^a Source: derived in adapted form from Nowotny et al. (2001)

1.4.1 Working within mode 1 science

Mode 1 science refers to research that is generated in theoretical or experimental environments at scientific institutes and is structured by scientific disciplines. The role of the researcher in mode 1 science is detached from the subjects being

researched, as the researcher acts as a neutral observer and aims to understand a reality which exists independent of the observer. Research within mode 1 science is mostly characterized by theory building and theory testing towards the aim of creating general knowledge (Nowotny et al., 2001). In order to address the first main research question, the second and third chapter draw on mode 1 science. In these chapters, new hypotheses were firstly developed, using deductive reasoning, with the use of business and management literature. Thereafter, data was collected with the use of surveys and subsequently hypotheses were tested through advanced statistical analyses. Both chapters were carefully reviewed through a peer review process for scientific journals. Drawing on mode 1 science is useful for answering the first main research question as it enables studying the general effects of different types of stakeholder interactions and collaborations on the integration of the principles of corporate sustainability and the circular economy in enterprise strategy. In doing so, the chapters align with a post-positivistic paradigm, aiming to understand reality, which exists independent of the observer, but acknowledging that this reality can only be apprehended imperfectly because of the complexity of social phenomena and the influence of the researcher on what is being observed.

1.4.2 Shifting to mode 2 science

Despite the benefits and useful insights provided through working within mode 1 science, a different approach was adopted in order to answer the second main research question. The second main research question aims to address a complex social challenge, where multiple perceptions of both the problems and solutions exist (Hassan, 2014). There is no general rule on how diverse stakeholders can engage in successful interactions and collaborations, as this is highly dependent on the context, the stakeholders involved and their perspectives. Furthermore, in order to address the second main research question, this PhD thesis aimed to identify new ways in which enterprises can interact and collaborate with local communities in their circular strategies. The aim of the second research question was thus to generate practical and context-specific knowledge on how enterprises can successfully interact and collaborate with local communities in new ways. Therefore, in order to address the second main research question, in-depth interactions with individuals, including representatives from businesses, governments and civil society, were required in order to explore different perspectives and identify new approaches. Academic scholars can achieve this through adopting mode 2 science, where insights are generated through mutual interactions in a context of application and a transdisciplinary environment (Nowotny et al., 2001). This means that the relationship between science and society is fundamentally changed, where science does not only speak to society, but where society also speaks to science, enabling the co-creation of solutions to the complex sustainability challenges we face today. This also means that the researcher is no longer a neutral observer, as he or she actively interacts and collaborates with the research subjects.

In order to address the second main research question, chapters four and five adopt approaches relating to mode 2 science. Both chapters adopted a transdisciplinary approach in which not only literature and insights from business and management were adopted, but were combined with insights from other disciplines such as social-ecological systems theory. Furthermore, for both chapters, collaborations with regional actors were established, including representatives from a social housing association, local communities, local businesses and the municipality. Most of these collaborations involved mutual interactions between the academic researcher and regional actors. This was not only applied to the data collection and data analyses stages but also to the initial stages, as research questions were formulated based on the challenges the regional actors encountered. Chapter four adopted a case study methodology, collecting data through participant observations, focus groups, and interviews. In doing so, the fourth chapter aligns with an interpretivist paradigm, aiming to understand a phenomenon in its context through the eyes of the participants. Chapter five adopted an action research methodology, collecting data through collaboratively working together with various regional actors on local challenges. The results of the chapter were shared and discussed with the involved actors, where the researchers and actors collaboratively reflected on the results and their interpretations. In doing so, the fifth chapter aligns with the paradigm of critical theory, not only aiming to understand society, but also to change it by assisting regional actors in addressing local challenges.

1.4.3 Combining mode 1 and 2 science

In summary, the chapters in this thesis correspond to both mode 1 and 2 science, including different research paradigms and research methods. Chapters two and three draw on mode 1 science, aligning with a post-positivistic paradigm and adopting advanced quantitative methods. Chapters four and five draw on mode 2 science, aligning with an interpretivist paradigm and critical theory and adopting case-based and action research methodologies. This PhD thesis adopts the perspective that mode 1 and 2 science are not in conflict but rather support each other (Nowotny et al., 2001). Researchers do not solely have to rely on the one or the other mode of science but can use both alongside each other, resulting in mixed-methods research. The combination of the two modes and the corresponding diversity in research paradigms and methods is a source of strength as it enables the generation of richer knowledge upon which to base research and theory, which is important for research dealing with real-world complexities (Mingers, 2001).

Mode 1 and 2 science generate information about different aspects of the world and reality. Following Mingers (2001), this PhD thesis adopts the perspective that it is possible to simultaneously accept that there is both a single objective reality of factual events and multiple subjective views of this reality relating to the worldviews and perspectives of individuals. Mode 1 science aims to get as close to

the objective reality as possible, by collecting data and managing various forms of bias that may arise from the context or the respondent's understanding of events. On the other hand, mode 2 science aims to explore how individuals understand reality and generate practical knowledge, by collecting and exploring multiple subjective realities. Combining mode 1 and 2 science in this PhD thesis enables starting with developing general knowledge regarding the first main research question in chapters two and three, and gaining a more complete understanding through generating context-specific and practical insights in chapters four and five.

1.5 Outline of the chapters

The chapters in this thesis fit together under the umbrella of the main research questions. The chapters are also theoretically, conceptually, and empirically interrelated. This PhD thesis is written and presented in the form of standalone chapters which can be read independently as well as jointly. Table 1 provides an overview of the chapters included in this PhD thesis. The following sections provide an outline of the chapters.

The second chapter entitled '*The impact of dynamic capabilities on the sustainability performance of SMEs*' combines dynamic capabilities and strategic management literature and investigates to what extent interactions with external and internal stakeholders can assist SMEs in achieving social, environmental and economic objectives. Chapter 2 addresses the debate in the corporate sustainability literature concerning the ability/inability of SMEs to incorporate social, environmental and economic objectives (Aragon-Correa et al., 2008; Dyllick & Hockerts, 2002). Due to the conflicting nature of these objectives and resource constraints, SMEs may not be able to simultaneously address all three objectives (Dyllick & Hockerts, 2002). The key argument of this chapter is that SMEs can overcome their resource constraints and address all three pillars of corporate sustainability through external (processes that integrate the knowledge and resources of external stakeholders) and internal (processes that integrate the knowledge and resources of internal stakeholders) integrative dynamic capabilities (Bowman & Ambrosini, 2003). We propose that these dynamic capabilities can assist SMEs in developing holistic solutions for corporate sustainability and increasing the success and market performance of corporate sustainability initiatives. Furthermore, building on the strategic management literature, we propose that owner/manager transformational leadership and perceptions of sustainability are important in driving these integrative dynamic capabilities (Matzler et al., 2008). To study these effects, we developed a survey resulting in a data-base including 297 Dutch SMEs. The chapter contributes to the literature by showing that processes that integrate the sustainability knowledge of external stakeholders can assist SMEs in addressing environmental, social and economic objectives. Contrastingly, the results highlight

that processes integrating the resources of individuals inside the organization may not provide such an advantage. Furthermore, the findings show that SME owner/managers have an important role in driving the capabilities necessary for addressing social, environmental and economic objectives.

The third chapter entitled *'The impact of managers and network interactions on the integration of circularity in business strategy'* combines multi-stakeholder network and strategic management literature in order to investigate to what extent managerial perceptions of circularity and circular network interactions can assist incumbent enterprises in integrating the principles of the circular economy in their strategies. Although researchers have increasingly focused on the barriers enterprises face in the integration of circular principles (Kirchherr et al., 2018; Ormazabal et al., 2018; Rizos et al., 2016), little attention has been paid to the organizational attributes that can help enterprises to successfully overcome these barriers. Building on the strategic issue interpretation literature (Dutton & Jackson, 1987; Sharma, 2000), we propose that managers who perceive the circular economy as an opportunity can drive the integration of circular principles in their company's strategy. Furthermore, building on multi-stakeholder network literature (Clarke & Fuller, 2010; Roloff, 2008), we propose that this relationship is partially mediated by circular network interactions. We argue that these interactions are important for the integration of circular principles as they can enable enterprises to identify collaborative approaches necessary for value preservation (Jonker & Faber, 2018). We furthermore explore how holistic thinking can assist managers in building circular network interactions. In order to investigate these effects, we developed a survey resulting in a data-set including 627 Dutch SMEs. The chapter contributes to the literature by highlighting that integrating circularity in corporate strategy demands more than an organisation-centric perspective. We conclude that, by encouraging the development of circular network interactions, managers may be able to lead the way toward more integrated visions, increased collaborations and the successful integration of circularity in corporate strategies.

The fourth chapter entitled *'Circular strategies for social housing associations: lessons from a Dutch case'* combines circular economy and social-ecological systems literature to investigate the circular strategy options that can be adopted by social housing associations and explore how social elements can be integrated in these strategies via the establishment of relationships with local communities. This chapter addresses the lack of attention towards social elements in the circular economy literature (Geissdoerfer et al., 2017). This is an important limitation as circular strategies may create and destroy social value and suffer from limited success due to the exclusion of social elements (Murray et al., 2017). The key argument in this chapter is that social elements can be integrated in circular strategies through the establishment of two-way interactions with local communities in which communities

adapt their needs to circular strategies and in which circular strategies are adapted to suit community needs (Jochim, 1981; Stringer et al., 2006). In order to address the research aims, we conducted an in-depth case study in a social housing association in the Netherlands. Data was collected through grey literature publications, two focus groups and 15 interviews. The chapter contributes to the literature by showing how different types of interactions with communities influence the integration of social elements in circular strategies. We conclude that the challenge for social housing associations is to find synergies between social and ecological elements in such a way that circular strategies can serve the needs of both natural resource cycling and local communities.

The fifth chapter entitled *'How can local communities be involved in multi-stakeholder initiatives focussed on the adoption of circular economy approaches in neighbourhoods? An action research inquiry'* adopts multi-stakeholder network literature to explore how local communities can be best involved in a multi-stakeholder initiative in the context of a circular neighbourhood. The involvement of local communities in multi-stakeholder initiatives is often neglected in the literature and remains a challenging process in practice due to several challenges including its time-consuming nature and the use of the language of dominant stakeholders (Khazaei et al., 2015; Phanumat et al., 2015). This is especially the case when complex topics such as circularity are addressed as communities likely hold lesser power than the other involved stakeholders and their knowledge and awareness about circularity is often limited (Matos & Silverstre, 2012). Due to the limited knowledge available, this chapter focusses on an in-depth analysis of an initiative where local communities, next to other stakeholders, were involved in the design and implementation of circular approaches in a low-income neighbourhood in the Netherlands. An action research approach (Susman & Evered, 1978) was adopted, where the researcher actively participated in the design and execution of the initiative. Insights from multi-stakeholder network theory, and the process of issue-focused stakeholder management in particular, were used as a lens to guide and evaluate the process. This chapter contributes to the literature by offering insights into the involvement of local communities in multi-stakeholder initiatives. The results highlight that this involved dealing with several complexities, where a balance had to be found between certainty-uncertainty, agreement-disagreement, and consensus-domination-based management. The findings furthermore show that steps in this direction could be taken by enabling the exploration of community perspectives, allowing for disagreement and conflict, and adopting both domination- and consensus-based management strategies.

Chapter 6 concludes this dissertation. This chapter gives an overview of the main conclusions and discusses the results of the different chapters and indicates limitations as well as implications for future research.



2

The impact of dynamic capabilities on the sustainability performance of SMEs

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Abstract

Despite environmental and social goals being identified as key objectives for small- and medium-sized enterprises (SMEs), the literature has not provided an explanation of how these goals can be achieved alongside stable economic outcomes. Several researchers have argued that sustainability performance should be addressed through a process of constant adjustment, which can be facilitated by dynamic capabilities. The aim of this study is to investigate the effect of integrative dynamic capabilities on the social, environmental and economic performance of SMEs. This study is among the first to investigate this effect and uses unique survey data from 297 SMEs in the Netherlands. The empirical results highlight the importance of external integrative dynamic capabilities for all three pillars of sustainability performance in SMEs. These findings contribute to the debate on the ability/inability of SMEs to balance social, environmental and economic objectives by integrating new insights from the dynamic capabilities literature.

Keywords: Sustainability performance, SMEs, dynamic capabilities

2.1 Introduction

It has been acknowledged that without the systematic support of businesses, society will not achieve the 17 sustainable development goals set by the United Nations in 2015 (Hockerts & Wüstenhagen, 2010; Nawaz & Koç, 2018). Businesses need to address their sustainability performance, which requires achieving a positive economic, social and environmental performance over the long-term (Jamali, 2006 p.812). Sustainability has long been perceived to be the domain of large corporations, with the potentially significant contributions of SMEs to sustainable development receiving less attention (Bos-Brouwers, 2010; Graafland & Smid, 2016). Environmental and social concerns, such as the rising prices of energy and increasing community involvement, can pose significant challenges and offer great opportunities to SMEs (Graafland & Smid, 2016). Research has described approaches to sustainability management in large corporations; however, these approaches are not necessarily suited to SMEs due to the important strategic differences between large and small firms (Johnson & Schaltegger, 2017).

Sustainability management involves balancing the often conflicting objectives of the three pillars of sustainability, including social, environmental and economic objectives (Lethonen, 2004). With few exceptions, most studies have not explained how environmental and social goals can be achieved in SMEs alongside stable economic outcomes (Johnson & Schaltegger, 2017). Research addressing this issue has provided conflicting results. On one hand, it has been argued that SMEs are only able to focus on single pillars of sustainability and tackle sustainability issues in an ad-hoc manner (Hockerts & Wüstenhagen, 2010). Due to their financial, human and operational resource constraints, SMEs find the development of capabilities to address sustainability a complicated task that can increase their cost burden and even lead to a loss of competitiveness in the market (Dyllick & Hockerts, 2002; Hockerts & Wüstenhagen, 2010). On the other hand, empirical findings have shown that SMEs can simultaneously act as drivers of all three pillars of sustainability due to their idealism, flexibility and innovativeness (Aragon-Correa, Hurtado-Torres, Sharma & Garcia-Morales, 2008). The question of whether and how SMEs can overcome their resource constraints and develop the necessary enabling organizational capabilities to simultaneously drive all three pillars of sustainability performance has remained unexplored to date. The first contribution of this study concerns investigating how organizational capabilities simultaneously relate to all three pillars of the sustainability performance of SMEs. In addressing this issue, this research responds to calls for more SME-level sustainability research (Johnson & Schaltegger, 2017).

The second contribution consists of providing a stepping stone towards a more detailed investigation of the link between the dynamic capabilities and sustainability performance of SMEs. Dynamic capabilities are organizational processes that intentionally modify, change and renew a firm's resource base (Ambrosini & Bowman, 2009). Dynamic capabilities are a source of sustained competitive advantages in situations in which the competitive landscape is characterized by rapid and unpredictable changes (Teece, 2007). This research is the first to use insights from the dynamic capabilities literature to explain how SMEs can simultaneously drive their social, environmental and economic performance. Due to the rapidly changing and unpredictable nature of sustainability (O'Neil & Usbarasan, 2016), it has been argued that successful sustainability requires constant adjustments, which can be enabled by dynamic capabilities (Arend, 2014). We propose that in the specific context of SMEs, integrative dynamic capabilities, which are processes that enable a firm to integrate assets and resources, resulting in new resource configurations (Ambrosini & Bowman, 2009), are of major importance. These dynamic capabilities can assist SMEs to constantly integrate the preferences and knowledge of their stakeholders (Ayuso, Rodrigues & Ricart, 2006) and to develop holistic solutions for sustainability (Daily & Huang, 2001). Therefore, the authors propose that integrative dynamic capabilities can assist SMEs to: (1) address their sustainability performance at lower costs and (2) increase the success and market performance of their sustainability initiatives, leading to an increased environmental, social and economic performance. Building on the strategic management perspective of dynamic capabilities, owner/manager transformational leadership and perceptions of sustainability are proposed to be highly important in driving these integrative dynamic capabilities (Matzler, Renzl, Müller, Herting & Mooradian, 2008). By combining insights from the sustainability, dynamic capabilities and strategic management literature with unique survey data from 297 Dutch SMEs, the authors formulated and tested hypotheses.

The remainder of this article is structured as follows. Section 2.2 reviews the sustainability and dynamic capabilities literature, which serves as the foundation for this research. Building on this background, hypotheses regarding the effects of dynamic capabilities on the sustainability performance of SMEs are formulated. Subsequently, section 2.3 and 2.4 present the methods used and the results of the survey study, respectively, and the paper concludes with a discussion of the implications and possible avenues for future research in section 2.5.

2.2 Literature and hypotheses

2.2.1 Dynamic capabilities and sustainability performance

Teece, Pisano & Shuen (1997) distinguished between four main types of dynamic capabilities, including (1) reconfiguration—transforming and recombining assets

and resources; (2) leveraging—replicating a process or system operating in one business unit into another; (3) learning—experimenting and reflecting on failures and successes; and (4) integrating—integrating assets and resources, resulting in a new resource configuration. Researchers have suggested that these dynamic capabilities should be applied to understand the process of sustainability, as this process is dynamic, complex and characterized by constant and unpredictable change (Arend, 2014). Guidelines for sustainability are often ambiguous, and technologies, beliefs, and institutional approaches to sustainability are constantly changing (O'Neil & Usbarasan, 2016). Researchers have argued that companies need to be flexible and adaptive through a process of continuous adaptive learning, change, improvement and development to deal with the constantly changing environment around sustainability (Arend, 2014). Dynamic capabilities are crucial in allowing firms to achieve such adaptive flexibility and make constant adjustments (Arend, 2014; Chen & Chang, 2013).

The impact of dynamic capabilities on firm performance has been a key question among scholars, who have predicted a positive influence of dynamic capabilities on performance (Drnevich & Kriauciunas, 2011). An example of this is the work of Protogerou et al. (2011), which showed a positive relation between dynamic capabilities and firm profitability. Researchers have also started to explore the links between dynamic capabilities and sustainability, including environmental, social and economic aspects. For example, Marcus and Anderson (2006) investigated how dynamic capabilities can lead to the acquisition of both business and social competencies. Furthermore, in a survey study, Mousavi et al. (2018) found a positive effect from sensing, seizing and reconfiguring dynamic capabilities on innovations for sustainability. The concept of dynamic capabilities has also been translated into a sustainability context, referring to *'the firm's ability to address the rapidly evolving sustainable expectations of stakeholders by purposefully modifying functional capabilities for the simultaneous pursuit of economic, environmental and social competences'* (Wu et al. 2012, p.233). Several exploratory articles have indicated a positive relationship between these 'sustainability dynamic capabilities' and different sustainability aspects in firms. For example, through a survey study of 189 manufacturing companies, Dangelico et al. (2016) found a positive relationship between sustainability dynamic capabilities, eco-design capabilities and green innovation capabilities.

However, the relationship between dynamic capabilities and sustainability performance in SMEs has remained unclear in the literature (Arend, 2014). There are several explanations for this. First, researchers have relied on different types of dynamic capabilities without offering a thorough explanation. These types of dynamic capabilities range from general dynamic capabilities (Marcus & Anderson, 2006) to green dynamic capabilities (Chen & Chang, 2013). Researchers have

addressed the four main types of dynamic capabilities—reconfiguring, integration, learning and leveraging (Arend, 2014)—as well as other types, such as scanning, identification (Wu et al., 2012), comparing and evaluating (Marcus & Anderson, 2006). This focus on different types of dynamic capabilities has led to incomplete and even contrasting findings. For example, Marcus and Anderson (2006) only found a positive relationship between dynamic capabilities and business competencies, while Arend (2014) found a positive relationship between dynamic capabilities and green activities. A second reason for the lack of clarity in the current literature is that none of the studies identified has focussed on the effects of dynamic capabilities on all three pillars of sustainability performance. Researchers have explored the effects of dynamic capabilities on different sustainability concepts, including green innovation, for example (Dangelico et al. 2016), without including the effects on sustainability performance. It is thus unclear whether dynamic capabilities help align economic, environmental and social performance. Finally, researchers have primarily focused on the dynamic capabilities of large corporations, and it thus remains unclear which types of dynamic capabilities are important to SMEs.

2.2.2 Dynamic capabilities driving sustainability performance in SMEs

Some dynamic capabilities may be more important than others depending on specific firm situations (Ambrosini & Bowman, 2009). For instance, resource building and reconfiguration dynamic capabilities were found to positively relate to market performance in the context of large manufacturing firms (Dangelico et al. 2017). However, resource integrative dynamic capabilities were not found to positively relate to market performance within this context. This effect may have been caused by the substantial resource base and established market presence of large firms, which reduce the need for external resource integrative dynamic capabilities. SMEs concerned with sustainability experience specific circumstances that differ from those of large firms (Bos-Brouwers, 2010). These circumstances include, among others, a smaller resource base and a lack of communication systems, lower pressure for sustainability from consumers and governments, lower degree of formalization, and stronger local embeddedness. The dynamic capabilities that drive sustainability performance in large firms may thus not drive sustainability performance in SMEs. We propose that in the specific context of SMEs, integrative dynamic capabilities are particularly important, as they can assist SMEs in overcoming resource constraints and increasing the success of sustainability efforts. We make a distinction between the effects of external and internal integrative dynamic capabilities.

External integrative dynamic capabilities relate to processes that integrate the resources and capabilities of parties outside the organization, such as suppliers and customers (Bowman & Ambrosini, 2003). These processes enable SMEs to address their sustainability performance in two ways. First, these processes assist firms in constantly integrating the creative and practical knowledge of their stakeholders

(Ayuso, Rodrigues & Ricart, 2006). Relationships with stakeholders that foster sustainability are especially important (Ayuso, Rodrigues & Ricart, 2006). These dynamic capabilities enable SMEs to address sustainability at lower costs, as each SME does not need to develop all of the sustainability knowledge from scratch, or 'reinvent the wheel' (Boons & Lüdeke-Freund, 2013). Second, external integrative dynamic capabilities can enable SMEs to constantly address the knowledge and preferences in terms of sustainability, of their suppliers, government, consumers and local context (Klewitz & Hansen, 2014), which enables SMEs to continuously adapt their sustainability initiatives to these preferences and can, in turn, increase the success and market performance of the initiatives (Dangelico et al., 2017).

Internal integrative dynamic capabilities relate to processes that integrate the resources and capabilities of individuals inside the organization (Bowman & Ambrosini, 2003). These processes enable SMEs to address their sustainability performance in two ways. First, these processes facilitate the continuous exchange of knowledge among employees and between departments (Petroni, 1998). This continuous exchange not only results in a decrease in duplicated efforts but also enables a holistic and low-cost solution for sustainability (Daily & Huang, 2001). For example, the elimination of pollution from the source requires cooperation between manufacturing, planning and purchasing areas (Kitazawa & Sarkis, 2000). Second, internal integrative dynamic capabilities assist SMEs in executing sustainability, as they facilitate trust among employees (Choi, 2006). Trust is important, as it grants individual employees the confidence to invest in collective activities such as sustainability (Kitazawa & Sarkis, 2000) since they know that others will also do so (Pretty, 2003). Internal integrative dynamic capabilities can thus increase the willingness of employees to engage and invest time in sustainability activities, which in turn, assists the organization in consistently delivering sustainability (Collier & Esteban, 2007).

Thus, when addressing their sustainability performance, SMEs face a highly uncertain and changing environment that requires them to engage in a process of constant adjustment (Arend, 2014). Due to the specific context of SMEs (Bos-Brouwers, 2010), it is argued that integrative dynamic capabilities offer important advantages to SMEs. First, these dynamic capabilities assist SMEs in addressing their sustainability performance at lower costs, overcoming resource constraints and relieving the cost burden when addressing sustainability (Boons & Lüdeke-Freund, 2013; Daily & Huang, 2001). Taking the above factors into account, it is likely that integrative dynamic capabilities increase the ability of SMEs to invest in constant adjustments of their social and environmental performance while simultaneously addressing their economic performance. Second, integrative dynamic capabilities assist SMEs in consistently executing sustainability, adapting sustainability activities according to the changing preferences of their stakeholders and increasing their

market performance and the success of sustainability initiatives (Collier & Esteban, 2007; Dangelico et al., 2017). Therefore, we formulate the following hypotheses:

Hypothesis 1: External integrative dynamic capabilities are positively related to the social, environmental and economic performance of SMEs.

Hypothesis 2: Internal integrative dynamic capabilities are positively related to the social, environmental and economic performance of SMEs.

2.2.3 Managerial attributes influencing integrative dynamic capabilities in SMEs

Developing dynamic capabilities can be difficult for SMEs and may take years or even several decades (Teese & Pisano, 1994). Despite the challenges, research has shown that SMEs exhibit several dynamic capabilities (Borch & Madsen, 2007). Researchers adopting the managerial perspective on dynamic capabilities have argued that owners/managers play an important role in the development of dynamic capabilities, as they direct operations, decide how resources are used, and sense and grasp new opportunities (Augier & Teece, 2009; Zahra, Sapienza & Davidsson, 2006). Owners/managers have considerable strategic discretion over the allocation of resources in SMEs, which offers them the opportunity to drive dynamic capabilities (Augier & Teece, 2009; Matzler et al., 2008). Despite facing similar conditions in the external environment, owners/managers have been expected to make different decisions about the dynamic capabilities that could be further developed (Zahra et al., 2006). The diversity in decision-making largely results from differences in managerial attributes, including managerial social capital and cognition (Adner & Helfat, 2003). Following these arguments, two managerial attributes, transformation leadership and perceptions of sustainability, are likely to have a significant impact on the establishment of integrative dynamic capabilities in SMEs.

Transformational leadership refers to a leader moving their team beyond immediate self-interest by appealing to their values, emotions, attitudes and beliefs (Bass, 1999). Key dimensions of transformational leadership include articulating a vision, fostering the acceptance of group goals, modelling behaviours consistent with the articulated vision, providing individualized consideration, setting high performance expectations, and providing intellectual stimulation (Podsakoff, MacKenzie & Bommer, 1996). Transformational leadership behaviours, such as fostering the acceptance of group goals, enable leaders to facilitate a climate of collaboration in the organization (Gooty, Gavin, Johnson, Frazier & Snow, 2009). For instance, findings have shown that transformational leaders increase followers' identification with the group (Kark, Shamir & Chen, 2003). In such a climate, employees are more likely to contribute to group objectives and communicate with

others in the organization (Bono & Judge, 2003). Transformational leadership can thus enable leaders to motivate group members to work towards common goals and to coordinate and communicate within the group. For example, Özaralli (2002) found that employees working under transformational leaders expressed high levels of efficient within-group communication. Transformational leaders also experience the benefits of collaboration in overcoming obstacles for goal accomplishment and will thus see a greater need to develop processes that internally integrate employees (Gooty et al., 2009). Therefore, owners/managers who exhibit transformational leadership behaviours will be better able to drive and devote more resources to internal integrative dynamic capabilities, which leads to the third hypothesis:

Hypothesis 3: Transformational leadership is positively related to internal integrative dynamic capabilities.

Implementing stakeholder concerns about sustainability can be an ambiguous requirement for owners/managers of SMEs (Seidel et al. 2009). For instance, it has been shown that the awareness and implementation of tools for assisting corporations to systematically address their sustainability performance were low among SMEs (Johnson, 2015). To reduce ambiguity and unpredictability, owners/managers can perceive sustainability as an opportunity or a threat to their organization (Jackson & Dutton, 1998; Sharma, 2000). Adopting sustainability may require radical innovation and can add complexity to production and delivery processes (Russo & Fouts, 1997). Dealing with radical innovation and increased complexity may pose a threat to SMEs due to the previously mentioned resource constraints, including a lack of knowledge and limited financial resources (Hockerts & Wüstenhagen, 2010). Therefore, the owner/managers of SMEs may interpret sustainability as a threat to their organization. On the other hand, owner/managers may interpret sustainability as an opportunity for their organization due to the possibility of increased innovation potential and the opportunity to address niche markets (Darcy, Hill, McGabe & McGovern, 2013). Researchers have emphasized the importance of owner/manager perceptions in the implementation of sustainability in organizations (Patzelt & Shepherd, 2010). Sharma (2000) proposed that owners/managers who perceive environmental issues as threats do not feel a need to change their organization and will devote less time and resources to the acquisition and installation of new technologies that involve environmental goals. Barrales-Molina, Benitez-Amado and Perez-Arostegui (2010) found that if owners/managers felt that there was a need to adapt their organization to the external environment, then they would promote the generation of dynamic capabilities. Combining these insights, it is arguable that owners/managers who perceive sustainability as a threat will not feel a need to change their organization, which will in turn, lead them to direct fewer resources toward dynamic capabilities related to the integration of

external sustainability-related knowledge and resources. These insights lead to the following hypothesis:

Hypothesis 4: The owner/manager's perception of sustainability as a threat is negatively related to external integrative dynamic capabilities.

Figure 2.1 presents the research model of this study.

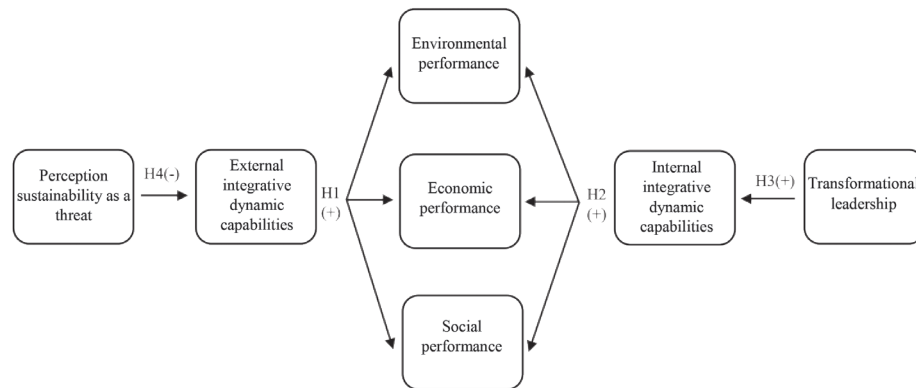


Figure 2.1 Research model

2.3 Data and method

2.3.1 Research design

Primary data to test the model was collected in a carefully designed survey. The survey was designed in four steps. First, the literature on dynamic capabilities, transformational leadership, managerial cognitions and sustainability performance was reviewed to identify established measures and items. Second, interviews with owners/managers of SMEs were conducted. SMEs were selected on the basis of their differences in sustainability reporting and similarities regarding size, geographic region, function and age. The results of the interviews helped in designing the survey and measurements; understanding the logic of dynamic capabilities in the SME setting; validating the core concepts studied in this paper; and interpreting the implications of the findings. Third, the questionnaire was developed following recommendations on survey design by Krosnick and Presser (2009), Forza (2002) and Hinkin (1995). These included, among other suggestions, the use of simple syntax, relevant and clear scales, and an appropriate order of questions. Fourth, the questionnaire was translated using rigorous forward-backward protocols and tested. A panel of four SME owners/managers and two sustainability scholars assessed the survey. The final questionnaire was again tested among ten owners/managers of SMEs in the Netherlands.

2.3.2 Participants and procedures

The population of this study included Dutch-owned small- and medium-sized enterprises (5 to 500 employees). A non-probabilistic sampling strategy was adopted, reducing the sample to SMEs in Friesland, a northern province of the Netherlands with approximately 650,000 inhabitants. Respondents from the province were selected to ensure that the enterprises faced similar institutional environments regarding sustainability. For this purpose, a random sample of 1,500 SMEs from the regional chamber of commerce was acquired. For each of the targeted companies, the director or senior manager directly responsible for leadership of the firm was identified. This information was used to personalize the invitation letter. Data were collected between May and July 2017. Paper and pencil surveys were sent out to all corporations, followed by a reminder two weeks later. Only 42 questionnaires were not delivered, primarily due to unknown relocation or bankruptcy of the company (2.8%). In total, 333 firms responded to the survey, with 36 responses unusable because the questionnaires were incomplete, leaving 297 usable observations. This represents a 20% response rate with respect to the 1,458 questionnaires that were successfully distributed.

The average age of the respondents was 50.65 (SD = 9.53), and their average work duration was 19.44 years (SD = 10.99). The gender of most respondents was male (260 male, 37 female). The average organizational age in this sample was 47.19 years (SD = 42.57), and the average number of employees was 32.40 (SD = 49.29). The firms represented a range of industries: agriculture 3.7%; industry 12.8%; building 11.1%; wholesales 17.5%; recreation 15.5%; business services 5.4%; transportation 13.5%; computers and IT 2.7%; healthcare 9.8%; and other industries 8.1%.

A comparison of the responding to non-responding firms indicated no significant differences concerning the firm size, firm age or sector. Additionally, no significant differences between early and late respondents were found. Several recommended procedural methods to reduce the risk of common method bias were used, including: (1) ensuring anonymity, (2) decreasing the risk of social desirability bias, (3) carefully evaluating all survey items, (4) adopting different scale endpoints and formats for predictor and criterion variables, and (5) distancing dependent and independent variables with a logical order from each other in the survey (Podsakoff et al., 2003). Single-respondent bias was further limited, as the survey addressed small organizations and targeted top managers as respondents (Arend, 2014).

Confirmatory factor analysis (CFA) was performed to investigate whether all survey items were loaded on a 'common' method factor and to assess whether the data may have featured significant common variance. The CFA analysis yielded a poor model fit to the data, with $\chi^2(209) = 1733.99$, RMSEA = 0.16, CFI = 0.35 and NFI = 0.33, suggesting that common method bias was unlikely to be a problem in the data.

2.3.3 Measures

Transformational leadership. To measure transformational leadership, the Global Transformational Leadership Scale developed by Carless, Wearing and Mann (2000) was adopted. Following the prompt of 'How often do you engage in the following behaviours?', items included: (1) 'Communicating a clear and positive vision of the future', (2) 'Fostering trust, involvement and cooperation among team members', (3) 'Treating staff as individuals, support and encourage their development', (4) 'Giving encouragement and recognition to staff', (5) 'Encouraging thinking about problems in new ways and questioning assumptions', (6) 'Being clear about my values and practising what I preach', and (7) 'Instilling pride and respect in others' ($\alpha = 0.80$). Owners/managers responded to these items on a frequency scale ranging from 1 = 'Rarely or never' to 5 = 'Very frequently, if not always'.

Manager's perception of sustainability. The owner/manager's perception of sustainability was measured using an adapted version of Sharma's (2000) three-item measure of managers' perceptions of environmental issues. In particular, the items were adapted to include sustainability rather than only Sharma's (2000) environmental dimension. Following the prompt of 'To what extent do you agree with the following statements', the items included: (1) 'I am likely to lose rather than gain by actions related to sustainability', (2) 'Actions that I may take for sustainability objectives are constrained by others in the organization' and (3) 'I lack the technical knowledge to reduce the negative sustainability impact of company operations'. Owners/managers responded to these items on a seven-point Likert scale ranging from 1 = 'Totally disagree' to 7 = 'Totally agree'. Although the Cronbach's alpha value of 0.54 was below the threshold value, the indications for unidimensionality (1 factor extracted with significant factor loadings > 0.4) and convergent and divergent validity of the construct were good. Therefore, this measure was adopted in the analysis.

Internal integrative dynamic capabilities. Measuring dynamic capabilities in SMEs is challenging, as SMEs often do not have formal policies and processes in place (Darcy, Hill, McCabe & McGovern, 2014). Therefore, researchers have measured dynamic capabilities in SMEs by looking at their resulting informal processes and outcomes (Borch & Madsen, 2007; Dangelico et al., 2017). In line with this, internal integrative dynamic capabilities were measured in this survey using the generic measure of employee integration as used by Den Hartog, Keegan and Den Hoogh (2007). This measure addressed employee behaviour related to their integration with other employees. Following the prompt 'Employees in this organization are willing to ...', the items included: (1) 'Assist new colleagues to adjust to the work environment', (2) 'Help colleagues solve work-related problems', (3) 'Cover work assignments for colleagues when needed' and (4) 'Coordinate and communicate with colleagues' ($\alpha = 0.83$). Owners/managers responded to these items on a five-point Likert scale ranging from 1 = 'Totally correct' to 5 = 'Totally incorrect'.

External integrative dynamic capabilities. External integrative dynamic capabilities were measured by adapting Dangelico et al.'s (2017) four-item measure of dynamic capabilities for external environmental resource integration. The items were adapted to include all sustainability dimensions. Following the prompt 'Does your company take the following aspects into account?', items included: (1) 'The wishes of consumers regarding sustainability', (2) 'The knowledge of consumers about sustainability', (3) 'The knowledge and capabilities of suppliers about sustainability' and (4) 'The cooperation with other partners on sustainability' ($\alpha = 0.88$). Owners/managers responded to these items on a five-point Likert scale ranging from 1 = 'Never' to 5 = 'Always'.

Social performance. Social performance was measured using four items from Martinez-Conesa, Soto-Acosta and Palacios-Manzano's (2017) measure of SME social performance in the local community. Following the prompt 'How frequently does your company engage in the following behaviours', items included: (1) 'Conducting programmes to support disadvantaged groups', (2) 'Supporting cultural and sports activities', (3) 'Taking into account the local community's interests for decision-making' and (4) 'Considering the company as part of the community and worrying about its development' ($\alpha = 0.78$). Owners/managers responded to these items on a five-point Likert scale ranging from 1 = 'Never' to 5 = 'Very often'.

Environmental performance. Environmental performance was measured using six items from Martinez-Conesa et al.'s (2017) measure of environmental performance in SMEs. Based on the pre-tests, the items were adapted by simplifying the wording and changing the scale to a tick box, only allowing owners/managers to indicate whether their company engaged in the activities. Following the prompt 'Does your company engage in the following behaviours', items included: (1) 'Investing in saving energy', (2) 'Performing environmental audits periodically', (3) 'Designing products and packaging to be reused, repaired and recycled', (4) 'Voluntarily exceeding environmental regulations', (5) 'Implementing programmes to reduce water consumption' and (6) 'Adopting measures to design ecological products or services'. The number of boxes ticked was determined to compute the score for the construct, which thus ranged between 0 and 6.

Economic performance. Economic performance was measured according to the firm's average annual turnover. Owners/managers were asked to indicate the category of their average annual turnover, choosing from: 'Less than EUR 100,000', 'EUR 100,001–250,000', 'EUR 250,001–500,000', 'EUR 500,001–750,000', 'EUR 750,001–1,000,000', 'EUR 1,000,001–1,500,000', 'EUR 1,500,001–2,500,000' and 'More than EUR 2,500,000'.

Control variables. Several sets of variables were included to control for alternative explanations of the relationships predicted in our model. First, this study controlled for the organizational size and age, industry types and family ownership. Second, the relationships between the human capital of owners/managers and the dynamic capabilities and sustainability performance of the organization were accounted for (Hambrick & Mason, 1984). This study controlled for the age, gender, education level and tenure of the owners/managers. The information on the owner/manager's gender, organization size (the natural logarithm of the number of employees), organization age (number of years operating) and industry (agriculture, industry, building; *benchmark*, wholesale, recreation, business services, transportation, computers and IT, healthcare and other industries) was collected from chamber of commerce documents and corporate websites. The information for the other control variables was collected in the survey.

2.4 Results

The descriptive and correlation statistics for the variables are shown in Table 2.1. The theoretical model was tested using structural equation modelling techniques (SEM) by applying AMOS graphics 7.0 (Byrne, 2016; Dangelico et al., 2017). The structural model provided a good fit to the data (with $\chi^2(12) = 35.94$, CFI = 0.96, RMSEA = 0.08, NFI = 0.95, and SRMR = 0.03). A summary of the standardized structural equation modelling results is presented in Table 2.2 and Figure 2.2. A discussion of the main findings follows (with significant control variables in line with expectations).

Hypothesis 1 predicted that external integrative dynamic capabilities positively relate to the social, environmental and economic performance of an SME. Figure 2.2 shows that this hypothesis was supported—the path coefficient from external integrative dynamic capabilities to social performance was positive and significant ($\beta = 0.34$, $p < 0.01$), as were the path coefficient to economic performance ($\beta = 0.12$, $p < 0.01$) and the path coefficient to environmental performance ($\beta = 0.39$, $p < 0.01$).

Hypothesis 2 predicted that internal integrative dynamic capabilities positively relate to the social, environmental and economic performance of an SME. Figure 2.2 shows that this hypothesis was not supported—the path coefficients from internal integrative dynamic capabilities to social performance ($\beta = 0.08$, ns) and economic performance ($\beta = 0.01$, ns) were insignificant, while the path coefficient to environmental performance was significant but negative ($\beta = -0.12$, $p = 0.02$). Thus, internal integrative dynamic capabilities did not positively relate to the social, economic and environmental performance of the firms.

Hypotheses 3 and 4 focused on the owner/manager's transformational leadership and perceptions of sustainability. Hypothesis 3 predicted that transformational

leadership positively relates to internal integrative dynamic capabilities. Hypothesis 4 predicted that the owner/manager's perception of sustainability as a threat negatively relates to external integrative dynamic capabilities. Figure 2.2 shows that both hypotheses were supported—the path coefficient from transformational leadership to internal integrative dynamic capabilities was positive and significant ($\beta = 0.37$, $p < 0.01$), and the path coefficient from the owner/manager's perception of sustainability as a threat to external integrative dynamic capabilities was significant and negative ($\beta = -0.31$, $p < 0.01$).

Table 2.1 Descriptive statistics and correlation matrix

	Mean	Sd.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Perception sustainability	2.93	1.45	1.00													
2. Transformational leadership	3.94	0.46	-0.20**	1.00												
3. Internal integration	4.07	0.51	-0.04	0.35**	1.00											
4. External integration	3.63	0.82	-0.24**	0.12*	-0.02	1.00										
5. Environmental performance	3.48	1.44	-0.20**	0.10*	-0.13**	0.45**	1.00									
6. Social performance	3.12	0.79	-0.12*	0.23**	0.08	0.34**	0.29**	1.00								
7. Economic performance	5.84	2.21	-0.19**	0.19**	0.01	0.20**	0.22**	0.02	1.00							
8. Organization size ^a	32.40	49.30	-0.26**	0.15**	-0.05	0.15**	0.23**	0.03	0.50**	1.00						
9. Organization age	47.19	42.57	-0.10*	-0.02	-0.06	0.10*	0.23**	-0.02	0.28**	0.26**	1.00					
10. Family ownership ^a	0.57	0.50	0.01	-0.05	-0.00	0.19**	0.15**	0.05	0.01	-0.10*	0.18**	1.00				
11. Gender ^a	0.13	0.33	0.01	-0.14**	-0.14**	0.04	-0.00	0.11*	-0.13**	-0.07	-0.14**	-0.10*	1.00			
12. Age	50.65	9.53	0.07	-0.10	-0.10	-0.01	-0.07	-0.16**	-0.04	0.05	0.07	-0.03	0.19**	1.00		
13. Education ^a	3.68	0.90	-0.09	0.03	-0.03	-0.03	-0.02	0.02	0.21**	0.22**	-0.06	-0.21**	0.01	-0.14**	1.00	
14. Tenure	19.44	10.99	0.05	-0.07	-0.07	-0.03	-0.04	-0.08	-0.08	-0.13**	0.19**	0.27**	-0.11**	0.52**	-0.33**	1.00

N = 297

^a Dummy variable

^b The natural logarithm is used in correlations, but the actual values are reported in the descriptive information

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 2.2 Summary of the study results

		Internal Integration	External Integration	Social perf.	Environ. perf.	Economic perf.
Control Variables	Organizational size	-0.10	0.11	0.03	0.12**	0.45***
	Organizational age	-0.01*	0.01	-0.00	0.00**	0.00***
	Family ^a	-0.04	0.42***	0.01	0.06	-0.03
	Gender ^a	-0.52***	0.23	0.25	-0.06	-0.28*
	Tenure	0.00	-0.01*	0.00	-0.01	0.00
	Age	-0.01*	0.01	-0.02**	-0.01	-0.01
	Education ^a	-0.07	-0.07	0.00	-0.00	0.18***
	Industry ^a	-0.01	-0.00	-0.03*	-0.07***	-0.05***
Independent Variables	Interpretation		-0.31***			
	Transformational	0.37***				
	Internal integration			0.08	-0.12**	0.01
	External integration			0.34***	0.39***	0.12**

^a dummy variable

* p < 0.1, ** p < 0.05, *** p < 0.01

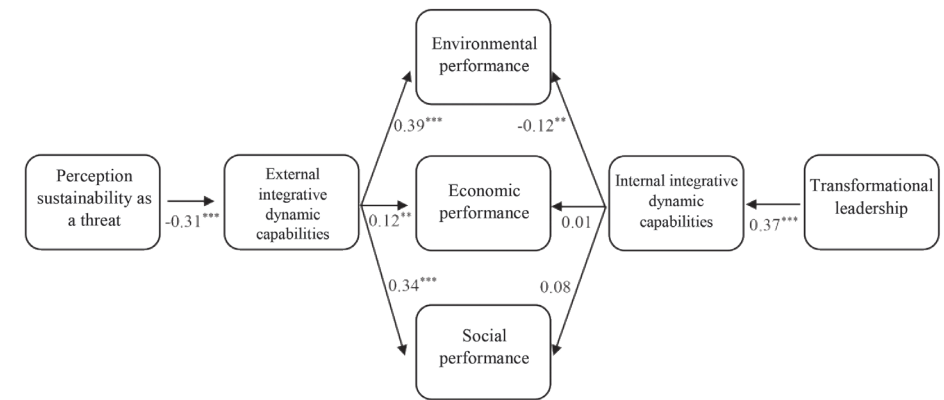


Figure 2.2 Summary of the study results^{a,b}

^a path coefficients are standardized

^b control variables are included on all dependent variables

* p < 0.1, ** p < 0.05, *** p < 0.01

2.4.1. Alternative model specification

Theories concerning the social, environmental and economic performance of SMEs suggest that there might be direct relationships between the characteristics of the owner/manager and the performance outcomes of SMEs (Hambrick & Mason, 1984). The role of the owner/manager is expected to be crucial in SMEs, as he or she must constantly evaluate whether firm resources and capabilities continue to add value despite changes in the external environment (Zahra et al., 2006). These direct relationships were not formally hypothesized because this study aimed to analyse the indirect effects of the owner/manager on SME performance via their ability to drive dynamic capabilities. Including the direct relationships between leadership characteristics and sustainability performance in the previous model slightly improved the model fit (with $\chi^2(6) = 18.97$, CFI = 0.98, RMSEA = 0.08, NFI = 0.98, SRMR = 0.02). A summary of the standardized structural equation modelling results is presented in Figure 2.3.

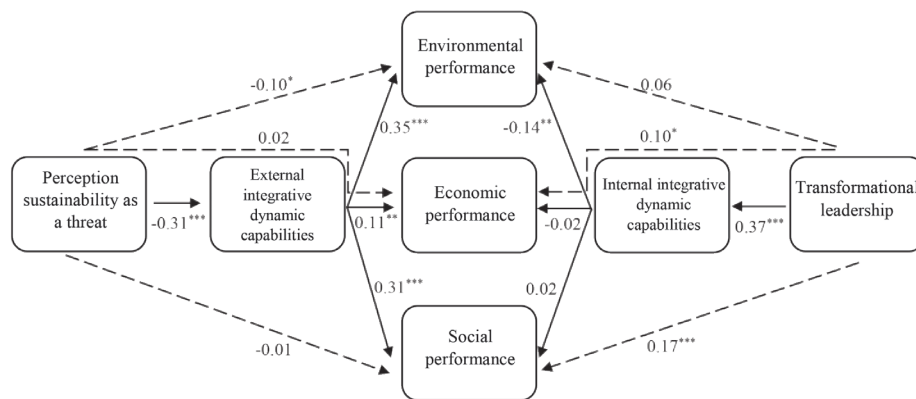


Figure 2.3 Summary of the study results with alternative model specification^{a,b}

^a path coefficients are standardized

^b control variables are included on all dependent variables

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Similar results regarding the hypotheses were found. Additionally, the results indicated that the path coefficients from transformational leadership to social ($\beta = 0.17$, $p < 0.01$) and economic performance ($\beta = 0.10$, $p = 0.06$) were positive and significant, while the path coefficient to environmental performance was insignificant ($\beta = 0.06$, ns). The path coefficient from the owner/manager's perception of sustainability as a threat to environmental performance was negative and significant ($\beta = -0.10$, $p = 0.05$), while the path coefficients to social ($\beta = -0.01$, ns) and economic performance ($\beta = 0.02$, ns) were both insignificant.

2.4.2 Robustness tests

Several additional analyses were performed to test for robustness. First, the model was estimated using an ordinary least squares (OLS) estimation approach. Three separate models for social, environmental and economic performance were estimated, including owner/manager characteristics and dynamic capabilities as independent variables. The results showed that the corresponding OLS estimation did not differ from the SEM estimates either in terms and signs or in significance of the estimated parameter coefficients.

Second, whether the results remained robust for an alternative measure of the owner/manager's perception of sustainability was tested. The analysis was repeated using only one item: 'I am likely to lose rather than gain by actions related to sustainability', which did not affect the SEM results.

Third, the possibility of non-linear relationships between the variables of interest was investigated. There might have been non-linear relationships, for example, because a focus on external integration may, at a certain point, result in a negative influence on economic performance due to the amount of effort and costs required for SMEs to maintain these processes. The estimation results for this robustness test did not indicate any statistically significant non-linear relationships.

2.5 Discussion

If they are to contribute to the sustainable development of the planet, SMEs must find approaches that simultaneously drive social, environmental and economic performance (Moore & Manring, 2009). This study investigated the relationship between dynamic capabilities and the sustainability performance of SMEs. The results advance the debate about SME sustainability in significant ways.

First, this research addressed the debate in recent sustainability literature regarding the ability or inability of SMEs to implement social, environmental and economic objectives (Aragon-Correa et al. 2008; Dyllick & Hockerts, 2002; Hockerts & Wüstenhagen, 2010). The study is among the first to construct a framework that includes these environmental, social and economic aspects of SME performance, extending current research by addressing whether and how SMEs might develop the necessary capabilities to simultaneously drive the three aspects of performance. This study indicated, theoretically and empirically, that external integrative dynamic capabilities positively relate to all three dimensions of sustainability performance in SMEs. This finding provides an important rationale for how SMEs might overcome barriers to the implementation of sustainability by developing appropriate organizational capabilities and advances current research (e.g., Biondi & Iraldo, 2002; Johnson & Schaltegger, 2017; Siedel et al. 2009) by revealing that

even resource-constrained SMEs can simultaneously address the three pillars of sustainability.

Second, in contrast to the positive relationship found between external integrative dynamic capabilities and sustainability performance, the results indicated an insignificant relationship between internal integrative dynamic capabilities and the social and economic performance of SMEs. The results even showed a negative relationship between internal integrative dynamic capabilities and the environmental performance of the SMEs, contradicting the corresponding hypothesis. The effects that were found are intriguing, especially considering the dominant view in the literature that employee cooperation and trust are important drivers of sustainability (Inigo et al., 2017). However, there is a potential explanation for the findings. Previous research has shown that embracing sustainability requires major innovation and often demands the transformation of the entire method of operation (Eccles & Serafeim, 2013). High levels of internal integration among employees may not increase the ability of the company to make substantial changes and move towards sustainability, as employees may be reluctant to change and show limited out-of-the-box thinking (Morrison, 2011). High levels of internal integrative dynamic capabilities may even lead to lower environmental performance, as environmental performance is often less directly tied to SME legitimacy and competitive advantages (Simpson, Taylor and Barker, 2004). Therefore, environmental performance might be included less-often in the mindset of employees and managers, which means that to contribute to environmental performance, employees must be able to deviate from the conventional mindset and share new ideas. For instance, it has been suggested that to contribute effectively to environmental action, employees must be able to think individually and operate freely and independently (Daily, Bishop & Steiner, 2007). A high level of internal integrative dynamic capabilities may limit this ability of employees (Morrison, 2011) and potentially cause a 'competency trap' in which the organization becomes better at conventional processes without developing the necessary processes for environmental performance (Tallman, 2003). These findings add value to the sustainability literature (e.g., Daily & Huang, 2001; Inigo et al., 2017) by highlighting the ambiguous role of stand-alone internal integration processes in relation to sustainability performance. In contrast to the conclusions drawn by Arend (2014), the results of the present study imply that general dynamic capabilities alone may not be sufficient to simultaneously drive economic, social and environmental performance in SMEs.

Third, this study contributes to the sustainability and dynamic capabilities literature by offering a fine-grained and nuanced theoretical framework. While some scholars have addressed dynamic capabilities for sustainability in SMEs (Arend, 2014), there has not been much discussion about which types of dynamic capabilities might be particularly useful in specific situations faced by SMEs (Bos-Brouwers,

2010). The findings of this study further develop previously adopted frameworks (e.g., Arend, 2014; Marcus & Anderson, 2006) by revealing that integrative dynamic capabilities, in particular, are important for sustainability performance in SMEs. The results of the present study showed that SMEs possessing external integrative dynamic capabilities had an important advantage in relation to sustainability performance, while possessing internal integrative dynamic capabilities did not provide such an advantage. These results highlight that different types of dynamic capabilities have different effects on sustainability performance in SMEs, supporting the need for a nuanced framework.

Fourth, this paper further adds to the sustainability and leadership literature (e.g., Patzelt & Shepherd, 2012; Revell, Stokes & Chen, 2010) by investigating the indirect and direct roles of owners/managers in the sustainability performance of SMEs. Some researchers have argued that the capabilities, values and attitudes of owners/managers are highly influential factors in determining whether SMEs embrace environmental and social practices (Perez-Sanchez, Barton & Bower, 2003). However, other researchers have found that the generally positive attributes of owners/managers rarely translate into concrete sustainability efforts (Revell, Stokes & Chen, 2010). This study is among the first to develop and test, in detail, the direct and indirect links between owners/managers and all three pillars of sustainability performance in SMEs. It was found that while managerial attributes may not always be directly linked to all three pillars of sustainability in SMEs, there are indirect links through dynamic capabilities. These findings highlight the indirect influence of owner/managers on all three pillars of sustainability performance in SMEs.

2.5.1 Managerial implications

This study provides valuable information to SMEs that wish to address their sustainability performance. First, SMEs must realize that they can address all three pillars of sustainability (Aragon-Correa et al, 2008) by fostering similar capabilities. This study takes a first step in this direction by showing that all three pillars of sustainability performance can benefit from processes that integrate the sustainability knowledge of suppliers, customers and other external partners. Given the important role of dynamic capabilities, SMEs should intentionally build and enhance their dynamic capabilities to drive their sustainability performance (Arend, 2014).

Second, this study showed that SMEs may need to extend their view beyond internal processes to enhance their sustainability performance. Solely addressing internal policies and employees may not be sufficient to address all three pillars of sustainability. Therefore, SMEs need to integrate their suppliers, local communities and customers into their approaches to sustainability (Klewitz & Hansen, 2014). Furthermore, this study showed that general processes that integrate employees

are not sufficient to drive sustainability performance. When translated into a sustainability context, such integrative processes may offer important advantages. SMEs aiming to increase their sustainability performance may thus largely benefit from re-evaluating their dynamic capabilities in light of sustainability.

Third, SMEs and governments must understand the importance of owners/managers in fostering sustainability performance. Even when direct impacts seem absent, owners/managers may have important indirect effects on the sustainability performance of their organizations. SMEs transitioning towards sustainability should start by evaluating their leadership. Governmental programmes aiming to increase the sustainability performance of SMEs might invest in training programmes for corporate leaders to increase their sustainability knowledge.

2.5.2 Limitations and future research

There were several limitations within this study, which point to potential areas for future research. First, the measures used were constrained by the information that could be obtained from the survey. Driven by previous research, this study relied on outcome measures for the internal and external integrative dynamic capabilities of the SMEs. Although the measures offered unique data about the dynamic capabilities of the SMEs, there were still trade-offs. Other possible methods, such as qualitative analysis, might offer more nuance in the measurement of dynamic capabilities. The measurements used are a potential limitation of this study, but nonetheless, the data are both unique and relevant to the research aim of this paper.

Another issue pertains to the sample adopted in this research. This study focused on a selection of firms that conformed to the selection criteria with regard to location, size and ownership. Future research could increase the sample size and include multiple countries, cultures and industry effects. This study offered points of departure for studies on the dynamic capabilities for sustainability performance in other contexts.

Third, the data for this study was constrained by the time frame, which may have caused endogeneity. This study relied on the strategic management perspective on dynamic capabilities (Zahra et al., 2006) to support the hypotheses and results. Nonetheless, the relationships found may have been strengthened or weakened by including multiple points in time. Additional research is needed to take into account the developments in sustainability performance and the long-term effects of dynamic capabilities using longitudinal data.

Fourth, driven by theory, this study focused on dynamic capabilities and sustainability performance, adopting a meta-level view of the organization. The relationships found may have been strengthened or weakened by including more

specific processes such as innovation or other organizational factors. Additional research is needed to take into consideration the dynamics of organizational capabilities and sustainability performance. Furthermore, future research could translate owner/manager characteristics into a sustainability context, investigating, for instance, the effects of sustainability leadership on the sustainability performance of SMEs.

2.6 Conclusion

This study addressed the debate in the recent sustainability literature concerning the ability/inability of SMEs to incorporate social, environmental and economic goals. Due to the conflicting nature of these goals and resource constraints, SMEs may not be able to simultaneously address all three pillars of sustainability performance. By contrast, recent evidence has suggested that SMEs can act as drivers of all three pillars of sustainability performance. The contribution of this study is that it investigated whether and how SMEs can overcome their resource constraints and develop the necessary capabilities to simultaneously drive social, environmental and economic performance. This study theoretically advanced the sustainability literature by presenting new hypotheses and applying insights from the dynamic capabilities perspective. Evidence was found for a positive relationship between external integrative dynamic capabilities and all three pillars of sustainability performance in SMEs.



3

The impact of managers and network interactions on the integration of circularity in business strategy

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Abstract

Integrating circularity in business strategy is difficult to achieve for companies as it requires impactful changes in core business processes. While research has focused on identifying key barriers, little is known about the organizational attributes that can assist businesses in integrating circularity in their strategies. The purpose of this study is to investigate the implications of organizational managers and network interactions for the integration of circularity in business strategy. Through using survey data from 627 SMEs in the Netherlands, this study shows that managers who interpret circularity as an opportunity can have a positive direct and indirect effect on the integration of circularity in a company's strategy. The results furthermore highlight the importance of circular network interactions for the integration of circularity in business strategy. This paper contributes to recent calls for more empirical research into the integration of circularity and offers relevant insights for companies aiming to integrate circularity.

Keywords: Circular economy, strategic issue interpretation, circular networks

3.1 Introduction

Researchers are increasingly focusing on investigating the successful integration of circularity in business strategy which can enable companies to contribute to the sustainable development of our planet (Bocken et al., 2017; Kirchherr et al., 2017; Urbinati et al., 2017). The circular economy has been defined as an economic system that replaces the 'end-of-life' concept with reducing, reusing, recycling and recovering materials in production, distribution and consumption processes (Kirchherr et al., 2017). Integrating circularity in a company's strategy involves establishing a long-term vision, setting clear targets and assigning responsibilities for circularity (Liu & Bai, 2014; Pheifer, 2017). This can lead to multiple benefits including environmental benefits, such as a decrease in natural resource depletion, and social benefits, including the creation of employment (Geissdoerfer et al., 2018; Murray et al., 2017). A recent paper by the Ellen MacArthur Foundation (2019) shows for instance that the adoption of circularity could help reduce global emissions by 40% in 2050.

Research has highlighted that a fundamental shift in every aspect of how businesses are conducted is needed in order to successfully integrate circularity in business strategy (Bocken & Short, 2016; Urbinati et al., 2017). Transitioning towards a circular economy represents change that requires new ways of doing business in the long-term (Lieder & Rashid, 2016). It is a new way of thinking, focusing on value preservation, where materials from a discarded product maintain their original quality, and achieving growth without expending resources (Potting et al., 2017). Change in core business processes, such as the value proposition and forward supply chain activities, is thus needed in order to integrate circularity in business strategy (Urbinati et al., 2017). However, research has shown that making such impactful changes is difficult to achieve for many businesses (Bocken et al., 2017; Ormazabal et al., 2018; Pheifer, 2017). Ormazabal et al. (2018) found for example in a survey among 95 Spanish SMEs, that the adoption of long-term strategic approaches towards circularity was limited. This is likely caused by the barriers companies face in the integration of circularity. These include cultural barriers, such as a hesitant company culture, regulatory barriers, including a lacking global consensus, technical barriers, for example a need for new technologies, and market barriers, such as high upfront investment costs (Kirchherr et al., 2018; Rizos et al., 2016). These barriers may for instance hamper the development of circular products and services, prevent circular products from competing with their linear equivalents and complicate the adoption of recycled materials (Kirchherr et al., 2018).

Although researchers have increasingly focused on the barriers firms face in the integration of circularity (Kirchherr et al., 2018; Ormazabal et al., 2018; Rizos et al., 2016), little attention has been paid to the organizational attributes that can help

companies to successfully overcome these barriers. This is an important limitation, as the barriers combined can lead companies to only adopt circularity in the form of ad-on short-term practices, such as one-time waste reduction activities, and not integrate circularity in their strategies (Ormazabal et al., 2018; Pheifer, 2017; Stewart et al., 2018). This will in turn limit the shift of businesses towards value preservation and consequently also their ability to generate environmental, economic and social benefits (Baumgartner et al., 2010; Pheiffer, 2017). Researchers have therefore attributed the limited progress in the integration of circularity in business strategy to the cultural, regulatory, market and technical barriers faced by companies (e.g., Kirchherr et al., 2018; Pheifer, 2017; Rizos et al., 2016; Stewart et al., 2018).

Previous research has highlighted that organizational managers (e.g., Rizos et al., 2016; Ünal et al., 2018) and networks (e.g., Sousa-Zomer et al., 2018; Walls & Paquin, 2015) may be important for the adoption of circularity in businesses. It has for example been emphasized that managers willing to embrace the circular economy can aid the transition of corporations towards circularity (Ünal et al., 2018). Furthermore, research has shown that organizational networks are essential in order to close resource loops and keep them closed over time (Sousa-Zomer et al., 2018). It is however unclear how these two organizational attributes can enable companies to overcome the previously mentioned barriers and integrate circularity in their strategies. It has for instance been shown that managers are becoming increasingly positive about the circular economy, however it is unclear if and how this translates in the integration of circularity in business strategy (Liu & Bai, 2014; Pheiffer, 2017; Rizos et al., 2016).

The purpose of this study is therefore to investigate the implications of organizational managers and circular network interactions for the integration of circularity in business strategy. We contribute to the circular economy literature by showing how two organizational attributes, managerial interpretations of circularity and circular network interactions, can assist businesses (and SMEs in particular) in successfully integrating circularity in their strategies. Our findings highlighted that both of these attributes were positively related to the integration of circularity in an SME's strategy. Furthermore, our results highlighted that an essential role for managers was to encourage circular network interactions, which could eventually lead to the integration of circularity in business strategy. However, our findings also showed that circular network interactions only partially mediated the relationship between managerial interpretations of circularity and the integration of circularity in a company's strategy. This indicates that managerial interpretations were both directly and indirectly related to the integration of circularity in a company's strategy. Finally, our results indicated that a manager's level of holistic thinking did not strengthen the relationship between positive managerial interpretations of circularity and circular network interactions.

3.2 Literature and hypotheses

3.2.1 The circular economy

The 4R framework of reduce, reuse, recycle and recover is often adopted to describe the different circular economy principles that can be implemented by businesses (Kirchherr et al., 2017). Reduce refers to increasing efficiency in product manufacturing and usage by consuming fewer natural resources and materials. Reuse includes reusing discarded products which are still in good condition. Recycle addresses processing materials to obtain the same or lower quality. Finally, recover refers to the incineration of materials with energy recovery. Recently, extensions to the 4R framework have been made to include other circular principles as well, including refuse, rethink, repair, refurbish, remanufacture and repurpose (Potting et al., 2017). These principles also fit with the cradle-to-cradle concept in which the focus is on designing products that, after their useful lives, become resources for new products (McDonough and Braungart, 2002). Successfully integrating circular principles in business strategy often requires changes in core business processes including (1) forward supply chain activities, (2) value propositions, (3) relationships with customers, and (4) flow of revenues (Urbinati et al., 2017). For example, integrating return schemes for the reuse of discarded products requires a change in technologies, policies, organizational culture, and the way businesses interact with their supply chain partners (enabling reverse logistics) (Repo & Anttonen, 2017). Through making these changes, circularity can become a central part of the business instead of an optional extra (Potting et al., 2017; Urbinati et al., 2017).

The integration of circularity in business strategy may be difficult to achieve due to several barriers. Kirchherr et al. (2018) identified, through surveys and expert interviews among European businesses, multiple barriers which are faced by firms in the implementation of circularity (table 3.1). These barriers pose an important obstacle to the integration of circularity, especially in the context of SMEs. First, cultural barriers, such as lacking consumer interests and a hesitant company culture, may hamper the development of circular products and services as they are often difficult to change (Kirchherr et al., 2018). Managing these cultural barriers is especially difficult for SMEs, as SMEs are often more dependent on their supply chain partners and experience more difficulties in addressing the mindsets of consumers and partners (Luthra et al., 2017; Rizos et al., 2016). Second, market barriers, such as low prices for virgin materials, prevent circular products and services from competing with their linear equivalents (Mont et al., 2017). Furthermore, due to the large investments needed and limited funding available for circular business models, the first companies to implement circularity will likely lose money (Kirchherr et al., 2018). The severity of these market barriers is increased in the context of SMEs as SMEs are more sensitive to the additional costs resulting from circularity compared to large businesses (Rizos et al., 2016). Third, multiple regulatory barriers

can hinder the integration of circularity as they may complicate the adoption of recycled materials and prevent the cascading of materials across international borders (Kirchherr et al., 2018; Pheifer, 2017). Large companies may be in a better position to influence and get around these regulations compared to SMEs due to their larger stake in the market and more extensive resource base (Rizos et al., 2016). Fourth, technical barriers, such as limited circular designs and few large-scale demonstration projects, may hinder the development of circular products and services as technological development is often slow (Kirchherr et al., 2018; Pheifer, 2017). These technical barriers may be difficult to manage for SMEs due to their limited technological know-how and dependence on available technologies in the market (Rizos et al., 2016).

Table 3.1 Barriers firms face in the implementation of circular principles ^a

Aspect	Barrier
Cultural	<ul style="list-style-type: none"> • Hesitant company culture • Limited willingness to collaborate in the value chain • Lacking customer awareness and interest • Operating in a linear system
Regulatory	<ul style="list-style-type: none"> • Limited circular procurement • Obstructing laws and regulations • Lacking global consensus
Market	<ul style="list-style-type: none"> • Low virgin material prices • Lacking standardization • High upfront investment costs • Limited funding for circular business models
Technological	<ul style="list-style-type: none"> • Lacking ability to deliver high quality remanufactured products • Limited circular designs • Too few large-scale demonstration projects • Lack of data e.g., on impacts

^a derived in adapted form from Kirchherr et al. (2018)

The different barriers may lead business to implement circularity in the form of ad-on short-term practices, instead of integrating circularity in their strategies, as short-term practices do not require impactful changes in core business processes (Kirchherr et al., 2018; Pheifer, 2017). Pheifer (2017) found for instance that most companies included in his study had not integrated circularity in their strategy, mission, vision and key performance indicators. Kirchherr et al. (2018) identified that three cultural barriers, 'lacking consumer interest and awareness', 'hesitant company culture' and 'operating in a linear system', appeared as main barriers for the implementation of circularity in their study. These findings suggest that circularity may still be a niche discussion among sustainable development

professionals, which does not automatically translate into the successful integration of circularity in business strategy. Kirchherr et al. (2018) also identified that the different cultural, market, regulatory and technical barriers can reinforce each other. Low virgin material prices may for instance favour linear products, resulting in lacking customer interests in circular products, which can in turn lead to a hesitant company culture to develop such products.

3.2.2 Managerial interpretations of circularity

Researchers have started to explore the role of managers in the circular economy and reveal that managers can be important for the transition of businesses towards circularity (Rizos et al., 2016; Ünal et al., 2018). We draw on strategic issue interpretation literature to explore the impact managers can have on the integration of circularity in a company's strategy. Strategic issue interpretation literature focuses on the processes that determine the events and information that managers pay attention to and those that they ignore (Dutton et al., 1983). These processes, especially within ambiguous and complex contexts, involve fitting information into categories for understanding and action taking (Gioia, 1986). Through using cognitive frames managers can reduce complexity and ambiguity by selectively organizing and interpreting signals from the organizational context (Dutton & Jackson, 1987). Two categories in which managers fit strategic issues in order to reduce ambiguity are 'opportunities' and 'threats' (Jackson & Dutton, 1988). Managers who interpret a strategic issue as a threat will emphasize its negative aspects and the potential loss for the organization resulting from the issue. On the other hand, managers interpreting a strategic issue as an opportunity will focus on its positive aspects and potential gains. It has been demonstrated that these managerial interpretations can have a significant impact on the strategic actions an organization takes and the environmental strategy it chooses (Barr & Glynn, 2004; Dutton & Jackson, 1987; Jackson & Dutton, 1988; Sharma, 2000; Thomas et al., 1993). For example, Sharma (2000) found that managers who interpret environmental issues as opportunities have a positive influence on the implementation of voluntary environmental strategies in their organizations.

The integration of circularity is a relatively new consideration for managers (Ghisellini et al., 2016; Kirchherr et al., 2018), who may face a great deal of ambiguity in understanding the concept and its implications. This is caused by the significant changes in production and consumption patterns needed for the successful integration of circularity including the development of new products, technologies and policies (Kirchherr et al., 2017). Furthermore, complexity is increased as circularity often requires collaborations between multiple stakeholders who may have different perspectives on how closed materials loops can be best generated (Lazarcic & Valve, 2017). Given the high level of complexity and ambiguity involved in circularity, the treat and opportunity categorization of strategic issues is relevant.

Managers may interpret circularity as a threat due to its complex and innovative nature, which requires impactful changes and may potentially result in losses (Urbinati et al., 2017). For example, if a company integrates circularity through remaining ownership of its products, potential losses may occur due to uncertain product returns in terms of quality, quantity and timing (Shaharudin et al., 2017). On the other hand, managers may interpret circularity as an opportunity due to its potential gains such as reduced material costs, access to new markets and higher environmental gains (Bocken et al., 2018; Stewart et al., 2018). For example, Mugge et al. (2017) found that businesses can address new markets and customer groups through the manufacturing of refurbished mobile phones.

We propose that managers who interpret circularity as an opportunity may be able to positively influence the integration of circularity in their company's strategy in two ways. First, building on the treat-rigidity hypothesis (Staw et al., 1981), we argue that managers who interpret circularity as a threat are likely to respond in domains over which there is greater organizational control in order to offset their negative perceptions. These managers are therefore unlikely to seek new and innovative solutions because these solutions can disrupt existing production and operating systems (Sharma, 2000; Thomas et al., 1993). Furthermore, managers who interpret circularity as a threat may be more likely to adopt a passive and defensive search approach due to their fear of negative outcomes (Nutt, 1984; Sharma, 2000). Engaging in an open search for new solutions is important for the integration of circularity in a company's strategy as this requires radically new approaches were relying on existing policies and processes may not be sufficient (Bocken et al., 2018; Urbinati et al., 2017). We propose that managers who interpret circularity as an opportunity likely act in opposite ways compared to managers who interpret circularity as a threat. It has for instance been found that the categorization of issues as opportunities results in a more open search for solutions compared to the categorization of issues as threats (Nutt, 1984; Sharma, 2000). We therefore propose that managers who perceive circularity as an opportunity will be more likely to engage in an open search for new and innovative circular solutions which can assist them in developing an alternative vision and finding new ways to integrate circularity in their company's strategy.

Second, building on the treat-rigidity hypothesis, we argue that managers who interpret circularity as a threat are more concerned about efficiency (Staw et al., 1981) and therefore focus attention on issues internal to the organization which can result in cost cutting and budget tightening (Thomas et al., 1993). The mobilization of action towards circularity, for instance the allocation of employees, time and resources to circular activities, is important for the establishment of clear targets and responsibilities for circularity (Pheifer, 2017; Urbinati et al., 2017). We propose that managers who interpret circularity as an opportunity likely act in opposite ways

from managers who interpret circularity as a treat and are therefore more likely to mobilize action towards circularity which can assist them in integrating circularity in their company's strategy. It has for instance been argued that managers who interpret circularity as an opportunity may be more likely to mobilize action because of their confidence in achieving positive outcomes (Dutton et al., 1983; Ginsberg, 1988). These insights lead to the following hypothesis:

Hypothesis 1: The manager's interpretation of circularity as an opportunity is positively related to the integration of circularity in a company's strategy.

3.2.3 Circular network interactions

Integrating circularity in business strategy likely requires increased interactions with different stakeholders due to the collective nature of the circular economy. The circular economy focuses on value preservation instead of value capture for the individual firm (Jonker et al., 2020). Value preservation is a collective value which can only be realized when all actors in a value chain collaborate to create various types of resource loops through recycling, conversion and the substitution of materials (Jonker et al., 2020; Jonker & Faber, 2018). For example, in order for businesses to close resource loops, manufacturers need to adopt reusable materials and customers have to return products. The involvement of multiple different stakeholders, such as suppliers, manufacturers and customers, in inter-firm networks is thus needed (Ghisellini et al., 2016). This means that businesses need to organize circularity at an inter-organizational level instead of organizing circularity in an organization-centric environment (Jonker et al., 2020).

Literature on multi-stakeholder networks investigates how companies can increasingly collaborate in networks involving different stakeholders (Roloff, 2008; Reypens et al., 2016). Multi-stakeholder networks can involve actors from business, civil society and governmental institutions, who come together in order to find a common approach to an issue that affects them all and that is too complex to be addressed effectively without collaboration (Roloff, 2008). Through interacting with each other, the involved stakeholders can grasp the complexity of the issue, learn about their interdependencies, and develop shared perspectives and collaborative strategies (Clarke & Fuller, 2010; Roloff, 2008; Warner, 2006). These collaborative strategies involve the joint determination of a vision and broad collective goals for addressing a given issue (Clarke & Fuller, 2010). Interacting with each other and formulating collaborative strategies first, can assist the involved stakeholders in specifying organizational-level actions and strategies related to the issue (Clarke & Fuller, 2010; Reypens et al., 2016). It enables companies to get new and innovative ideas for their individual strategies regarding the issue or identify how to put existing ideas into action through pooling and sharing resources with other stakeholders (Clarke & Fuller, 2010; Hardy et al., 2003). For example, Reypens et al. (2016) found

that participation in a multi-stakeholder network allowed companies to develop company specific strategies related to the issues being explored as it broadened their vision, challenged their procedures and identified new opportunities.

We propose that adopting a multi-stakeholder network approach is important for the integration of circularity in a company's strategy, as circularity requires the collaboration of several stakeholders and is too complex to be handled by one actor alone (Ghisellini et al., 2016; Jonker et al., 2020). There are three key arguments that explain why firstly interacting in circular networks can assist companies in integrating circularity in their strategies. First, interacting with different stakeholders can assist companies in identifying how knowledge, resources and responsibilities can be pooled and shared in order to close resource loops and keep them closed over time (Ghisellini et al., 2016; Hardy et al., 2003). This knowledge can enable companies to formulate and integrate company specific targets and responsibilities as it assists them in taking interdependencies into account that may not have been apparent before (Reypens et al., 2016).

Second, interacting with diverse stakeholders on the topic of circularity can enable firms to identify collaborative approaches for value preservation (Jonker & Faber, 2018). These collaborative approaches can in turn assist companies in determining and integrating a company specific vision, responsibilities and targets necessary for value preservation (Clarke & Fuller, 2010). Without interacting with key stakeholders, firms may not be able to individually develop and integrate a long-term vision and targets necessary for achieving the collective goal of value preservation (Jonker et al., 2020). The case of Kalundborg, an industrial symbiosis network in Denmark including several private and public entities, highlights the importance of interacting with different stakeholders and establishing a collaborative approach. The different by-product exchange projects in Kalundborg sprung initially from social interactions among different stakeholders in which key challenges the organizations faced were discussed (Valentine, 2016). These interactions led to a collaborative approach focused on industrial symbiosis, which in turn laid ground for the formulation and integration of circular actions and strategies at the individual stakeholders, such as an oil refinery using steam from a local power plant (Jacobsen & Anderberg, 2005; Valentine, 2016).

Third, interacting with different stakeholders can assist companies in dealing with the barriers they face in the implementation of circularity. It can for instance help them to address the linear mindset of supply chain partners and increase the awareness and concerns of consumers for circularity (Jonker et al., 2020; Ormazabal et al., 2018; Östlin et al., 2008). For example, Jonker et al. (2020) highlight that companies can create support for circularity by involving the government, market

and customers in formulating a collaborative approach, which can function as the basis for individual firm strategies. These insights lead to the following hypothesis:

Hypothesis 2: Circular network interactions are positively related to the integration of circularity in a company's strategy.

Literature on multi-stakeholder networks suggests that the ability of managers to establish interactions and build trust with different stakeholders is important for the establishment of successful multi-stakeholder networks (Dentoni & Veldhuizen, 2012). We propose that organizational managers who interpret circularity as an opportunity are likely to be able to fulfil this role. First, these managers may be more likely to become involved in new interactions with different stakeholders on the topic of circularity. It has for instance been highlighted that managers who interpret strategic issues as opportunities are more likely to initiate actions directed at the external environment that might otherwise be perceived as too risky, such as interactions with new stakeholders (Dutton & Jackson, 1987; Thomas et al., 1993). In contrast, managers who interpret circularity as a threat may be less likely to engage in new interactions with stakeholders as they focus on taking internally directed actions (Dutton & Jackson, 1987; Staw et al., 1981). These internally directed actions can assist managers in dealing with their negative perceptions, as they perceive such actions to be associated with lower levels of risk compared to externally directed actions (Dutton & Jackson, 1987). Furthermore, perceptions of threats can intensify concerns about efficiency and in this way focus attention on issues and stakeholders internal to the organization (Thomas et al., 1993).

Second, managers with a positive interpretation of circularity may be more likely to build strong relationships and trust with their stakeholders on the topic of circularity. Engaging in early and positive interactions with stakeholders on the topic of circularity can for instance assist in building trust by highlighting future possibilities and opportunities (Quinn & Dalton, 2009). Furthermore, managers with a positive interpretation of circularity can inspire their stakeholders to get involved in circularity as well, leading to enlarged circular networks (Waligo et al., 2013). Managers who perceive circularity as a threat may instead highlight 'doom and gloom' scenario's which may neither inspire nor encourage the establishment of strong relationships on the topic of circularity (Quinn & Dalton, 2009). These insights lead to the following hypothesis:

Hypothesis 3: The manager's interpretation of circularity as an opportunity is positively related to circular network interactions.

In conclusion, we propose that managers who interpret circularity as an opportunity may be more likely to engage in an open search for innovative circular

solutions and mobilize action towards circularity. This can assist these managers in the integration of circularity in their company's strategy. However, an open search and the mobilization of action alone may not be sufficient for the integration of circularity in a company's strategy due to the importance of stakeholder interactions and the establishment of collaborative approaches (H2). We therefore propose that the positive influence of managers on the integration of circularity may not only take place directly, but also indirectly via their influence on circular network interactions. For example, a manager's positive interpretation of circularity and open search for circular solutions may not only directly enable the development of an alternative vision and the integration of circularity in a company's strategy. It may also lead to increased interactions with diverse stakeholders and the development of a collaborative approach, which can in turn assist the firm in developing an alternative vision and integrating firm-level targets and responsibilities for circularity. These insights lead to the following hypothesis:

Hypothesis 4: The relation between the manager's interpretation of circularity as an opportunity and the integration of circularity in the company's strategy is partially mediated by circular network interactions.

3.2.4 Manager's holistic thinking

Some managers who interpret circularity as an opportunity may be better able to encourage the development of circular network interactions compared to others. This is due to the fact that some managers will be better able to recognize the importance of network interactions for the integration of circularity (Zott & Amit, 2010). Holistic thinking has been argued to help individuals appreciate the interconnectedness of elements and understand the 'bigger picture' including the relationships between objects (Monga & John, 2008). Holistic thinking has been defined as "an orientation to the context or field as a whole, including attention to relationships between a focal object and the field, and a preference for explaining and predicting events on the basis of such relationships" (Nisbett et al., 2001, p.293). Holistic thinking has often been contrasted against analytic thinking which involves "the detachment of the object from its context and a tendency to focus on attributes of the object" (Nisbett et al., 2001, p.293). This difference has for example been shown by Morris and Peng (1994), who showed participants pictures of fish moving in relation to each other. Analytic thinkers viewed the behaviour of individual fish as being caused by internal factors such as health and size, whereas holistic thinkers viewed the behaviour of the fish as being caused by contextual factors including the movements of the other fish. Most research has focused on comparing individuals from Westerns and Eastern cultures, where individuals from Western cultures tend to be analytic thinkers and individuals from Eastern cultures tend to be holistic thinkers (Choi et al., 2007). However, researchers are also increasingly exploring the

variation within cultures and the effects of holistic thinking in a business context (e.g., Monga & John, 2008).

Within the circular economy, emphasis has been placed on the importance of holistic perspectives and approaches. This is due to the fact that circular principles operate in wider systems including different partners in inter-firm networks (Ghisellini et al., 2016). Managers have been argued to play an important role in recognizing the embeddedness of circularity within this network which requires them to abandon isolated and individual choices (Zott & Amit, 2010). Following the previous insights, we argue that holistic thinking can assist managers in evaluating circularity at the network level and in recognizing interdependencies among different network partners. Therefore, we propose that managers with a positive interpretation of circularity that exhibit a high level of holistic thinking may be more likely to encourage circular network interactions. These managers may be more likely to engage in new interactions with network partners with the aim to establish long-term collaborative relationships as they recognize the importance of such relationships for the successful integration of circularity (Monga & John, 2008). Furthermore, these managers may be more likely to mobilize externally directed actions that help establish such relationships, such as the organization of networking events. In contrast, managers with a low level of holistic thinking may interact with network partners but likely focus on finding individual firm solutions, such as internal waste reduction programs. This will likely lead to one-time interactions with suppliers or knowledge institutions instead of long-term relationships with different stakeholders. These insights lead to the following hypothesis:

Hypothesis 5: The relation between the manager's interpretation of circularity as an opportunity and circular network interactions is positively moderated by the manager's holistic thinking.

3.3 Data and method

3.3.1 Research design

Primary data to test the hypotheses was collected in a questionnaire which was designed in four steps. Firstly, the circular economy, strategic issue interpretation and network literature was reviewed to identify relevant measures and items. As limited measures on circular economy constructs were available in the scientific literature, a review of the practice literature was conducted as well including circular economy studies from research institutes such as the European Commission and the Ellen McArthur Foundation. Second, the questionnaire was developed following recommendations on survey design by Krosnick and Presser (2010) and Hinkin (1995). These included the use of simple syntax, relevant and clear scales, and an appropriate order of questions. Third, the questionnaire was translated from

English to Dutch and the first version was tested in a panel of six managers and two circular economy scholars. Pretesting was conducted in order to minimize potential bias, to prevent measurement errors and to ensure that the questionnaire was understood by the target respondents (Podsakoff et al., 2003). Adjustments were made regarding the clarity and understandability of the questions. Fourth, the enhanced questionnaire was tested among 30 companies to verify the constructs and assess their validity and reliability.

Figure 3.1 presents the research model of this study.

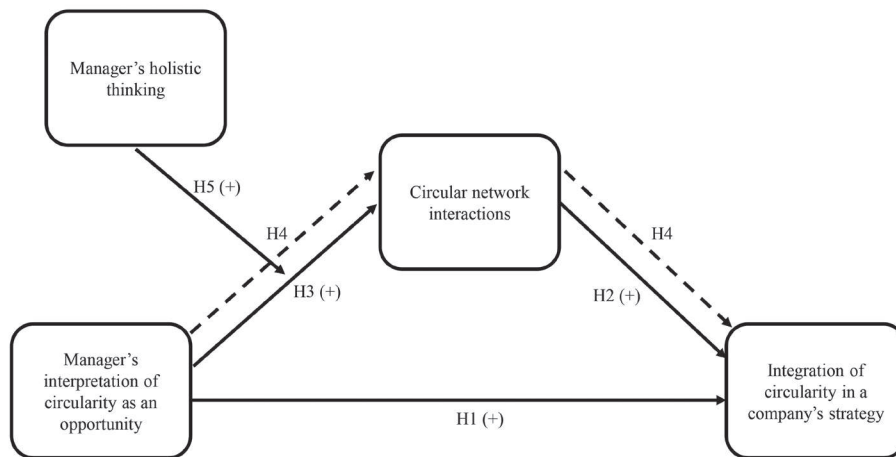


Figure 3.1 Research model

3.3.2 Participants and procedures

The population of this study included Dutch-owned SMEs (< 500 employees; USITC, 2010). We focused on SMEs in this study as SMEs represent the majority of businesses in most European countries and contribute significantly to environmental problems, including 60-70% of industrial waste and pollution and 40-45% of all industrial air emissions (OECD, 2015; Tounés et al., 2019). Therefore, the adoption of circularity by SMEs is important and could lead to a significant reduction in global pollution and emissions (Ellen MacArthur Foundation, 2019; Ormazabal et al., 2018). However, SMEs are facing difficulties in the integration of circularity due to their relatively low level of financial resources and small resource base. This can cause barriers, such as high upfront investment costs, limited funding, operating in a linear system and the ability to deliver high-quality remanufactured products, to be more difficult to manage in the context of SMEs (Ormazabal et al., 2018; Rizos et al., 2016). Therefore, the context of SMEs is relevant for the objectives of this study.

A non-probabilistic sampling strategy was adopted, reducing the sample to SMEs in Friesland, a northern province of the Netherlands with approximately 650,000 inhabitants. Respondents from the province were selected to ensure that the enterprises faced similar institutional environments regarding circularity. For this purpose, a random sample of 6,000 SMEs (from a total of approximately 20,000 SMEs in the province) from the province of Friesland was acquired. For each of the targeted companies, the manager of the firm was identified in order to personalize the invitation letter. Data were collected in cooperation with the Frisian province which was interested in collecting information on the uptake of circularity among SMEs in the region. A cover letter signed by the Frisian province was added in order to explain the dual purpose of the questionnaire to the respondents. This letter and the beginning of the questionnaire both included an explanation of the circular economy following the definition of the Ellen McArthur Foundation ('The circular economy is an industrial economy that is restorative and regenerative by intention and design through reducing, reusing, recycling and recovering waste and increasing reusability in production and consumption'). Data were collected between November and December 2018. Questionnaires were sent out to all corporations, followed by a reminder four weeks later. Only 24 questionnaires were not delivered, primarily due to unknown relocation or bankruptcy of the company (0.4%). In total, 783 firms responded to the questionnaire, with 40 responses unusable because the questionnaires were incomplete (> 10% missing data), leaving 743 usable responses. This represents a 12.43% response rate with respect to the 5,976 questionnaires that were successfully distributed. We had to exclude multiple responses from our research because the main location of the company was outside of Friesland (2 cases), the company size was either too small (< 2 employees, 80 cases) or too large (> 500 employees, 4 cases), or the respondent was not the manager of the company (30 cases). This resulted in 627 usable responses. The average number of employees in the organizations was 23.29 (SD = 59.02), and the average organizational age was 45.14 years (SD = 42.04). The average age of the respondents was 52.36 years (SD = 9.78), and their average tenure was 22.74 years (SD = 12.85).

The early and late respondents in the survey were compared in order to estimate the potential for nonresponse bias. Adopting t-tests, no significant differences in organizational size, age, the manager's interpretation of circularity, circular network interactions and the integration of circularity in the company's strategy were found between early and late respondents. Several recommended procedural methods to reduce the risk of common method bias were adopted including: (1) ensuring anonymity, (2) decreasing the risk of social desirability bias, (3) carefully evaluating all survey items, and (4) distancing dependent and independent variables with a logical order from each other in the survey (Podsakoff et al., 2003). We aimed to decrease the risk of social desirability bias by ensuring the anonymity of the respondents and by assuring respondents that there were no right and wrong answers (Podsakoff et

al., 2003). We additionally adopted the method described by Krosnick and Presser (2010) that attempts to save face for respondents by legitimating the less desirable option. We did this by specifying in the invitation letter and questionnaire that the integration of circularity can be difficult to achieve for SMEs and that we were interested in both positive and negative experiences in order to find ways to help SMEs with the integration of circularity. Single-respondent bias was further limited, as the survey addressed small organizations and targeted managers as respondents (Arend, 2014). Confirmatory factor analysis (CFA) was performed to investigate whether all survey items were loaded on a 'common' method factor and to assess whether the data may have featured significant common variance. The CFA analysis yielded a poor model fit to the data, with $\chi^2(252) = 6728.95$, RMSEA = 0.21, CFI = 0.43 and TLI = 0.37, suggesting that common method bias was unlikely to be a problem in the data.

3.3.3 Measures

Manager's interpretation of circularity as an opportunity. To measure the manager's interpretation of circularity as an opportunity, an adapted version of the manager's interpretation of corporate sustainability developed by Thomas et al. (1993) was adopted. We adapted the measure by replacing corporate sustainability with circularity. After the probe 'To what extent do you...' items included: (1) 'perceive that benefits for my company will come from circularity', (2) 'label circularity as something positive for my company', (3) 'feel the future of my company will be better because of circularity', (4) 'label circularity as a potential gain for my company' ($\alpha = 0.93$). Managers responded to these items on a 7-point Likert scale ranging from 1 = 'Totally disagree' to 7 = 'Totally agree'.

Circular network interactions. Circular network interactions were measured using an adapted measure of inter-subsidary relationships by Hansen et al. (2005). This measure included two questions relating to the frequency of interactions with different subsidiaries and the strength of the relations between different subsidiaries. The measure was adapted to refer to the relationships between different network parties on the topic of circularity. The circular economy literature was reviewed in order to identify important parties in the implementation of circularity. These included: (1) suppliers, (2) consumers, (3) knowledge institutions, (4) network organizations, (5) colleague entrepreneurs, (6) competitors, and (7) the municipality (e.g., Ghisellini et al., 2016; Östlin et al., 2008). Managers were asked for each of these parties to identify: 'How frequently does your organization interact with this party on the topic of circularity?'. Managers responded to this question on a frequency scale ranging from 1 = 'Never' until 5 = 'Very frequently'. Second, managers were asked to identify for each of the parties: 'How close is the working relationship between your organization and this party on the topic of circularity?'. Managers responded to this question on a 5-point Likert scale ranging from 1 = 'Very distant' to 5 = 'Very close'.

For each party we computed Spearman's rho for the two questions relating to the frequency and strength of the relationships. Spearman's rho is a non-parametric test that can be used to measure the strength of the association between two variables (where a value of 1 means a perfect positive correlation and a value of -1 a perfect negative correlation). The Spearman's rho for all parties showed sufficient reliability (suppliers 0.70; consumers: 0.74; knowledge institutions 0.70; network organizations 0.73; colleague entrepreneurs 0.70; competitors 0.68 and the municipality 0.70). In line with Hansen et al. (2005), we computed the average of the two questions for all the parties and adopted these averages to create one measure for circular network interactions ($\alpha = 0.92$).

Integration of circularity in a company's strategy. To measure the integration of circularity in the strategies of the companies a measure from the grey literature was adopted (VBDO, 2015). After the prompt 'To what extent is circularity integrated in your company?' items included (1) 'My company has integrated circularity into strategy.' (2) 'My company has a long-term vision on circularity.' (3) 'My company sets targets for circularity.' (4) 'Progress against targets for circularity is clearly reported.' (5) 'It is clear who is responsible for circularity.' ($\alpha = 0.93$). Managers responded to these items on a 7-point Likert scale ranging from 1 = 'Totally disagree' to 7 = 'Totally agree'.

Holistic thinking. In order to measure the manager's level of holistic thinking a measure for the holistic thinking dimension locus of attention from Choi et al. (2007) was adopted. Following the prompt 'To what extent do you agree with the following statements?' items included (1) 'The whole, rather than its parts, should be considered in order to understand a phenomenon.' (2) 'The whole is greater than the sum of its parts.' (3) 'It is more important to pay attention to the whole context rather than the details' (4) 'It is not possible to understand the parts without considering the whole picture.' ($\alpha = 0.86$). Managers responded to these items on a 7-point Likert scale ranging from 1 = 'Totally disagree' to 7 = 'Totally agree'.

Control variables. Several control variables were included to control for alternative explanations of the relationships predicted by the hypotheses. Firstly, the potential relationships between the age and tenure of the managers and organizational outcomes were controlled for (Hambrick & Mason, 1984). Second, this study controlled for several organizational attributes that may influence the integration of circularity in a company's strategy including: organizational size, age, sector, market and financial performance (Ormazabal et al., 2018; Rizos et al., 2016). Finally, we controlled for the network commitment of the organization, which may influence how likely it is that an organization seeks advice from its network in strategic decision making (Ulaga & Eggert, 2004). The information for the control variables was collected in the survey including organizational size (the

natural logarithm of the number of employees), organization age (number of years operating), market (B2B; benchmark, B2C, both) and financial performance (average financial performance in the last three years, ranging from 1 = 'Very low' to 5 = 'Very high'). Network commitment was measured using an adapted (referring to the whole network) measure by Ulaga & Eggert (2004). Following the prompt 'To what extent do you agree or disagree with the following statements?' items included: (1) 'We are very committed to the relationships with actors in our network.' (2) 'The relationships with actors in our network are very important to our business.' (3) 'We intend to maintain the relationships with actors in our network indefinitely.' (4) 'The relationships with actors in our network deserve our business' maximum effort to maintain.' ($\alpha = 0.95$). Managers responded to these items on a 5-point Likert scale ranging from 1 = 'Totally disagree' to 7 = 'Totally agree'.

3.3.4 Data analysis

Both multiple regression analysis in StataSE 15 and conditional process analysis using the PROCESS macro in SPSS statistics 24 were adopted to test the hypotheses. Conditional process analysis has been adopted to study statistical models where the goal is to describe and understand the conditional nature of the mechanism or mechanisms by which a variable transmits its effect on another (Hayes, 2013). The SPSS macro PROCESS presented by Hayes (2013) allows for the estimation of indirect effects using bootstrapping procedures based on generating multiple random samples. Bootstrapping procedures have received increased attention as these test a model's predictive validity, make no normality assumption, and provide stronger accuracy in confidence intervals (Hayes, 2013). Conditional process analysis estimates the conditional indirect effects and generates bias-corrected 95% confidence intervals (CI) for the indirect effect. This analysis has been employed by various studies recently published in journals in the fields of business and management (e.g., Lu et al., 2019).

3.4 Results

The descriptive and correlation statistics for the variables are presented in table 3.2. Table 3.2 indicates that the integration of circularity in the company's strategy had a positive association with both the manager's interpretation of circularity and circular network interactions. The average for the manager's interpretation of circularity was on the higher end (5.62 on a 7-point scale), whereas the average for circular network interactions (2.13 on a 5-point scale) and for the integration of circularity in the company's strategy (3.75 on a 7-point scale) where on the lower end.

Table 3.2 Descriptive statistics and correlation matrix^a

	Mean	Sd.	1	2	3	4	5	6	7	8	9	10	11
1. Interpretation circularity	5.62	1.02	1.00										
2. Circular network interactions	2.13	0.82	0.27**	1.00									
3. Integration circularity	3.75	1.54	0.26**	0.68**	1.00								
4. Holistic thinking	5.05	1.16	0.17**	0.10**	0.11**	1.00							
5. Organizational age	44.47	41.51	0.00	0.15**	0.16**	0.08**	1.00						
6. Organizational size	23.13	58.54	0.14**	0.23**	0.16**	0.03	0.23**	1.00					
7. Manager age	52.26	9.82	-0.05	-0.06**	-0.02	0.03	0.07	-0.10*	1.00				
8. Manager tenure	22.60	12.80	-0.13**	0.03	0.10**	0.01	0.26**	-0.20**	0.57**	1.00			
9. Network commitment	5.45	1.17	0.22**	0.22**	0.21**	0.16**	0.01	0.16**	-0.08*	-0.11**	1.00		
10. Market^b	0.64	0.68	0.01	0.00	-0.05	-0.08*	-0.08*	-0.11**	0.06	0.03	-0.02	1.00	
11. Financial performance	5.00	1.11	0.14**	0.05	0.08**	0.10**	0.04	0.05	-0.10**	-0.10**	0.22**	0.00	1.00

N = 627

^aStandardized variables are used in correlations, but the actual values are reported in the descriptive information

^bDummy variable

* $p < 0.1$, ** $p < 0.05$

Hypotheses 1, 2, 3, and 5 were tested using an ordinary least squares (OLS) estimation approach in StataSE 15. Several models, with circular network interactions and the integration of circularity in the company's strategy as outcome variables, were estimated using standardized variables. Robust standard errors were adopted in the models to control for non-normality and heteroscedasticity. To test for a bias caused by collinearity among the variables, the variance inflation factors (VIF) were calculated for all models. The VIF values obtained ranged from 1.02 to 2.35. These values are below the cut-off point of 10 (Hair et al. 1998), indicating that there were no collinearity problems in the models. A summary of the multiple regression results is presented in table 3.3 and figure 3.2. Semi-partial correlations for the main models are reported in table 3.4. Hypothesis 4 was tested using the Process macro in SPSS statistics 24 by adopting a mediation model (Model 4; Hayes, 2013). The analysis employed 5000 bootstrap samples and 95% confidence intervals to obtain the estimates. A summary of the conditional process analysis results can be found in table 3.5. A discussion of the main findings follows.

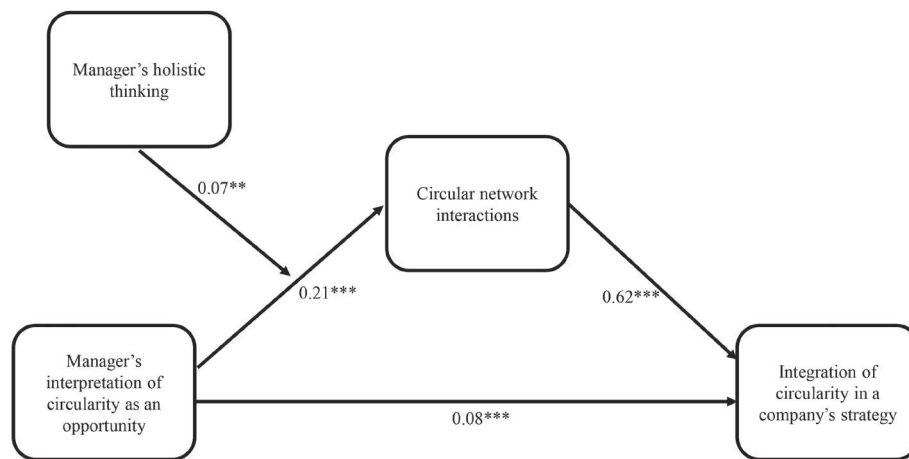


Figure 3.2 Summary of the study results^a

^a control variables are included on all dependent variables

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Hypothesis 1 predicted that the manager's interpretation of circularity as an opportunity positively relates to the integration of circularity in the company's strategy. Figure 3.2 and table 3.3 (model 6) show that this hypothesis was supported – the estimated parameter coefficient from the manager's interpretation of circularity as an opportunity to the integration of circularity in the company's strategy was positive and significant ($\beta = 0.08$, $p < 0.01$).

Hypothesis 2 predicted that circular network interactions are positively related to the integration of circularity in a company's strategy. Figure 3.2 and table 3.3 (model 6) show that this hypothesis was supported – the estimated parameter coefficient from circular network interactions to the integration of circularity in the company's strategy was positive and significant ($\beta = 0.62$, $p < 0.01$).

Hypothesis 3 predicted that the manager's interpretation of circularity as an opportunity positively relates to circular network interactions. Figure 3.2 and table 3.3 (model 2) show that this hypothesis was supported – the estimated parameter coefficient from the manager's interpretation of circularity as an opportunity to circular network interactions was positive and significant ($\beta = 0.21$, $p < 0.01$).

Hypothesis 4 predicted that the relation between the manager's interpretation of circularity as an opportunity and the integration of circularity in the company's strategy is mediated by circular network interactions. The results of the mediation analysis (table 3.5) show that the direct effect of the manager's interpretation of circularity as an opportunity on the integration of circularity in a company's strategy was positive and significant ($\beta = 0.08$, $p < 0.01$). Furthermore, the results show that the indirect effect of the manager's interpretation of circularity as an opportunity via circular network interactions was also positive and significant ($\beta = 0.13$, 95% CI LL: 0.08 and UL: 0.18). In addition, to test the mediating effect of circular network interactions, we assessed the following conditions: (1) the independent variable relates to the mediator variable, (2) the independent variable relates to the dependent variable, (3) the mediator relates to the dependent variable, and (4) the independent variable must have no effect on the dependent variable when the mediator is held constant (full mediation) or become significantly smaller (partial mediation) (Baron & Kenny, 1986). Our OLS estimation results (table 3.3) showed that all conditions were satisfied, were the effect of the manager's interpretation of circularity on the integration of circularity in the company's strategy became smaller when the mediator, circular network interactions, was held constant (see table 3.3, model 5 and 6). These results indicate that the relation between the manager's interpretation of circularity as an opportunity and the integration of circularity in the company's strategy was partially mediated by circular network interactions.

Hypothesis 5 predicted that the relationship between the manager's interpretation of circularity as an opportunity and circular network interactions is positively moderated by the manager's holistic thinking. Figure 3.2 and table 3.3 (model 3) show that this hypothesis was supported – the estimated parameter coefficient for the interaction effect was positive and significant ($\beta = 0.07$, $p < 0.05$). However, table 3.3 also shows that the effect was small and the inclusion of the interaction effect did not result in an improvement of the adjusted R2.

Table 3.3 Summary of the OLS estimation results

Outcome variable	Circular network interactions			Integration circularity		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Control variables</i>						
Organizational age	0.05	0.05	0.05	0.05	0.05	0.02
Organizational size	0.20***	0.18***	0.18***	0.15***	0.12***	0.01
Manager age	-0.05	-0.06	-0.07	-0.03	-0.04	-0.01
Manager tenure	0.08	0.10**	0.10**	0.13**	0.15***	0.09**
Network commitment	0.20***	0.16***	0.16***	0.20***	0.16***	0.06*
Market – B2C	0.03	0.04	0.01	-0.18	-0.17	-0.19**
Market – B2B & B2C	0.40***	0.37***	0.36***	0.26**	0.22*	-0.01
Financial performance	0.02	-0.01	-0.01	0.06	0.04	0.04
<i>Sector dummies^a</i>						
Retail	-0.48***	-0.48***	-0.45***	-0.40***	-0.40***	-0.10
Industry	-0.18	-0.19	-0.17	-0.31**	-0.32**	-0.20*
Building	-0.49***	-0.46***	-0.45***	-0.49***	-0.45***	-0.16
Restaurants & cafes	-0.54***	-0.53***	-0.52***	-0.54***	-0.53***	-0.20
Logistics	-0.57***	-0.53***	-0.54***	-0.56***	-0.53***	-0.19
Wholesales	-0.79***	-0.81***	-0.81***	-0.65***	-0.67***	-0.16
Business services	-0.69***	-0.68***	-0.70***	-0.72***	-0.70***	-0.28
Culture	-0.24	-0.30	-0.27	-0.26	-0.31	-0.13
Healthcare	-0.48*	-0.40	-0.36	-0.59**	-0.51*	-0.26
Energy & environment	-0.02	-0.03	-0.01	-0.23	-0.23	-0.21

Table 3.3 [Continued]

Outcome variable	Circular network interactions			Integration circularity		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
ICT & media	0.20	0.07	0.03	-0.01	-0.14	-0.18
Other industries	-0.77***	-0.78***	-0.77***	-0.52***	-0.53***	-0.04
<i>Independent variables</i>						
Interpretation circularity		0.21***	0.21***		0.21***	0.08***
Circular network interactions		-	-			0.62***
<i>Moderator</i>						
Holistic thinking			0.01			-
<i>Interaction effect</i>						
Interpretation circularity x Holistic thinking			0.07**			-
Constant	0.30***	0.29***	0.28***	0.38***	0.38***	0.19***
	R2=0.18 Adjusted R2=0.15 F (21, 588) = 6.24 p < 0.00	R2=0.22 Adjusted R2=0.19 F (22, 587) = 7.60 p < 0.00	R2=0.22 Adjusted R2=0.19 F (24, 576) = 6.86 p < 0.00	R2=0.18 Adjusted R2=0.14 F (21, 588) = 5.91 p < 0.00	R2=0.22 Adjusted R2=0.19 F (22, 587) = 7.31 p < 0.00	R2=0.51 Adjusted R2=0.49 F (23, 586) = 26.91 p < 0.00

^aAgriculture is the benchmark sector

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 3.4 Semi-partial correlations for model 3 and 6 ^a

Outcome variable	Circular network interactions	Integration circularity
	Model 3	Model 6
<i>Control variables</i>		
Organizational age	0.04	0.02
Organizational size	0.15	0.01
Manager age	-0.05	-0.01
Manager tenure	0.07	0.09
Network commitment	0.15	0.06
Market – B2C	0.01	-0.06
Market – B2B & B2C	0.11	-0.01
Financial performance	-0.01	0.04
<i>Sector dummies^b</i>		
Retail	-0.11	-0.02
Industry	-0.05	-0.05
Building	-0.12	-0.04
Restaurants & cafes	-0.11	-0.04
Logistics	-0.12	-0.04
Wholesales	-0.15	-0.03
Business services	-0.11	-0.05
Culture	-0.11	-0.02
Healthcare	-0.05	-0.04
Energy & environment	-0.01	-0.02
ICT & media	0.01	-0.01
Other industries	-0.17	-0.01
<i>Independent variables</i>		
Interpretation circularity	0.19	0.08
Circular network interactions	-	0.55
<i>Moderator</i>		
Holistic thinking	0.01	-
<i>Interaction effect</i>		
Interpretation circularity x Holistic thinking	0.07	-

^a Semi-partial correlation shows the correlation between the outcome variable and the aspects of the predictor unique from the other predictors

^b Agriculture is the benchmark sector

Table 3.5 Summary of the conditional process analysis results

		Mediator (M)	Dependent variable (Y)
		Circular network interactions	Integration circularity
<i>Independent variable (X)</i>	Interpretation circularity	0.21***	0.08***
<i>Mediator (M)</i>	Circular network interactions	-	0.62***
<i>Control Variables</i>	Organizational age	0.05	0.02
	Organizational size	0.18***	0.01
	Manager age	-0.06	-0.01
	Manager tenure	0.10**	0.09*
	Network commitment	0.16***	0.06*
	Market – B2C	0.04	-0.19**
	Market – B2B & B2C	0.37***	-0.01
	Financial performance	-0.01	0.04
	<i>Sector^a</i>	Retail	-0.48***
	Industry	-0.19	-0.20*
	Building	-0.46***	-0.16
	Restaurants & cafes	-0.53***	-0.20
	Logistics	-0.53***	-0.19
	Wholesales	-0.81***	-0.16
	Business services	-0.68***	-0.28
	Culture	-0.30	-0.13
	Healthcare	-0.40	-0.26
	Energy & environment	-0.03	-0.21
	ICT & media	0.07	-0.18
	Other industries	-0.78***	-0.04
<i>Constant</i>	Constant	0.31***	0.19***
		R2 = 0.22	R2 = 0.51
		F (22, 587)	F (23, 586)
		= 7.61	= 26.92
		p < 0.00	p < 0.00

Table 3.5 [Continued]

Direct and indirect effects					
	Effect	Se	P	LLCI	ULCI
Total effect X on Y	0.21	0.04	0.00	0.14	0.29
Direct effect X on Y	0.08	0.03	0.01	0.02	0.14
Indirect effect X on Y	0.13	0.03	-	0.08	0.18
Standardized indirect effect X on Y	0.13	0.02	-	0.08	0.18

^a Agriculture is the benchmark sector

Figure 3.3 depicts the effect of the manager's interpretation of circularity on circular network interactions contingent on holistic thinking, based on the estimation results of model 3 (table 3.3). Figure 3.3 shows that the relationship between the manager's interpretation of circularity and circular network interactions was positive for managers with low and high levels of holistic thinking. The slope is slightly steeper for managers with a high level of holistic thinking, compared to managers with a low level of holistic thinking, however the difference is minimal and the confidence intervals of both slopes are overlapping. Therefore, we conclude that holistic thinking does not seem to have a meaningful effect on the relationship between the manager's interpretation of circularity as an opportunity and circular network interactions.

3.4.1 Robustness checks

Three additional analyses were performed to test for robustness. First, in order to control for common method bias by creating temporal separation between the independent and dependent variables (Podsakoff et al., 2003), the model was estimated adopting the integration of circularity in the company's strategy measured six months after the initial questionnaire was sent out. We were only able to measure this variable for the respondents that indicated to be willing to participate in further research which corresponded to 250 respondents. A new questionnaire, including the questions for the integration of circularity in the company's strategy, was sent out in April 2019, with a reminder sent two weeks later. Prior to the initial questionnaire distribution, the questionnaires were code numbered to match responses from the initial questionnaire with those of this additional questionnaire. Due to the code numbering, the respondents remained unidentified since all questionnaires were answered anonymously. In total 62 companies responded to this questionnaire. The integration of circularity in the company's strategy measured in this questionnaire highly correlated to the integration of circularity in the company's strategy measured in the initial questionnaire (0.68, $p < 0.01$). A model was estimated using an OLS estimation approach in StataSE 15, with the

integration of circularity in the company's strategy as the dependent variable and the manager's interpretation of circularity and circular network interactions as independent variables. As the number of respondents was limited, only the control variables correlating with the dependent variable (organizational age, size, owner-manager tenure, network commitment, financial performance, and sector) were included. The results indicated that the relation from the manager's interpretation of circularity as an opportunity to the integration of circularity in the company's strategy was still positive and significant ($\beta = 0.21$, $p < 0.05$), as well as the relation from circular network interactions to the integration of circularity in the company's strategy ($\beta = 0.53$, $p < 0.01$).

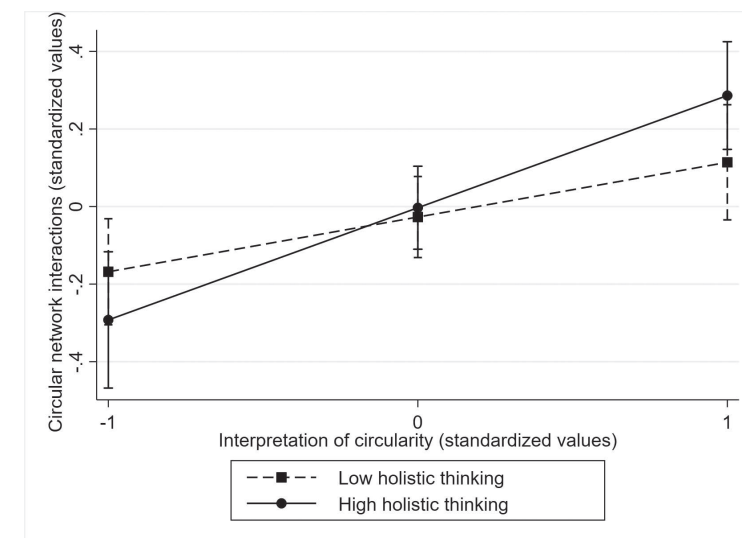


Figure 3.3 Effect of the interpretation of circularity as an opportunity on circular network interactions contingent on holistic thinking (including 95% confidence intervals)

Second, we checked whether the items for circular network interactions and the integration of circularity in a company's strategy all referred to the same underlying factor. This may explain the high correlation between the two variables (0.68). For this purpose, we conducted a factor analysis using a varimax rotation. Two factors were extracted in the analysis (based on eigenvalue > 1), showing high factor loadings of the circular network interaction items on the first factor and high factor loadings of the integration of circularity items on the second factor (table 3.6). These results indicate that the items for both variables did not refer to the same underlying factor.

Table 3.6 Rotated factor matrix for the items of circular network interactions and the integration of circularity in a company's strategy^a

		Factor 1	Factor 2
Circular network interactions	1	0.69	0.42
	2	0.61	0.35
	3	0.77	0.38
	4	0.77	0.36
	5	0.72	0.25
	6	0.71	0.26
	7	0.84	0.27
Integration circularity	1	0.32	0.81
	2	0.35	0.86
	3	0.37	0.83
	4	0.39	0.63
	5	0.27	0.75

^a Extraction method: principal axis factoring. Rotation method: varimax rotation with Kaiser normalization.

Third, we checked the relations between the interpretation of circularity as an opportunity and both circular network interactions and the integration of circularity in the company's strategy for respondents that were not the manager of the company (N = 30). These respondents were employees of the respective companies with functions including: administrative employees, quality managers, environmental employees and controllers. We expected that the relations would be weaker for these respondents compared to the relations for respondents that were the manager of the company. Two models were estimated using an OLS estimation approach in StataSE 15, with the respondent's interpretation of circularity as the independent variable and the integration of circularity in the company's strategy and circular network interactions as dependent variables. As the number of observations was limited, only the control variables correlating with the dependent variables (organizational age, size, owner-manager tenure, network commitment, financial performance, and sector) were included. The results indicated that the relation from the respondent's interpretation of circularity as an opportunity to the integration of circularity in the company's strategy was positive but insignificant ($\beta = 0.16$, $p = 0.37$), as well as the relation to circular network interactions ($\beta = 0.23$, $p = 0.32$). The results also showed that the relation from circular network interactions to the integration of circularity in the company's strategy remained positive and significant ($\beta = 0.54$, $p < 0.01$).

3.5 Discussion

The importance of the integration of circularity in businesses is increasingly recognized by researchers and policy-makers (Ormazabal et al., 2018). This study investigated the impact of managers and network interactions on the integration of circularity in business strategy. The results advance the debate about the integration of circularity in businesses in significant ways.

First, this paper contributes to the growing body of research on the integration of circularity in businesses (e.g., Bocken et al., 2017; Kirchherr et al., 2017; Rizos et al., 2016). While many businesses are increasingly recognizing the opportunities circularity can bring, research has shown that the integration of circularity in corporate strategies is limited (Ormazabal et al., 2018; Pheifer, 2017). This study contributes to the literature by investigating the next step: using the existing knowledge on the barriers companies face in the integration of circularity (e.g., Kirchherr et al., 2018; Rizos et al., 2016), this study investigated the organizational attributes that can assist businesses in overcoming these barriers and integrating circularity in their strategies. By combining insights from the circular economy, strategic issue interpretation and multi-stakeholder network literature we contribute to the circular economy literature by showing that both organizational managers and network interactions can assist companies in integrating circularity in their strategies. Furthermore, this paper contributes to the literature by providing empirical findings about the integration of circularity in a larger sample of firms. Most circular economy studies are small-N studies (< 10 cases), while insights about what works on average are important to aid businesses in the integration of circularity (Kirchherr & van Santen, 2019). Our findings, based on a sample of SMEs in the Netherlands, are in line with previous research which shows that managers are becoming increasingly positive about the circular economy (Liu & Bai, 2014; Ormazabal et al., 2018). We contribute to this research, by conceptually building and empirically testing a model in a large sample of firms that offers insights in the organizational attributes that can assist firms in the integration of circularity.

Second, this research contributes to the literature on leadership and management in the circular economy. In line with previous research (e.g., Rizos et al., 2016; Ünal et al., 2018), our findings showed that organizational managers are important for the implementation of circularity in businesses. We advance this research by specifying and testing that the manager's interpretation of circularity as an opportunity in particular can assist firms in integrating circularity in their strategies. In line with Sharma (2000), our study highlights the importance of the human dimension, and managerial interpretations in particular, in environmental strategies. This research also indicated a new application of strategic issue interpretation literature in explaining, next to the direct influence, also the indirect influence of organizational

managers. Strategic issue interpretation literature has mostly been used to specify the direct influence of managers on internal processes such as environmental strategies and actions (Sharma, 2000; Thomas et al., 1993). However, this paper also builds on the strategic issue interpretation literature to shed light on the indirect role of organizational managers, via their influence on circular network interactions. This also indicates a convergence between managerial and network research streams in the circular economy. Research has for instance emphasized the importance of organizational networks in the circular economy (Bocken et al., 2016; Ghisellini et al., 2016), however it has not placed much emphasis on how organizational managers can function to facilitate these networks. Our results showed that managers with a positive interpretation of circularity could directly influence the integration of circularity in their company's strategy. This finding indicates that the ability of these managers to engage in an open search for circular solutions and mobilize employees and resources for the execution of circular activities can in itself have a positive effect on the integration of circularity. However, our results highlighted that the manager's ability to influence the integration of circularity in business strategy indirectly, via his or her influence on circular network interactions, was stronger. Our results thus highlight that an essential role for managers is to encourage the development of circular network interactions. This may enable managers to lead the way towards collaborative approaches and the successful integration of circularity in corporate strategy. Furthermore, our findings show that the manager's level of holistic thinking may be a supporting factor in this process. However, the effect we found was small, which implies that the ability of managers to encourage circular network interactions is not highly dependent on their level of holistic thinking. Even managers with a low level of holistic thinking may be able to recognize the importance of network interactions due to the high level of dependence among supply chain partners in the circular economy (Ghisellini et al., 2016).

Third, this research contributes to the literature on circular networks and confirms previous research (e.g., Jonker et al., 2020; Zucchella & Previtali, 2018) by highlighting the important role of organizational networks in the circular economy. This study adds to the circular economy literature by combining insights from the circular economy and multi-stakeholder network literature and showing that interacting with different stakeholders in the network can assist organizations in integrating circularity in their strategies. Our findings highlight that integrating circularity in business strategy demands more than an organisation-centric perspective. Instead, it is important to broaden the perspective to the level of the network and interact with network partners in order to establish collaborative approaches, which can in turn assist companies in specifying and integrating firm-level strategies, targets and responsibilities. In doing so, this paper bridges circular economy research focusing on the network level and research focusing on the organizational level. While research is increasingly paying attention to circular networks and network level

outcomes such as network-level learning and value creation (e.g., Baas & Huisingsh, 2008; Jonker et al., 2020), limited emphasis has been placed on how these networks can assist firms in achieving circularity at the firm-level (Walls & Paquin, 2015). Our findings highlight that interacting with different stakeholders in the network can assist firms in integrating circularity in their strategies.

3.5.1 Managerial implications

The results presented in this study offer guidelines for businesses which are aiming to integrate circularity in their strategies. First, given the relative newness of the circular economy concept, it is important that managers update their knowledge about the circular economy by engaging in knowledge-related events and workshops or hiring professionals for in-company workshops. This can help managers to look past the challenges inherent in circularity, and view circularity as an opportunity which can result in increased efficiency and new competitive advantages. Furthermore, it may be beneficial for managers to get more familiar with the circular principles that are already adopted in their organizations and the circular network interactions that are or may be established. To get started, managers thus need to develop a better understanding of the circular economy potential of their organizations.

Second, it is important for managers to realize the importance of collaboration for the integration of circularity in their company's strategy. Increased interactions with different stakeholders in the network and the establishment of collaborative approaches can assist companies in managing barriers and successfully integrating circularity in their strategies. It is therefore highly important for managers to encourage the establishment of circular network interactions and interact on the topic of circularity with employees, customers, suppliers, knowledge institutions and other stakeholders in order to establish collaborative approaches. A first step in this direction can be taken by exploring the network in which the company is situated (for instance via the net-map method by Schiffer & Hauck, 2010). This method can help managers to identify the position of the business in the value chain and wider environment, including for instance relevant legislations and cultural habits. This can assist managers in identifying interdependencies and finding new opportunities for circular network interactions. Managers can make use of existing relationships identified through the nep-map method to benefit from their existing knowledge sharing routines. Furthermore, managers may identify the need to establish new relationships which can be achieved through using active networks and attending events such as conferences, communities of practice and trade shows. Engaging in open conversations with potential partners can enable managers to come to both formal (e.g., financial, confidentiality) and informal (shared mission, collaborative goals) agreements.

Third, although our research concentrates on businesses, it goes without saying that the successful transformation towards a circular economy requires useful guidelines and policy instruments. One implication of our study is that policy-makers should concentrate on the design and maintenance of circular networks including different organizations from multiple industries. Another implication is that, rather than highlighting barriers towards circularity and therefore, at least implicitly, portraying circularity as a threat, policy-makers should support the interpretation of circularity as an opportunity and frame an interdisciplinary dialogue around the concept. Policy-makers could do this by means of, for example, redesigning existing laws and regulations in order to consider waste as a meaningful production input and adapt to the current technological advancements. In this way policy-makers can assist managers in shifting their interpretation of circularity as a threat towards an interpretation of circularity as an opportunity. Furthermore, policy-makers could support regional stakeholders such as educational institutes to design transdisciplinary and interdisciplinary programs that bring different stakeholders together.

3.5.2 Limitations and future research

There were several limitations within this study, which point to areas for future research. First, our research setting and data relates to SMEs in a particular province in the Netherlands. Using SMEs from one specific context enables us to control for unobserved heterogeneity due to, amongst others, cultural and institutional differences. Our study is among the first to present results from a large dataset of SMEs and, in doing so, offer new and unique findings. Nonetheless, future research is needed to address the relationships in the context of larger firms as our data did not allow us to test the relationships in this context. Relationships, in particular between managerial interpretations and the integration of circularity, may be weaker in this context as managers of larger firms may have less influence over the allocation of resources and strategic decisions of the company (Augier & Teece, 2009). Furthermore, a replication of this study with data collected from companies from other countries and regions enables a cross-validation of the results and study the potential differences in national/regional transitions to a circular economy. Positive managerial interpretations may for instance be less influential in uncertainty-avoiding cultures, as even managers with a positive interpretation of circularity may not be willing to get involved in circularity due to its complex and ambiguous nature.

Second, this study was constrained by its time frame, which may have caused endogeneity. An important limitation that should be taken into account is the issue of reversed causality, especially with regards to the relationships between circular network interactions and the integration of circularity in a company's strategy. We relied on strategic issue interpretation and multi-stakeholder network literature to

support our hypotheses and added a robustness check in which we created temporal separation between the independent and dependent variable. Nonetheless, reverse causality may be an issue. Adopting longitudinal or panel datasets would enable researchers to address this issue and study more complex causalities among the concepts included in this research such as feedback mechanisms. For instance, a company's integration of circularity in its strategy may lead other firms aiming to integrate circularity to reach out to the company, in turn leading to increased circular network interactions. We were not able to test for these feedback loops in our study and future research is therefore needed to assess these relationships. Furthermore, the use of longitudinal data would enable investigations into the process of transitioning towards circularity.

Third, despite our aims to control for social desirability and common method bias, our study might still include potential biases. For instance, the potential for social desirability bias may have been increased due to the involvement of the Frisian province which may have caused companies to put effort in showing themselves at their best. Therefore, our results should be interpreted with caution and future research is needed to verify the results.

Fourth, we only measured the manager's interpretation of circularity as an opportunity in our study. Future research could investigate if, rather than interpreting circularity as an opportunity, organizational managers may interpret circularity as something else, for example as a necessary requirement, and explore how this relates to the integration of circularity in a company's strategy. The interpretation of circularity as a necessary requirement may for instance limit circular network interactions as it may lead managers to focus on quick fixes such as short-term practices, instead of formulating collaborative approaches in cooperation with multiple stakeholders. Future research can also address the effects of other managerial characteristics, such as openness or risk avoidance. These factors may influence the extent to which managers interpret circularity as an opportunity and are able to stimulate circular network interactions. While we did control for several managerial characteristics, omitted variable bias may have been an issue in our analysis. Therefore, future research is needed to verify our results.

Fifth, there may be overlap between the variables circular network interactions and the integration of circularity in a company's strategy. While factor analysis showed that the items for these variables did not refer to the same underlying factor, our results should still be interpreted with caution. In case of dependence between the variables, the results we found regarding the relationship between circular network interactions and the integration of circularity may have been inflated. Our analysis also suggests that circular network interactions may overlap with the structure of the company, sector or the market. Our study showed for instance a

significant correlation between circular network interactions, organizational size (0.23) and market (B2B: 0.08, B2B&B2C: 0.12, B2C: -0.16). This finding highlights interesting directions for future research, which can explore the relation between the structure of a company, sector or market and circular network interactions. It can for instance be interesting to investigate how establishing circular network interactions may be different for companies operating in a B2C market compared to companies operating in a B2B market. Furthermore, future research could adopt a finer measure of financial performance to explore the relations between financial performance, circular network interactions and the integration of circularity in more detail.

Finally, although our study benefits from a large dataset and fills research gaps in this direction, it could be complemented with insights derived from other research methods. The use of case studies would enable more detailed investigations in the integration of circularity in business strategy and potentially identify concepts or causalities that have not been addressed in this study. Similarly, the use of intervention research enables identifying whether and how managers with different personalities and value systems can be induced to change their interpretations of circularity. Furthermore, future research adopting case studies could investigate in more detail the specific roles of and interactions between the diverse stakeholders in circular networks. Finally, future studies could broaden the view of leadership, not only focusing on the manager of the organization, but also including other forms of leadership.

3.6 Conclusion

This study addressed an important research topic in the recent circular economy literature on the integration of circularity in business strategy. While organizational managers are becoming increasingly positive about the circular economy, the integration of circularity in business strategy is still limited. This is an important issue as scaling up the circular economy from front-runners to the mainstream businesses can make a significant contribution to achieving climate neutrality by 2050 and decoupling economic growth from resource use, while ensuring long-term competitiveness (European Commission, 2020). However, this promise has been hard to fulfil as businesses face numerous barriers in the integration of circularity and limited approaches to mitigate these barriers have been identified. Further research is therefore needed in order to assist firms in finding ways to integrate circularity in their strategies and make the shift towards value preservation. Building on our findings, researchers may focus on investigating interactions among various stakeholders leading to the formulation of collaborative circular approaches, encouraging experimentation and interactions among businesses, governments, citizens, knowledge institutions and civil society organizations. This may ultimately lead to the identification of successful circular strategies and thus ensure that the promises of the circular economy can be fulfilled.



4

Circular strategies for social housing associations:
lessons from a Dutch case

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Abstract

The aim of this research is to explore how social housing associations can introduce circular strategies and integrate social elements, next to ecological elements, within these strategies. In order to investigate this aim, this paper first explores the circular strategy options that can be adopted by housing associations. Thereafter, the paper explores how social elements can be integrated within these strategies via the establishment of relationships with communities in the network of housing associations. By performing an in-depth case study, we identified potential circular strategies for housing associations and indicate how community relationships could be established within these strategies. The findings highlight that community relationships in the vision formulation and activities involved in the execution of circular strategies may assist in creating synergies between the ecological aims of circular strategies and the perspectives and needs of communities. On the other hand, the results indicate that not establishing relationships with communities or only establishing relationships in the strategy outcomes may be detrimental to both community needs and the ecological aims of circular strategies.

Keywords: Circular strategies, social housing associations, social elements, community relationships

4.1 Introduction

The circular economy is a promising approach to help reduce global sustainability pressures (European Commission, 2014). The ecological foundations of this approach recognize that planetary resources are limited and that waste can be a useful resource (Murray et al., 2017). The circular economy has been defined as ‘an economic system that is based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations’ (Kirchherr et al., 2017: p.224). In order to achieve these aims, the circular economy concept proposes a range of strategies that can be adopted by businesses in order to slow and close resource loops (Bocken et al., 2016).

The focus in the circular economy literature has been on redesigning manufacturing and service systems to benefit the environment (Geissdoerfer et al., 2017). Therefore, research and practice has prioritized the environmental aims of the circular economy at the expense of wider social implications (Geissdoerfer et al., 2017). This is an important limitation as recent literature indicates the importance of social elements within the circular economy, including social benefits, such as human well-being and social equity, societal perspectives and societal stakeholders, such as NGOs and local communities (Inigo & Blok, 2019; Kirchherr et al., 2017; Murray et al., 2017). On the one hand, circular strategies may create social benefits, such as cleaner community spaces through recycling practices. On the other hand, they may result in negative social implications, for example, by requiring more expensive production practices, potentially limiting accessibility to low-income communities. Not exploring these social elements is problematic as it can lead to unintended negative social implications (Murray et al., 2017). Furthermore, involving societal stakeholders is important for the success of circular strategies, which often require fundamental changes to social behaviours and lifestyles (Geissdoerfer et al., 2017). For example, for producers to successfully adopt recycling strategies, users must adjust their behaviour (Atlason et al., 2017). However, the involvement of societal perspectives within circular strategies has been neglected in the literature (Inigo & Blok, 2019).

To address these gaps, this paper focusses on the adoption of circular strategies in the context of a Dutch social housing association. Social housing associations are private non-profit-making organizations with social goals: providing low-income communities with affordable housing and improving their overall well-being (Dewick & Miozzo, 2004). Circular strategies are seen as promising for housing associations as they could help reduce their negative environmental impacts by (1) closing

material loops in construction and demolition and (2) reducing waste, water and energy usage in buildings and neighbourhoods (Pomponi & Moncaster, 2017). Reducing the environmental impacts of Dutch housing associations is important as they own over 30% of the total housing stock and are key enablers of a transition within the building sector (Nagel & Lustenhouwer, 2017). Social housing associations offer a unique context for studying the social elements of the circular economy as they have to take social elements, in particular the perspectives and needs of low-income communities, into account when introducing circular strategies. This is due to the central importance of social goals within housing associations, where all initiatives must be evaluated in the light of these goals (Dewick & Miozzo, 2004). For instance, Dewick and Miozzo (2004) have found that housing associations expressed an interest in implementing environmental initiatives but only when it improved the overall living conditions of low-income communities. The current literature is unclear about whether and how circular strategies could be introduced in contexts where social elements are of central importance. Therefore, this paper aims to investigate how social housing associations can introduce circular strategies and integrate social elements, next to ecological elements, within these strategies.

To achieve this aim, this paper first explores the circular strategies that could be adopted by housing associations. To do this, this paper builds on the circular strategy framework developed by Bocken et al. (2016). A critical assessment of the strategies, using a grey literature review, is conducted to evaluate whether the strategies can be applied to the context of housing associations or whether modifications are needed. Second, this paper investigates how housing associations can integrate social elements within these strategies. We propose that housing associations can achieve this by building relationships with communities in the networks in which the circular strategies are situated. We see communities as constituting a variety of local actors including housing association tenants (which are also users), other local residents and local community organizations (such as tenant associations and community centres) (Wallis et al., 2010). Relationships with communities in the network can increase community support for circular strategies and can enable the adoption of community knowledge and partnerships within these strategies (Dacin et al., 2010; Joyce & Pacquin, 2016). Despite calls for more community engagement in the circular economy (Hobson, 2016), few studies have examined relationships with communities within this context. Existing examples mostly focus on citizen initiatives, such as citizen innovation spaces (Ouillon et al., 2017). While these examples are useful to explain the potential contribution of communities to the circular economy, they do not explain how relationships with communities can be established within the networks in which circular strategies are situated.

The research aim was investigated through an in-depth case study in a social housing association in the Netherlands. Data was collected through grey literature

publications, two focus groups and 15 interviews. The results identify potential circular strategies that could be adopted by housing associations and highlight how different types of relationships with communities could assist housing associations in integrating social elements within these strategies. Our study responds to calls for a wider recognition of social elements within the circular economy (Murray et al., 2017).

4.2 Literature

4.2.1 Circular strategies

The circular economy concept proposes a range of efficiency and productivity enhancing activities, collectively known as circular strategies (Blomsma et al., 2019). Circular strategies specify visions and activities for how businesses can operate in a circular economy (Blomsma et al., 2019; Bocken et al., 2016). This paper builds on the circular strategy framework established by Bocken et al. (2016) (table 4.1). The identified strategies are not mutually exclusive and can complement each other. Bocken et al. (2016) note, for instance, that high-quality Miele washing machines are an example of 'classic long life' and 'encouraging sufficiency' strategies. Furthermore, different circular strategies will be relevant in different contexts depending on firm industry and function (Blomsma et al., 2019).

Circular strategies can lead to multiple environmental benefits, including reduced resource depletion and waste. However, researchers have highlighted that circular strategies may induce several rebound effects, limiting their environmental benefits (Bocken et al., 2016). First, circular strategies may not reduce resource usage where secondary goods are insufficient substitutes for primary goods when they are of inferior quality or less desirable to users (Cooper & Gutowski, 2015; Zink & Geyer, 2017). Second, circular strategies may increase consumption and production if they improve access to and decrease the prices of goods and services; consumers may increase their use of a product or spend their cost savings on other polluting activities (Bocken et al., 2016; Zink & Geyer, 2017). Third, circular strategies may have negative indirect effects such as an increase in the sales of disposable products as customers believe they can reduce their impact through recycling (Zink & Geyer, 2017). Another important critique on circular strategies is their narrow approach, which often does not include societal participation nor address societal perspectives (Millar et al., 2019). Including these social elements in circular strategies is important to transform consumption patterns and lifestyles and overcome the above-mentioned rebound effects (Millar et al., 2019). It has even been argued that without considering social elements, the circular economy will remain a technical tool that does not change the course of the current unsustainable economic paradigm (Korhonen et al., 2018).

Table 4.1 Circular strategies^a

Strategy	Description
1. Access and performance	Delivery of services without users having to own physical products, often includes services such as maintenance & repair. Pricing per unit of service.
2. Extending product value	Exploitation of the residual value of products and the delivery of 'as new' products to customers. Involves establishing take-back systems and capturing value through reduced material costs.
3. Classic long-life	Delivering high-quality, long-lasting products for premium prices often accompanied with high levels of services.
4. Encouraging sufficiency	Delivering long-lasting products for premium prices emphasizing a non-consumerist approach and focussing on influencing customer behaviour.
5. Extending resource value	Exploiting the residual value of resources through collecting otherwise wasted materials and turning them into new forms of value.
6. Industrial symbiosis	Turning waste outputs from one process into feedstock for another process. Involves new collaborative agreements, joint cost reductions and the creation of new business lines.

^a Source: derived in adapted form Bocken et al. (2016)

4.2.2 The circular economy in the building sector

Circular economy research in the building sector has increased due to growing environmental concern as the sector consumes 40% of global natural resources, produces 40% of global waste and 33% of global emissions (Hossain & Ng, 2018). The transition to a circular built environment is therefore important and could reduce environmental impacts while contributing to economic growth and providing social benefits (Leising et al., 2018; Lopez Ruiz et al., 2020). A circular approach for buildings has been defined as 'a lifecycle approach that optimizes the buildings' useful lifetime, integrating the end-of-life phase in the design and uses new ownership models where materials are only temporarily stored in the building that acts as a material bank' (Leising et al., 2018: p.977). Multiple circular strategies for the building sector have been identified, including reusing old buildings and materials, designing buildings for disassembly, delivering functionality without ownership, and substituting resources with renewables (Foster, 2020; Leising et al., 2018).

Despite the increased interest, the transition towards a circular built environment is at an early stage, focussing mainly on the recycling of materials (Hossain & Ng, 2018; Munaro et al., 2020). This is caused by several challenges. First, multiple different actors are involved in construction value chains, which are

often fragmented and characterized by low awareness of circularity (Leising et al., 2018; Manuro et al., 2020). Second, there are multiple technical challenges due to the long lifespan and complex design of buildings (Munaro et al., 2020; Pomponi & Moncaster, 2017). Other challenges include: uncertainty about material prices in the future, a lack of quality standards for recovered materials, unclear financial cases, an unequal division of benefits, and a lack of incentives to adopt circularity (Adams et al., 2017). Pomponi and Moncaster (2017) highlight that the greatest challenges ahead will not lie in further technological innovation, but in the role of people, both individuals and society as a whole. Therefore, it has been proposed that to implement circularity in the building sector, increased interaction, collaboration and co-creation among manufacturers, waste companies, policymakers and communities is essential (Munaro et al., 2020).

4.2.3 Community relationships in circular strategies

Community relationships are important to integrate societal perspectives in and increase the social and environmental benefits of circular strategies (Inigo & Blok, 2019; Murray et al., 2017). Relationships with communities can be established within the social networks in which circular strategies are situated (Liu et al., 2013). In broad terms, social networks are defined by a set of actors, the relationships between these actors, and the structure of relationships among the actors (Nohria & Eccles, 1992). These actors could be individuals, organizations, industries or even nation states and their relationships may refer to friendship, influence, the exchange of products, services or information, or anything else that forms the basis of a relationship (Tichy et al., 1979). Situating strategies within these networks is important as actors in the network can provide organizations with access to information, resources, markets and technologies, allowing them to achieve strategic objectives (Gulati et al., 2000). This argument is especially relevant within the context of circular strategies as companies have to participate in collaborative circular networks in order to close resource loops (Sousa-Zomer et al., 2018).

Within circular economy research, limited attention has been paid to understanding relationships with communities in the network. However, within sustainability research, informal relationships between organizations and non-enterprise actors, such as local residents, NGOs, and the environment, have received increased attention (Frow & Payne, 2011). While economic relationships are built with business partners, social or informal relationships can be built with communities (Joyce & Paquin, 2016). Developing and maintaining mutually beneficial relationships with communities in the network can influence the success of sustainable business models through enhanced acceptance, commitment and support (Joyce & Paquin, 2016). Furthermore, these relationships can enable the adoption of local knowledge and the creation of local partnerships (Dacin et al., 2010). Research on renewable energy has, for instance, shown that community relationships can lead to increased

environmental and social benefits, such as locally appropriate installations and enhanced social cohesion (Walker et al., 2007). However, not all relationships with communities in the network may enhance the acceptance and success of circular strategies, for instance, due to one-way communication strategies (Stringer et al., 2006).

We adopt a social-ecological systems perspective to examine when and how relationships with communities can assist in integrating social elements in circular strategies. Within a social-ecological systems perspective the social system refers to social activities and perspectives, and the ecological system refers to ecological processes and outcomes (Chapin et al., 2009). Social ecological systems theory proposes that social elements can be integrated within environmental strategies by establishing two-way interactions in which local communities adapt their needs to natural resources and adapt natural resources to suit their needs (Jochim, 1981; Stringer et al., 2006). These two-way interactions can be established when communities (1) are concerned about natural resources, (2) have incentives for natural resource use and protection, and (3) have the capacity to influence natural resources (Jodha, 1998). There is increasing evidence that these interactions can lead to synergies between the environmental goals of environmental strategies and the needs of local communities (Shackleton et al., 2019). Following these insights, we propose that housing associations may be able to integrate social elements, next to ecological elements, within circular strategies by building relationships, which involve two-way interactions, with communities within the networks in which circular strategies are situated.

4.3 Case description

This study focusses on a social housing association in the Netherlands. Dutch housing associations build, maintain and rent houses to low-income communities and aim to improve liveability in neighbourhoods. Dutch housing associations own over 30% of the total housing stock and are therefore key players in the circular transition of the building sector. Transitioning the building sector is important as it is responsible for 35% of CO₂ emissions, 50% of resource usage, 40% of the energy usage of the Netherlands (Nagel & Lustenhouwer, 2017).

This study focusses on a housing association with 185 employees which rents out over 20,000 houses to low-income communities. The housing association's core task is to provide affordable and pleasant housing to its tenants and it additionally strives to create, in cooperation with local stakeholders, pleasant, safe and viable communities. In doing so the housing association interacts with a variety of stakeholders including the municipality, tenant associations and community interest groups (figure 4.1). Relationships with tenants and tenant associations are

important and these stakeholders participate in new initiatives through information sessions and consultations. Since 2016, the housing association has been involved in environmental initiatives, for example by constructing energy neutral houses. The housing association has been a national leader in adopting environmental initiatives, implementing the ambitious target of transforming its entire portfolio into energy-neutral buildings by 2030 and being among the first to explore the opportunities of the circular economy. However, the introduction of a circular strategy is still at an exploratory start-up phase. There are concerns about the impacts of circularity on the well-being of low-income communities, for example, though increased living expenses. Our case study focusses on the potential adoption of a circular strategy within this housing association and its network. This provides an interesting context for our research due to (1) the dominant social mission of the housing association and its interactions with the community and (2) the aim of the association to adopt a circular strategy.

4.4 Method

This study is based on a single case study in a housing association where one of the researchers worked on the research aim at the strategy department for one day a week during 2018-2019. A single case study is appropriate to analyse the complex interplay of actors involved in circular strategies and allows for the generation of rich data including different actor perspectives (Lapan et al., 2012). Abductive inference is adopted in this study, which is an appropriate method for making sense of new situations through inference from empirical observations (Richardson & Kramer, 2006 p. 499). Abduction is useful to explain new and surprising empirical data through the elaboration, modification, or combination of pre-existing concepts as it confronts theory with the empirical world (Richardson & Kramer, 2006). The abductive approach is thus useful when the objective is to discover new things, other variables or relationships, leading to the generation of new concepts and the development of theory, rather than confirming existing theory (Dubois & Gadde, 2002). This approach has for instance been adopted in previous studies to uncover new forms of sustainable business models (Stubbs & Cocklin, 2008) and investigate circular ecosystems (Zucchella & Previtali, 2018). Abduction accepts existing theory, which can improve the theoretical strength of case analysis. In this research, we build on the previously discussed literature regarding circular strategies, community relationships and social-ecological systems theory. We focus on the continuous interplay between the theory and the empirical observations with the aim of integrating these streams, as well as advancing knowledge, through an in-depth analysis of the case study (Dubois & Gadde, 2002). Figure 4.2 portrays the methodological steps that were taken in the research.

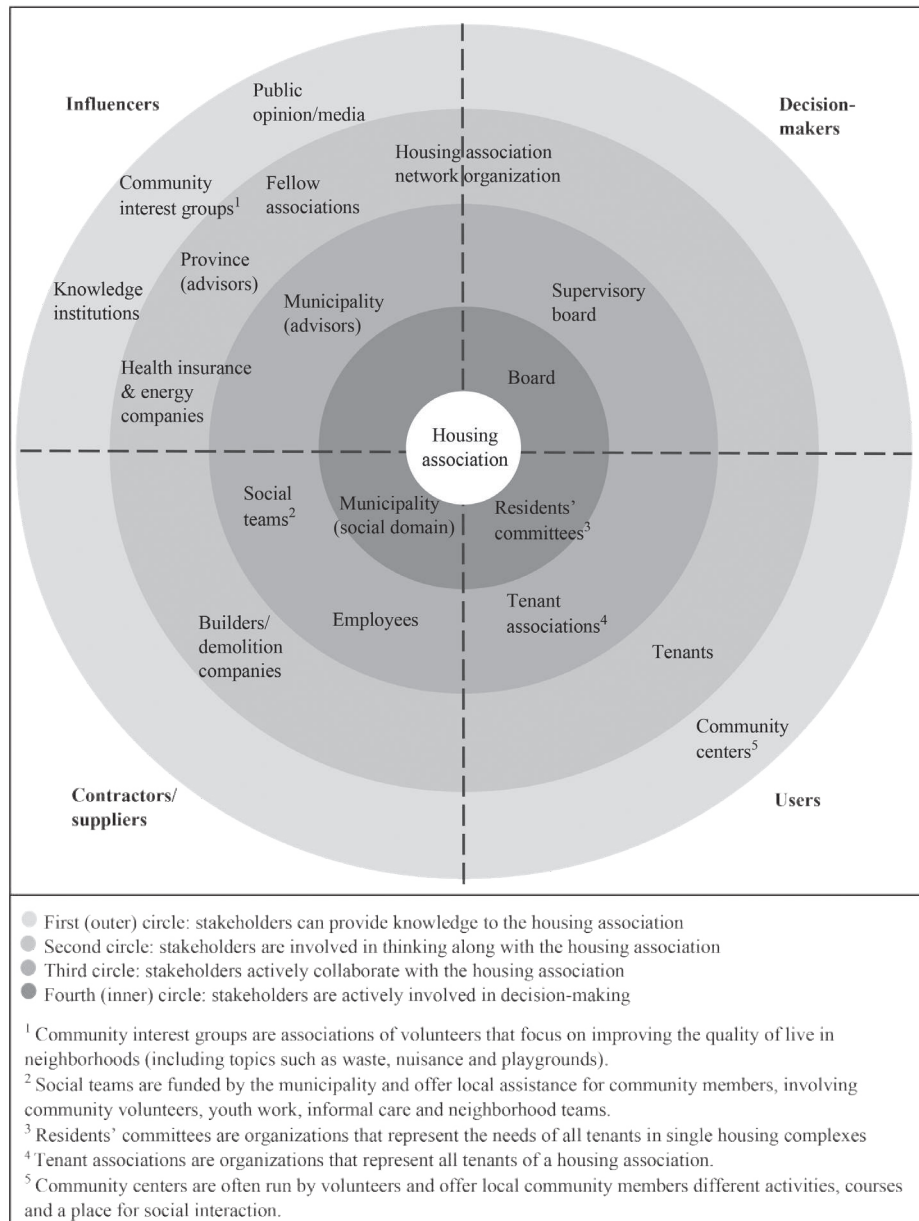


Figure 4.1 Key housing association stakeholders according to function and type of interaction

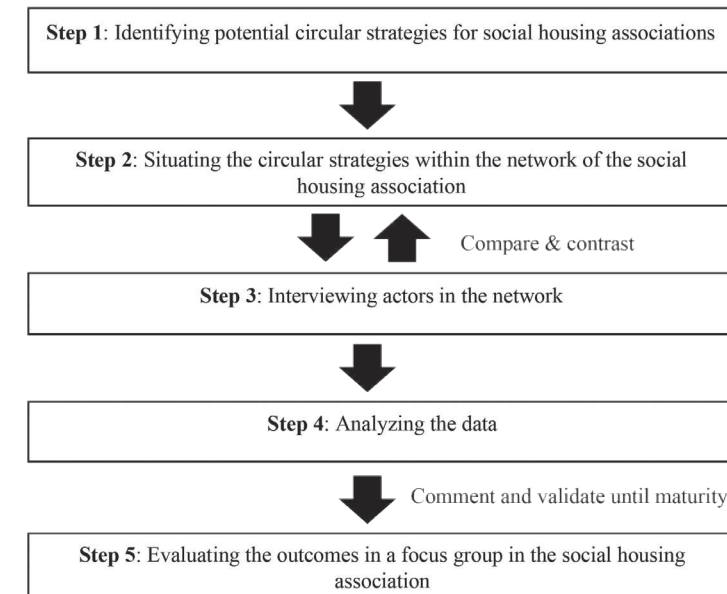


Figure 4.2 Method overview

4.4.1 Identifying circular strategies

In the first step a practice review of circular strategies in housing associations was conducted by searching the grey literature. Publications on the potential of circularity in housing associations were collected from (1) housing associations, (2) network organizations, (3) governments and (4) banks, resulting in 23 relevant publications. These publications provided information on the circular initiatives that could be or were already adopted by housing associations. For example, the housing association network organization published a guide on how housing associations could take steps towards a circular housing stock. As the number of relevant publications was limited, one of the researchers joined and observed 7 explorative meetings (30 to 60 minutes), involving innovation and strategy managers, on the potential of circular strategies in the housing association.

The practice review materials and participant observation notes were analysed and coded using the circular strategy framework (table 4.1). The coded data were evaluated against whether they could fit the strategies or whether revisions were needed. Based on this, a new set of strategies was developed. This framework does not identify circular strategies that have been adopted by housing associations, but strategies that could be adopted. This research aimed to focus on strategies that can be practically adopted by housing associations and therefore also coded for viability, paying particular attention to potential barriers that were identified.

Based on the outcomes, it was decided to focus on two specific circular strategies in the rest of this research – namely, the ‘extending product value’ and ‘industrial symbiosis’ strategies.

4.4.2 Situating the strategies within the network

In step two, the networks in which the two identified strategies would be situated were investigated using the net-map method (Schiffer & Hauck, 2010). Net-map is a participatory interview technique that helps people to understand, visualize, and discuss situations in which many different actors influence the outcomes. It allows companies to examine not only the formal relationships in the network but also informal relationships that cannot be understood by merely studying documents. The main aim of this step was to identify the network the circular strategies would be situated in, paying specific attention to relationships with communities.

The net-map approach was conducted with a group of 7 employees with strategic responsibility and/or who work with external stakeholders (table 4.2). Each employee was introduced to the research and briefly interviewed beforehand. The session started with a characterization and discussion of the two circular strategies. Participants were divided into two groups, corresponding to the two strategies. The net-map approach involved three main steps. First, participants thought of all external individuals, groups or organizations that could be involved in and/or affected by the strategy. Second, participants linked the identified actors by drawing coloured arrows between them, including the direction and transactional content of their relationships. Finally, participants reflected upon the network maps, paying specific attention to the relationships with communities. The focus group lasted for 4 hours and was recorded and transcribed (focus group script is provided in Appendix D).

Table 4.2 Focus group participants

Department	Function
Strategy	1. Strategic relations manager
	2. Strategic relations manager
	3. Strategic manager
Asset management	4. Innovation manager
	5. Senior asset manager
Estate	6. Contract manager
	7. Project leader

4.4.3 Interviewing actors in the network

In the third step, actors from the identified networks were interviewed. The aim of these face-to-face semi-structured interviews was to collect in-depth information on the potential relationships with communities within the networks. Furthermore, the interviews were used to check the maps made in the focus group, providing external validation for the focus group results. Other actors identified to have relationships with communities were interviewed, in addition to community actors. Contacts were acquired through the housing association. This resulted in 15 interviews in total (table 4.3). All interviews started with an explanation of the selected circular strategies, and the interviewees were asked about their potential role and position in the network. In the next steps, interviewees were asked to reflect upon their potential relationships with (other) community actors in the network. All interviews were recorded and transcribed (interview protocol is provided in appendix C).

Table 4.3 Interviewees

Actor	Interviewee function	Length (in minutes)
Social team	1. District manager	60
Social working space	2. Supervisor & manager	50
Community centre	3. Manager	30
	4. Project manager	30
Tenant association	5. Board member	30
Community space & restaurant	6. Owner	40
Second-hand shop	7. Manager	45
School	8. Sustainability coordinator	45
Municipality	9. Project manager	50
	10. Senior policy officer	80
	11. Sustainability officer	70
Waste processor	12. General director	50
	13. Communication director	50
Builder	14. Manager circularity	60
	15. Developer	65

4.4.4 Analyzing the data

In the fourth step, network maps for the two circular strategies were created based on the net-map discussion and interviews. The final maps were reviewed with the strategic manager of the housing association. The net-map discussion and the interviews were coded using a 1st and 2nd order analysis (Gioia et al., 2012), taking the previously discussed literature into account. The data structure is included in figure 4.3.

4.4.5 Evaluating the outcomes

In the last step, the results were evaluated in a focus group in the housing association, involving the same participants as the first focus group. The focus group lasted for 2 hours and was recorded and transcribed. In the focus group, participants were asked to reflect on the circular strategies, the relationships with communities, and the ability of these relationships to assist in integrating social elements within these strategies.

4.5 Results

4.5.1 Circular strategies for social housing associations

Table 4.4 contains the circular strategies, identified through the practice review, for housing associations. Only one new strategy was identified in the analysis, which was a strategy specifying outsourcing of circularity to the supply chain. Modifications to the 'access-and-performance', 'extending product value', 'extending resource value' and 'industrial symbiosis' strategies were made to reflect the nature of the services provided by the housing association. Some strategies needed to be extensively modified, including the 'classic long-life' and the 'encouraging sufficiency' strategies, involving further integration of social elements, such as the inclusion of the needs of low-income communities. For instance, the 'classic long-life' strategy needed to be adjusted as asking premium prices from low-income communities was undesirable. Furthermore, the 'industrial symbiosis' strategy was extensively modified, focusing more on the exchange and combination of materials, resources and knowledge to develop integrative circular solutions in neighbourhoods. It focusses more on finding collaborative solutions in terms of recycling and re-use, compared to solutions in production processes for which the term industrial symbiosis is generally being used.

The viability of all strategies was questioned in the practice review documents and by the housing association in the explorative meetings. First, it was argued that low-income communities may not benefit from the 'access and performance' strategy as an all-inclusive service package may increase fixed monthly expenses, which can pose a burden on low-income households. For instance, it was noted that bringing demolition materials to the market could cause clashes with demolition companies due to their current stake in these materials. Furthermore, this strategy may only lead to limited environmental gains due to transportation. Third, problems were indicated for the 'classic long-life' and 'encouraging sufficiency' strategies due to high initial costs and the inability to earn these back due to the undesirability of charging higher prices to low-income communities and balance sheet regulations. For instance, it was indicated that housing associations are not yet able to increase amortization periods for buildings on their balance sheets. Additionally, designing (modular) buildings with long life spans was argued to be difficult due to the complex

design of houses. Furthermore, the 'encouraging sufficiency' strategy might be difficult for housing associations to execute as, since the housing act of 2015, they are required to focus on providing affordable and pleasant housing to low-income communities, limiting their ability to engage in activities such as coaching and providing sharing spaces.

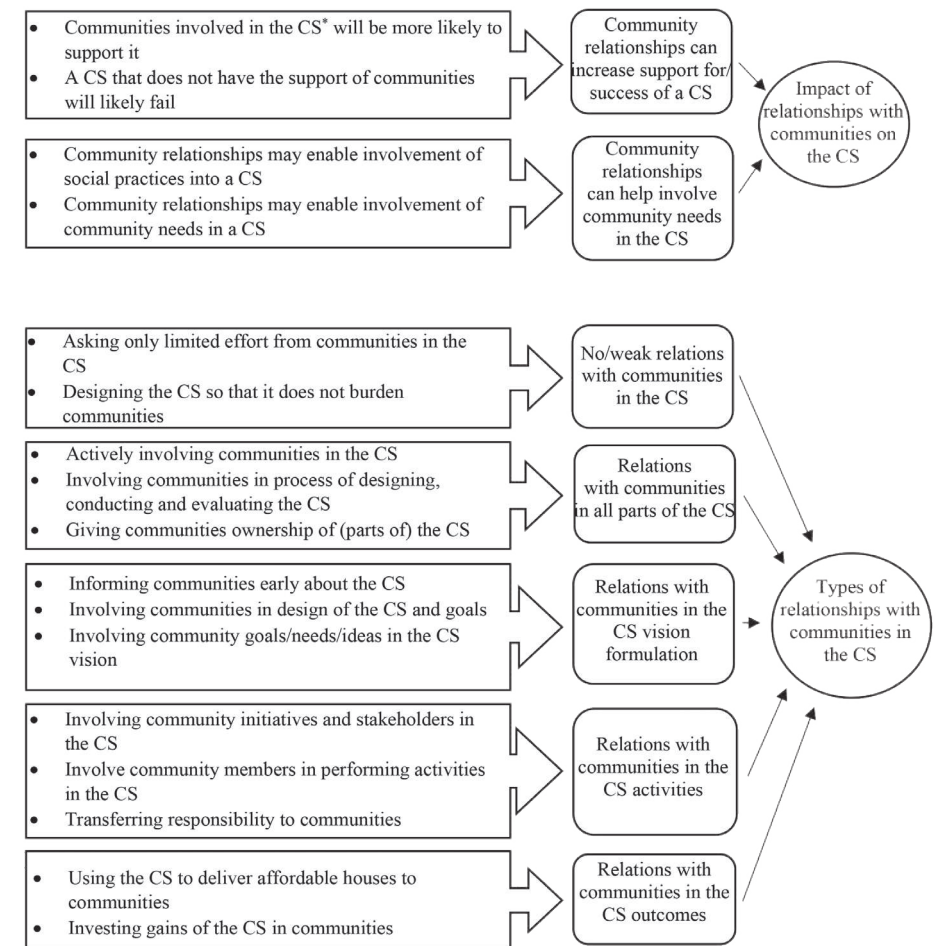


Figure 4.3 Data structure

*CS = circular strategy

The three remaining strategies only suffered from limited viability issues mostly referring to the challenge of collaborating with multiple stakeholders with different goals and balancing the demand and supply of materials. While the ‘outsourcing circularity’ strategy was seen as viable, it did not require the adoption of circularity by the housing association. Based on these outcomes, we decided to focus on the ‘extending product value’ and ‘industrial symbiosis’ strategies in the remainder of this research.

4.5.2 Relationships with communities in circular strategies

Figure 4.4 and 4.5 show graphical representations of the key actors and relationships in the networks in which the ‘extending product value’ and ‘industrial symbiosis’ strategies would be situated. The figures show multiple anticipated relationships with communities, highlighting that there might not only be direct relationships between the housing association and its tenants. Other actors, such as second-hand shops, could also establish relationships with tenants. Furthermore, different community actors could be involved in the relationships, including other local residents, tenant associations, community interest groups and community centres. Relationships with these actors were argued to be important as they could allow the housing association to use existing social structures in circular strategies and create a broad social movement. Figure 4.4 and 4.5 show the different types of anticipated relationships, including the transfer and exchange of (1) products and services, (2) cooperation, (3) knowledge and information, (4) influence and (5) enthusiasm.

Table 4.4 Circular strategies for social housing associations

Strategy	Vision	Activities	Expected outcomes	Modifications
1. Access and performance	Delivering a service, ‘living’, to low-income communities, who arrange all living requirements through a single housing association contract. Builders remain owners of buildings to encourage longer lifetimes.	Activities to offer low-income communities a ‘living’ service (e.g., electricity & rental of appliances). Increased collaboration and new contracts. More contact with tenants to specify service packages and reduce living costs.	<ul style="list-style-type: none"> • Reduced (living) costs due to large scale contracts • Reduced environmental impacts due to longer lifetimes 	The housing association service strategy (where the service housing is provided to tenants) is extended with other services, buildings remain in the ownership of builders.
2. Extending product value	Extending residual value of local parts & materials and delivering ‘as new’ houses to low-income communities through reuse and remanufacture.	Activities and partnerships with architects, builders, and demolition companies enables demolition materials reuse.	<ul style="list-style-type: none"> • Reduced environmental impacts due to reuse • Reduced material costs 	Focus is on increasingly collaborating with builders and demolition companies, rather than with consumers in take-back systems.
3. Classic long-life	Delivering longer lifespan houses, through using high-quality materials and modular building practices, enabling low-income communities to stay in their houses throughout their lifetime.	Activities that enable longer lifespans, including a shift in suppliers and incentive systems for durable building practices. Potentially closer contacts with tenants to facilitate maintenance.	<ul style="list-style-type: none"> • Tenants can stay in their houses for longer periods • Reduced costs through longer usage of buildings, decreased amortizations and demolition costs • Reduced environmental impacts 	Modular design principles are adopted. Focus is on cost reductions instead of premium prices. A social goal is included in the vision.

Table 4.4 [Continued]

Strategy	Vision	Activities	Expected outcomes	Modifications
4. Encouraging sufficiency	Encouraging low-income communities to adopt circular lifestyles through providing sharing spaces, tracking technologies and coaching services. Focus on influencing behaviour.	Activities that enable adoption of circular lifestyles. Requires closer contacts with communities and relations with new partners such as energy coaches.	<ul style="list-style-type: none"> • Reduced maintenance and living costs • Reduced environmental impacts due to circular lifestyles 	Focus is on assisting low-income communities instead of delivering a product. Charging for services is undesirable.
5. Extending resource value	Exploiting residual value of materials through sourcing and collecting demolition materials and selling them.	New collaborations needed to collect, store, sell and transfer materials.	<ul style="list-style-type: none"> • Value capture through selling otherwise wasted materials 	Focus is on selling materials instead of reusing them.
6. Industrial symbiosis	Facilitating platforms where different parties can combine and share materials, resources and knowledge to develop integrative circular solutions in neighbourhoods.	New collaborative agreements and partnerships (e.g., with demolition companies/municipalities) by sharing communal services and exchanging materials, knowledge and by-products.	<ul style="list-style-type: none"> • Joint cost reductions • Reduced environmental impacts due to sharing and new circular solutions. 	Focus is on exchanging attributes including knowledge and ideas, rather than focussing on sharing wasted outputs. Focus on solutions for recycling and re-use.
7. Outsourcing circularity	Specializing in offering affordable housing, outsourcing circularity to the supply chain where builders, demolition companies and energy companies reduce their impacts.	New and closer collaborations with suppliers and architects, by requiring circularity and reduced environmental impacts.	<ul style="list-style-type: none"> • Reduced environmental impacts due to reduced impacts of supply chain partners • Reduced costs due to innovative solutions 	The housing association itself is not actively involved in circular activities.

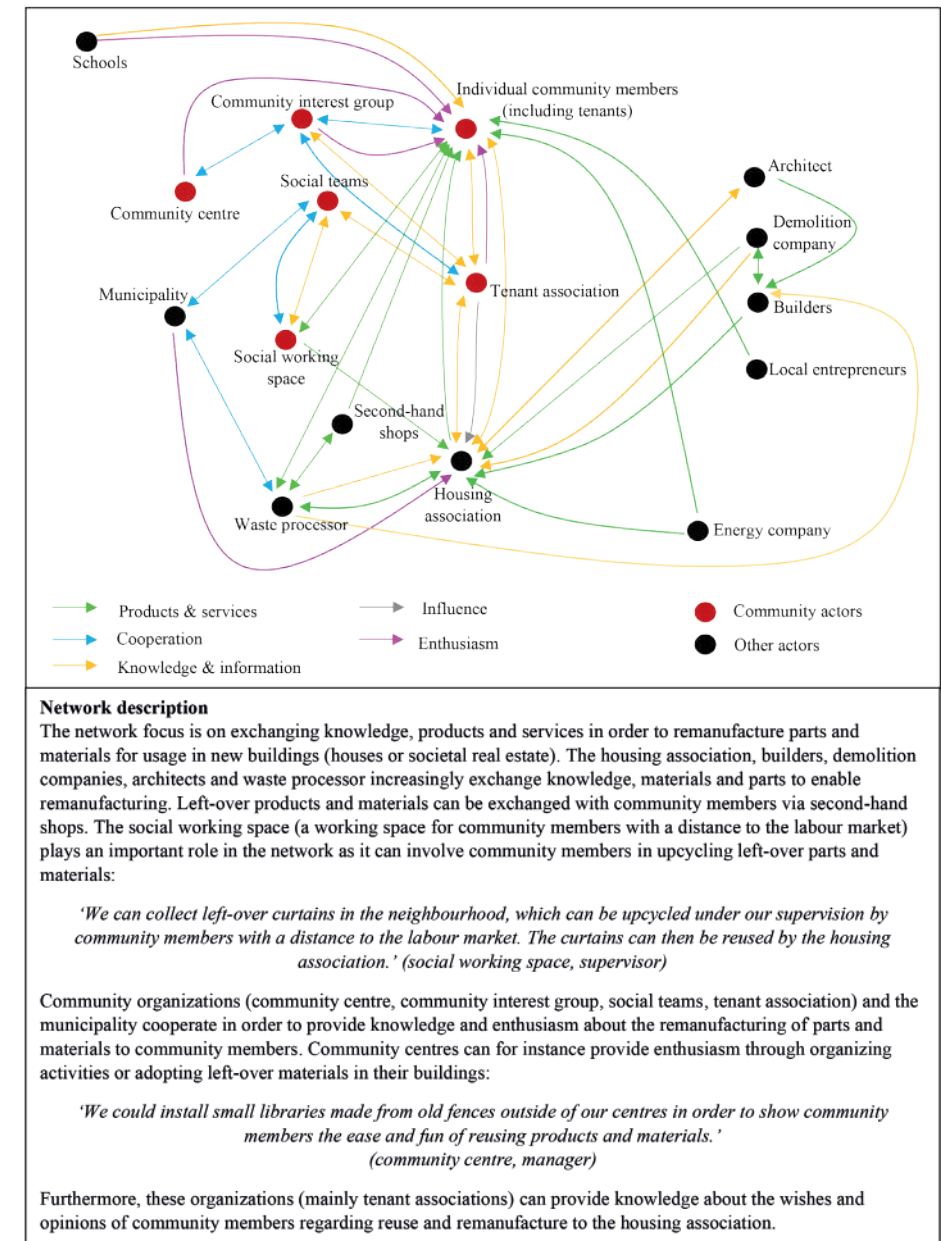


Figure 4.4 The network for 'extending product value'

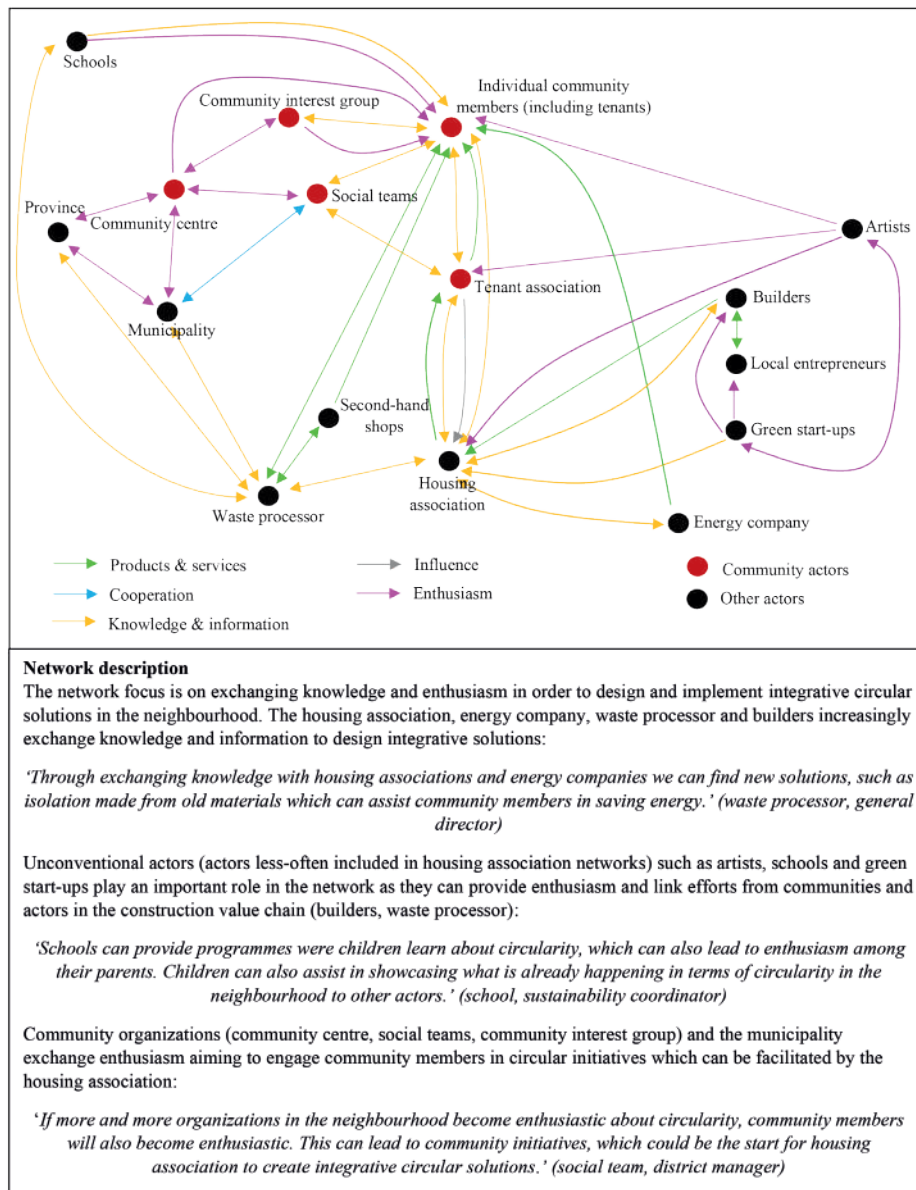


Figure 4.5 The network for 'industrial symbiosis'

The data showed that relationships with communities in the network were considered to be important as they could enable increased support for and success of the strategy:

If community members understand why we perform the strategy, they will be more likely to support it. Otherwise, there will be no cooperation and circular approaches are likely to fail. (focus group, participant 5).

Community relationships could also enable the inclusion of community needs and perspectives within circular strategies:

Involving community members may enable the recognition of every day social practices and needs within circular approaches (tenant association, board member).

The data structure (figure 4.3) shows that there are different ways in which community relationships could be established within the networks in which the circular strategies were situated. These include relationships in the vision formulation of the strategy, the activities involved in its execution, and the outcomes of the strategy. Relationships may operate in isolation, for instance, a community may only be linked to the vision formulation, or in two or more ways, up to full linkage, where communities are linked to the vision formulation, activities and outcomes of the strategy.

Relationships with communities in the vision formulation. First, community relationships could be established through their involvement in the vision formulation of the circular strategy. Such relationships refer to the transfer of information about the vision to communities and integration of community knowledge in the vision. It was for example mentioned for the 'extending product value' strategy that:

Low-income communities might have interesting knowledge on circularity and engage in reusing activities out of material poverty reasons. [...] We might be able to use this knowledge in our approach (focus group, participant 1).

Furthermore, community goals could be included in the vision, and could involve increased financial independence, participation, community cohesion, a cleaner and saver neighbourhood, and job opportunities. It was for instance mentioned for the 'industrial symbiosis' strategy that:

Every party can have another goal in the network, some ecological, some more social. [...] Maybe being circular is not our common goal but our way of working towards different goals (focus group, participant 5).

Involving the community in the vision formulation can assist housing associations in looking at the strategy from a different perspective, creating a feeling of ownership

among community members for the strategy, and developing a strategy that fits community needs:

We can help indicate the circular potential of the neighbourhood. Maybe you think it would be beneficial to create a mobile phone app for sharing left-over materials, however we know that this might not connect to the needs of community members due to their limited use of apps and lack of knowledge about what to do with these materials (social team, district manager).

Multiple interviewees indicated the importance of setting clear guidelines and goals before involving the community in the vision formulation to ensure useful input and fulfilled expectations among community members. Involving communities in the vision formulation may be a long and intensive process, requiring careful interactions among diverse actors:

You have to invite community members and talk about their knowledge and ideas regarding circularity. However, this is not easy as there are diverse actors involved. Technicians may for example only see problems in the ideas of community members, and financial people may expect the ideas will make house designs unprofitable (municipality, senior policy officer).

Relationships with communities in the strategy activities. Second, relationships with communities could be established through their involvement in the activities involved in the execution of the circular strategy, such as the performance of activities by communities within the strategy. For example, community organizations, such as tenant associations, can play a role in communicating how a strategy will operate in relation to a community, for example for the 'industrial symbiosis' strategy:

Tenant associations should be involved in the communication as they speak the language of the community, know how to address them and can get them enthusiastic about difficult topics such as circularity (focus group, participant 7).

Furthermore, individual community members can perform activities within the circular strategy, such as upcycling left-over materials in cooperation with social working spaces. Housing associations can also actively cooperate with communities by transferring responsibility for these activities to communities. For example, it was mentioned by the director of the circular waste processor that, within the 'extending product value' strategy, community centres could be responsible for the collection of otherwise wasted materials, enabling them to find locally appropriate methods in cooperation with other network actors. Involving communities in the strategy activities may increase the awareness of individual community members about their environment and the importance of circular approaches:

When we involve individuals in the upcycling of materials, they really start to think about the value of things. For example, what is the value of this left-over wood, and what can we do with it? This experience results in an increased awareness of their environment and an increased willingness to recycle (social working space, supervisor).

Furthermore, involving community members in circular activities may make it easier for other community members to become involved also. However, several interviewees mentioned the difficulty of transferring small-scale community initiatives into a broader movement:

Focusing on community initiatives is very labour intensive as you only reach a very small group of people per initiative. We experienced that it is difficult to transform these initiatives in a long-term movement towards circularity (waste processor, general director).

Relationships with communities in the strategy outcomes. Third, relationships with communities could be established through their involvement in the outcomes of the circular strategy. This will likely involve the distribution of some gains of circular strategies to housing association tenants in the form of reduced living costs. It was for instance mentioned for the 'extending product value' strategy that:

Housing associations have to make sure the reuse of materials leads to a reduction in costs which can be translated into lower rental rates for low-income communities (municipality, senior policy officer).

Involving communities in the strategy outcomes – for example, ensuring communities benefit directly from the strategy – can increase the willingness of community members to cooperate in the strategy as circularity becomes connected to financial independence. However, it was also mentioned that focusing too much on reducing the living costs for low-income communities may be detrimental to the long-term benefits of the strategy:

If we continue to put short term financial incentives, in terms of the affordability of houses, on the first place, community members will not focus on long term affordability and the effects we have on our planet. We may give them a perfect circular house, but they may still spend all their gains in cheap, polluting shops (municipality, sustainability officer).

Relationships with communities in all parts of the strategy. Fourth, community relationships could be established in all parts of a circular strategy. Housing associations may base their strategic vision on community goals, involve

communities in the strategy activities and distribute the gains of the strategy to the community, leading to a situation where the circular strategy is highly community oriented. It was for example noted for the 'extending product value' strategy that:

Strongly involving communities and their goals may lead to a new approach where the focus is no longer on extending the value of demolition materials, but on revaluing and reusing the talents of community members (community space, owner).

This may help housing associations to focus on community needs and perspectives within their circular strategies, but may also lead to a situation where there is less emphasis on the long-term environmental aims of these strategies:

I agree that we have to involve the community, however letting them decide about everything from A till Z might be too much. It may be a burden for them and limit our environmental achievements as the environment might not be the first concern of communities (focus group, participant 4).

No relationships with communities. Finally, it was mentioned that it might be beneficial not to establish relationships with communities, due to (1) a lack of understanding of and interest in circularity among communities, (2) the potential community burden of involvement, and (3) high costs involved in establishing relationships with communities. It was for example argued in the 'extending product value' strategy that:

We [the housing association] can design the ways in which we reuse materials. Communities should not have an influence, if their housing will get cheaper, they will be happy (focus group, participant 7).

The focus in this context would be on 'unburdening' communities and minimizing effects. Smart circular designs, which are not dependent upon the behaviour of tenants, could increase efficiency and reduce the need to involve communities in circular strategies. However, most interviewees mentioned the importance of establishing community relationships to create benefits for communities and enable the design of locally acceptable circular strategies:

If you design a circular approach, but you do not connect it to the community, you can forget it. If you only see the objects without recognizing the people, you will miss a lot of the involved complexities. We may end up designing houses that are not desired by communities and therefore have a short lifetime, making neither us, the environment nor communities happy (municipality, senior policy officer).

4.6 Discussion

The aim of this study was to investigate how social housing associations can introduce circular strategies and integrate social elements, next to ecological elements, in these strategies. Our study contributes to the circular economy literature by highlighting different types of circular strategies that could be adopted by housing associations. The circular strategy options identified in the practice review were not very different from the original circular strategies (Bocken et al., 2016) and most did not extensively integrate social elements. Our study showed how this can be problematic. The case association voiced concerns about all of the identified strategies, including their potential negative impacts on low-income communities and limited expected success. Our study adds to the literature by highlighting the difficulty and confirming the importance of integrating social elements, next to ecological elements within the circular strategies of social housing associations.

Our study contributes to the circular economy literature by showing how social elements could be integrated within the circular strategies by establishing relationships with communities in the network. We identified how different types of relationships could be established with communities in the vision, activities and outcomes of circular strategies. Our results imply that these relationships can assist in integrating social elements in circular strategies as they can increase community support for, and the extent to which their perspectives are integrated into, the ecological goals and processes of these strategies. However, our results also indicated that not all relationships with communities may be equally effective. Based on our findings, we designed a framework for the integration of social and ecological elements within circular strategies (figure 4.6). The x-axis represents the part of the circular strategy in which relationships with communities are established. The y-axis represents the integration of social and ecological elements within the circular strategy.

First, our case showed that by establishing relationships with communities only in the strategy outcomes, housing associations may increase community support for the circular strategy. This is caused by the potential benefit communities can achieve from the circular strategy, mostly referring to reduced living costs. However, this approach does not allow communities to provide input into the strategy. This can result in ecologically focused circular strategies as portrayed in situation 1 and 2 (figure 4.6) that suffer from limited community adoption, overlook synergies between social and ecological goals or are unable to achieve their ecological aims. Our case showed for instance that establishing relationships with communities in the strategy outcomes only, may increase the focus of community members on short-term financial gains, and not on long-term environmental benefits. This may result in rebound effects such as described in Zink and Geyer (2017).

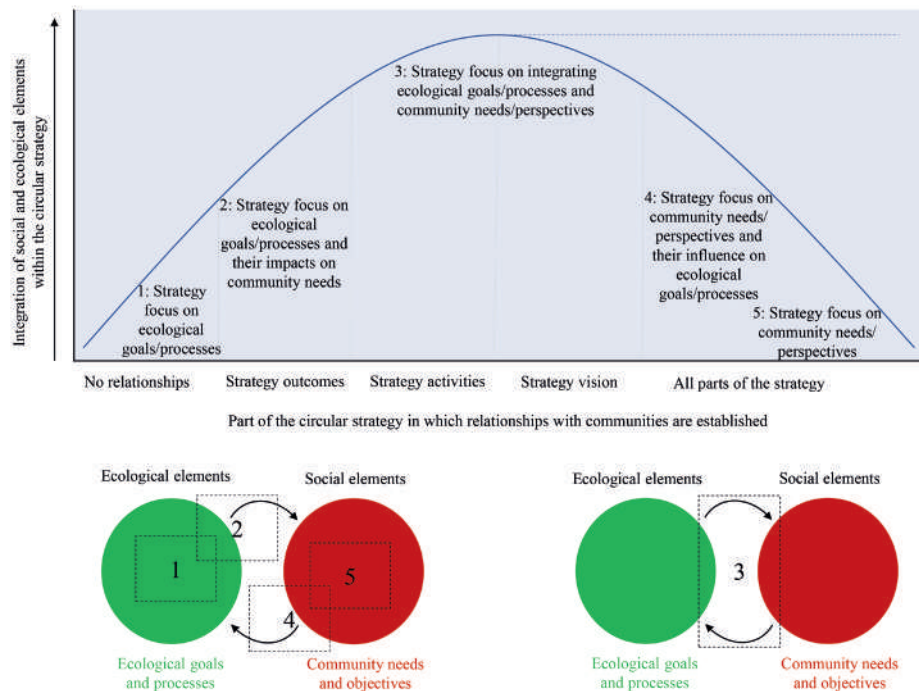


Figure 4.6 The integration of social and ecological elements in circular strategies

Second, our case showed that, by creating relationships with communities in the vision formulation of, and activities involved in the execution of the circular strategy, housing associations can (1) allow communities to influence the ecological aims of circular strategies as community needs and perspectives can be included from the start and (2) increase incentives and concerns of communities for the ecological aims, as these can be more directly tied to local activities and community well-being. This can result in circular strategies that integrate social elements next to ecological elements as portrayed in situation 3 (figure 4.6). Our study highlighted that situation 3 could, for example, occur when housing associations include community goals, such as a clean neighbourhood, in the strategy vision and involve community members in activities, for instance by giving them responsibility for finding the best waste-collection methods. However, our case also indicated that this might be a slow and challenging process for housing associations due to the diverse actors and perspectives involved.

Third, our case indicated that by creating relationships with communities in all parts of the circular strategy, housing associations can give community members the ability to influence the ecological goals and processes of these strategies. However, a high level of community influence in all parts of the strategy may mean

the strategy is increasingly community goal orientated. This may negatively impact a community's incentives to engage with ecological aspects to the detriment of the ecological aims (Jodha, 1998). In this situation, social elements take over the strategy, as portrayed in situation 4 and 5 (figure 4.6). Our case study indicated that situation 5 could, for example, occur when housing associations adopt the 'extending product value' strategy, focussing on community goals, such as revaluing community member talents. Establishing relationships with communities in all parts of the strategy does not necessarily have to lead to this situation when housing associations are able to create synergies between social and ecological elements. This could for instance be achieved when community goals, such as revaluing community member talents, are directly linked to environmental activities, such as the upcycling of materials.

Our framework adds to the literature by highlighting the importance, and potential nature of relationships with communities in the network for the integration of social elements, next to ecological elements, within circular strategies. Furthermore, our results indicate that different types of relationships with communities can have different effects. In the circular economy literature, communities are often excluded or only included in the outcomes of circular strategies (in terms of impacts on social equity and employment) as portrayed in situation 1 and 2 (Kirchherr et al., 2017). Our study adds to the circular economy literature by showing that this is problematic as it can lead to rebound effects and limit environmental or social benefits (Millar et al., 2019). Our research also shows the danger of focussing too much on community needs and objectives - which can be detrimental to long-term ecological outcomes - highlighting the importance of balancing social and ecological goals, and showing the potentially fine line between generating synergies or conflicts between goals. Additionally, our results highlight the importance of creating relationships with communities in the vision formulation and activities involved in the execution of circular strategies. In this way, synergies between the ecological aims of circular strategies and the needs and perspectives of communities can be created.

4.6.1 Limitations and future research

There were limitations within this study, which point to areas for future research. First, this was a single exploratory case study. Therefore, the results are likely to be context specific. However, our findings are likely to be relevant beyond other housing associations, as the circular economy spreads into different sectors, circular strategies will increasingly require the consideration of a multitude of social elements (Geissdoerfer et al., 2017). Our case study provides valuable insights as it focusses on a context which requires increased attention to social elements. Future research is necessary to address other contexts, including other countries and cultures, as these may influence the formation and outcomes of relationships

with communities within circular strategies. For example, in countries with more collectivist cultures, or traditions of community organising, it may be easier to reach a broader group of community members by involving communities in the strategy activities, such as through community initiatives.

Second, due to the limited adoption of circular strategies within housing associations this research focussed on two potential strategies only. We were unable to analyse the differences in establishing relationships with communities in different types of circular strategies, for instance, in strategies focussed on assets compared to those focussed on services. Future research should investigate these differences. Furthermore, due to our focus on the strategic level we were not able to explore the position and power of tenants at the level of single housing complexes. The importance of community support may for instance be intensified when circular strategies are applied at the level of single housing complexes where residents' committees are actively involved in decision-making about maintenance and renovation. Therefore, future research is needed to investigate the role and power of individual tenants and residents' committees in circular strategies at the level of single housing complexes.

Third, integrating community needs and perspectives within the ecological focus of circular strategies may be difficult due to conflicting needs and interests among the involved actors. Our case showed for instance that community members may focus more on the short-term financial gains of the circular strategy, while other actors may focus more on long-term environmental outcomes. However, our study also showed that synergistic interests and needs can exist. Further research is needed to explore the conditions under which synergistic interests and needs, instead of conflicts, exist among different actors, as our study only scratched the surface of the complexities of this issue. For instance, future research could explore the process by which common interests among the different actors involved in circular strategies are established. Furthermore, future research is needed to investigate the two-way interactions in further detail, including investigating how these interactions evolve over time. Future research is also needed to explore the integration of broader social elements within circular strategies, as our study mainly focussed on community perspectives and needs. Finally, research could investigate the social impacts of circular strategies and community involvement within these strategies.

4.7 Conclusion

This paper highlighted a case of exemplar circular strategies within the context of a social housing association. Based on the results, this paper concluded that social elements can be integrated within circular strategies through the creation

of relationships with communities in the networks in which these strategies are situated. Such relationships, especially those established in the vision formulation and the activities involved in the execution of the strategy, enable communities to adapt the ecologically oriented circular strategies to their needs and perspectives, and increase community support for the ecological aims of these strategies. Establishing such relationships with communities may be complex and costly, requiring careful interactions among a diverse set of actors. However, if housing associations ignore this complexity, they may end up missing important social elements leading to high costs in later stages and circular strategies that are unable to achieve long-term environmental benefits.



5

How can local communities be involved in multi-stakeholder initiatives focussed on the adoption of circular economy approaches in neighbourhoods? An action research inquiry.

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Abstract

The involvement of local communities in multi-stakeholder initiatives is often neglected in the literature and remains a challenging process in practice. This is especially the case when complex topics such as the circular economy are addressed as communities are likely to hold less power than the other stakeholders involved and their knowledge about the circular economy is often limited. This study investigates the challenges that arise when communities are involved in multi-stakeholder initiatives focused on the adoption of circular economy approaches in neighbourhoods and explores how these challenges can be addressed. An action research approach was adopted, lasting from September 2018 to December 2020, where the first author collaboratively worked with a social housing association on an initiative to involve the community, next to other stakeholders, in the design and implementation of circular economy approaches in a low-income neighbourhood. Insights from multi-stakeholder network theory were used as a lens to guide and evaluate the process. This study contributes to the literature by: 1) identifying challenges that result from the involvement of communities and focus on the circular economy in multi-stakeholder initiatives, 2) showing how these challenges can be beneficial to these initiatives, and outcomes for communities in particular, and 3) establishing that a continuous management of a balance between uncertainty-certainty, disagreement-agreement and domination-based vs. consensus-based management is needed to manage the challenges. This study also adds to the circular economy literature by showing how involving communities can assist in addressing its social and ethical dimensions.

Keywords: Multi-stakeholder initiatives, community involvement, circular economy

5.1 Introduction

Multi-stakeholder initiatives are increasingly used to address complex, social, and ecological problems, including the challenge of sustainable development which often involves ambiguous guidelines and a diverse and rapidly changing body of perspectives, values, technologies, and institutional approaches (Clarke & Fuller, 2010; O'Neil & Usbasaran, 2016). In these initiatives, actors from business, civil society and governmental institutions come together to find a common approach to an issue that affects them all and that is too complex to be addressed effectively without collaboration (Roloff, 2008). By engaging in multi-stakeholder initiatives for sustainable development, businesses, governments and civil society organizations can address their ethical responsibilities by incorporating diverse societal perspectives and creating economic, social and environmental benefits (MacDonald et al., 2019). These initiatives can for example assist organizations in contributing to their community by helping to address local economic, social and environmental concerns (Clarke, 2011). Examples of multi-stakeholder initiatives include, for instance, the Fair Labour Association and Fair Wear Foundation, in which businesses, governments, knowledge institutions and NGOs collaborate to develop better labour conditions and fairer ways of manufacturing clothes.

The involvement of local communities in multi-stakeholder initiatives is an important consideration which can increase the accountability of decision-making processes and the long-term viability and benefits of initiatives for communities (Lu et al., 2018). There are multiple different definitions of community and scholars generally agree that communities can be characterized by three factors: geography, interaction and identity (Dunham et al., 2006). In this paper we characterize communities by geography or as a 'community of place', referring to community as consisting of both individual citizens and groups of citizens organized to present their shared interests, residing within the same geographic region (Bowen et al., 2010; Dunham et al., 2006). The involvement of these actors in multi-stakeholder initiatives can enable two-way communication between local communities and other stakeholder groups in an open and transparent manner. The 'Grainger Town Project', a collaboration between businesses, local government, and citizens to restore the historic city centre of Newcastle, has for example shown that the involvement of local communities can help to successfully address their needs (Roloff, 2008). Other benefits of involving communities in multi-stakeholder initiatives include the legitimization of decision-making processes that affect communities, joint learning and sense-making, and the enhanced acceptance of outcomes (Mena & Palazzo, 2012). For example, it is argued that the Forest Stewardship Council, which aims to protect forests globally, has induced more social change compared to the similar Sustainable Forestry Initiative, due to its regular consultations with communities and extensive stakeholder meetings (Cubbage & Moore, 2008).

While multi-stakeholder network theory acknowledges the legitimacy of local communities' claims, the involvement of these actors, especially in the context of vulnerable and disadvantaged groups, in multi-stakeholder initiatives remains a challenging process (Lu et al., 2018). Research has indicated that most multi-stakeholder initiatives exhibit a lack of inclusiveness and large company interests are often over-represented (Dentoni et al., 2018; Fougère & Solitander, 2020; Phanumat et al., 2015). NGOs are often included as a token for civil society representation; however, the outcomes of NGO inclusion are not necessarily beneficial to local communities as NGOs also pursue self-interested objectives (Banerjee, 2014). Furthermore, when communities are involved, they do not always have an influence on the decisions made and thus remain marginalized in the process (Mena & Palazzo, 2012). Several challenges inhibit the involvement of local communities in multi-stakeholder initiatives, including its time-consuming nature, the use of the language of dominant parties, the limited power of communities, and a lack of skills within communities (Edmunds & Wollenberg, 2002; Khazaei et al., 2015; Phanumat et al., 2015). To enable communities to become active and equal participants in multi-stakeholder initiatives, increased attention must be given to their involvement. This may include acquiring a deep understanding of local community perspectives and building their skills and confidence (Khazaei et al., 2015). Multi-stakeholder network literature has provided relevant insights into the challenges involved in multi-stakeholder initiatives and offered guidelines for dealing with these challenges (Gray & Purdy, 2018). However, the literature falls short in providing insights into the specific challenges that arise when local communities are involved in multi-stakeholder initiatives and in offering guidelines for dealing with these challenges (Khazaei et al., 2015; Lu et al., 2018).

To explore this issue, this research focuses on the involvement of local communities in a multi-stakeholder initiative focused on the adoption of circular economy approaches in a neighbourhood. The circular economy has been defined as an economic system that replaces the 'end-of-life' concept with reducing, reusing, recycling and recovering materials in production, distribution and consumption processes (Kirchherr et al., 2017). The circular economy is a complex concept as it involves radically new technologies, a variety of stakeholders and perspectives, and extensive technological, cultural, regulatory and market barriers (Kirchherr et al., 2018). The importance of collaborating in multi-stakeholder initiatives has been emphasized in the circular economy literature as the circular economy focuses on value preservation, a collective value which can only be realized when all actors in a value chain collaborate to create various types of resource loops (Jonker & Faber, 2018). This has also been emphasized in the context of cities and neighbourhoods where different stakeholders, such as governments and businesses, collaborate in order to implement circular economy approaches (Prendeville et al., 2018).

The circular economy has been framed as a response to ethical issues in the linear take-make-dispose system, enabling the creation of economic prosperity without compromising the abilities of future generations (Kirchherr et al., 2017). However, researchers have argued that the circular economy itself is not a neutral system and involves multiple ethical considerations (Inigo & Blok, 2019; Murray et al., 2017). First, the circular economy likely has significant consequences for social equality in terms of inter- and intra-generational equity, gender, racial and religious equality, financial equality, or in terms of equality of social opportunity (Murray et al., 2017). The circular economy may bring prosperity and a socially positive footprint, but it may also make life worse for many (Mavropoulos & Nilsen, 2020). Second, the technological fix approach often adopted in the circular economy could lead to unintended social consequences. For example, house sharing initiatives, such as Airbnb, may lead to significant pressures on the housing market, increasing prices, and disturbing local practices (Lee, 2016). Furthermore, pay-per-use models could lead to significant privacy issues (Inigo & Blok, 2019). Evaluating the ethical acceptability and social-desirability of the outcomes of circular economy approaches is therefore essential as there is no guarantee that the final results will be positive for societies (Inigo & Blok, 2019; Mavropoulos & Nilsen, 2020). Third, circular economy approaches often involve different actors with different values, leading to a clash of conflicting interests and priorities. This means that circular economy approaches face considerable ethical dilemmas because they need to balance these interests and priorities. Unethical behaviour could for instance arise when considerations about dimensions of social justice and the social outcomes of circular economy approaches are intentionally or unintentionally excluded from the dialogue, when some actors are systematically favoured over other actors, or when there is an unrepresentative selection of stakeholders (Mavropoulos & Nilsen, 2020; Payne & Calton, 2002).

Involving communities in multi-stakeholder initiatives may help to address the ethical issues involved in the adoption of circular economy approaches in neighbourhoods and help achieve benefits for vulnerable communities (Eikelenboom et al., 2021; Lu et al., 2018). It may for instance help to address the social outcomes of circular economy approaches and enable local communities, often only engaged after-the-fact (Prendeville et al., 2018), to have a voice in the circular economy approaches of neighbourhoods. However, involving communities can be challenging as they likely hold less power than the other involved stakeholders and have less knowledge and awareness about complex and technical topics such as the circular economy (Matos & Silvestre, 2012). While previous literature has emphasized that communities should be involved in the circular economy approaches of cities and neighbourhoods to address social and ethical considerations (Inigo & Blok, 2019; Prendeville et al., 2018), limited guidance has been provided for how this can be

achieved, especially regarding how interactions among diverse stakeholders can be established.

To further explore how to involve local communities in multi-stakeholder initiatives that focus the circular economy, this research performs an in-depth analysis of an initiative where local communities, next to other stakeholders, were involved in the design and implementation of circular economy approaches in a low-income neighbourhood in the Netherlands. We adopt an action research approach (Susman & Evered, 1978), where the first author actively participated in the design and execution of the initiative. Insights from multi-stakeholder network theory, and the process of issue-focused stakeholder management in particular, were used as a lens to guide and evaluate the process. Our action research approach enabled us to answer the following research question: which challenges arise when communities are involved in multi-stakeholder initiatives focused on the adoption of circular economy approaches in neighbourhoods and how can these challenges be addressed? As a departure from previous multi-stakeholder research (e.g., Hovring et al., 2018; Roloff, 2008) and circular economy research (e.g., Fratini et al., 2019; Prendeville et al., 2018), our study investigated how an often-neglected stakeholder group, the local community, can be involved in multi-stakeholder initiatives focused on the circular economy. Our results showed that involving communities required a continuous reflection on and management of a balance between uncertainty-certainty, disagreement-agreement and domination-based vs. consensus-based management.

5.2 Literature

5.2.1 Multi-stakeholder network theory

Researchers have argued that organizations who use traditional types of stakeholder management (e.g., Freeman, 1984; Mitchell et al., 1997) tend to overlook stakeholders who are affected by the organization in favour of those who can affect it (Roloff, 2008). Therefore, new ways of dealing with diverse stakeholder perspectives have been proposed in the form of multi-stakeholder initiatives, where all stakeholders are considered as equally important and engage in a mutual learning process (Khazaei et al., 2015). In these initiatives, different stakeholders, including businesses, governments and civil society organisations, come together to address issues by communication and collaboration, instead of focusing on one organization and its objectives as the focal point (Clarke & Fuller, 2010; Roloff, 2008). The term stakeholder in this context is defined as any group or individual who can affect or is affected by the approach to the issue addressed by the initiative (Roloff, 2008: 238). Collaboration in multi-stakeholder initiatives is seen as a process that engages a group of autonomous stakeholders with interests in a problem or issue in an interactive deliberation using shared rules, norms, and structures, to share

information and/or take coordinated action (Wood & Gray, 1991: 11). The objective of collaboration is to create a richer and more comprehensive appreciation of the issue than any of the individual stakeholders could construct alone by viewing it from the perspectives of all involved stakeholders (Gray & Purdy, 2018). Multi-stakeholder initiatives can assume many different forms including policy dialogues, co-management of natural resources, and transnational networks among others (Gray & Purdy, 2018).

Managing multi-stakeholder initiatives is complex due to the wide range of actors, perspectives, values and beliefs involved in these initiatives and can therefore not be managed by one actor alone. Therefore, Roloff (2008) suggests that organizations should in this case adopt an issue-focused stakeholder management approach. This approach gives special attention to open interactions and the generation of shared perspectives. The early involvement of different stakeholders is therefore vital, which can assist stakeholders in grasping the complexity of an issue and learning about stakeholder interdependencies (Roloff, 2008). Issue-focused stakeholder management involves several phases (figure 5.1) through which the perspectives, resources and competencies of different stakeholders can be recombined, resulting in the generation of shared perspectives and solutions (Roloff, 2008).

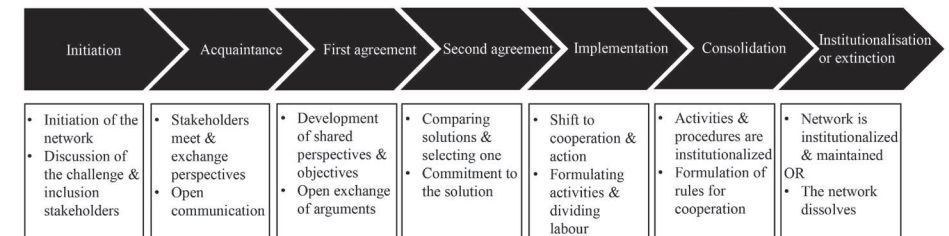


Figure 5.1 The phases of issue-focused stakeholder management (based on Roloff, 2008)

Recent research has shown that generating shared perspectives in multi-stakeholder initiatives is a complex process, likely involving dealing with several challenges, such as resistance, distrust, disagreement and confusion (Hovring et al., 2018; Reypens et al., 2019). Even when stakeholders show a strong commitment to collaboration, challenges may still arise, including conflicts over the process used to search for agreement, over their relationships, threats to identity, over values, or because of power differences (Gray & Purdy, 2018). This is especially likely when stakeholders, such as vulnerable communities, who hold lesser power compared to other stakeholders are involved (Matos & Silvestre, 2012). Chavez and Bernal (2008) showed for example in a case on the construction of a hydroelectric power plant in Mexico, that while there was community support for the project, conflict over the scope of the project, compensation to landowners, and ownership rights

for natural resources surfaced as the project progressed. Gray and Purdy (2018) provide an extensive overview of the reasons for challenges and conflicts in multi-stakeholder initiatives. These include history (stakeholders being at odds for years), distrust, differing interpretations or frames about issues and problems, mandated collaboration, value conflicts and identity differences, differences in risk perception, resource constraints, and power differences. Gray and Purdy (2018) also show that more deeply rooted institutional logics can drive conflict, such as when stakeholders originate from diverse societal sectors, when the core logics of organizational fields are being negotiated, or when the scale and scope of problems increase.

Power dynamics between stakeholders are an important source of challenges and conflicts in multi-stakeholder initiatives as they can heavily influence the interactions of parties and amplify power struggles (Gray & Purdy, 2018; Walker & Hurley, 2004). Powerful stakeholders may for example withhold effort and information, exclude others from participating and reduce diversity in perspectives in order to impose their will over others, retain their power and protect their interests (Gray & Purdy, 2014: 213). Furthermore, if stakeholders feel that other stakeholders have more power to influence the partnership process, they may feel voiceless and distrust may arise leading to their refusal to join the initiative (Huxham & Vangen, 2005). Power issues can also be more subtle, such as when stakeholders are not organized in a way that allows them to fully participate, or when the interests of some stakeholders are not noticed or acknowledged (Gray & Purdy, 2018).

When conflicts go unresolved, multi-stakeholder initiatives may fall apart and stakeholders may abandon their shared vision and adopt individual strategies that block or reverse the initiative (Gray & Purdy, 2018; Sousa & Klyza, 2007). Several tactics may be used for keeping the initiative on track. Third parties may for instance conduct conflict assessments to understand the history of conflicts, learn the positions and interests of the involved stakeholders and diagnose the feasibility of a consensus-building process (Gray & Purdy, 2018). Another tactic for addressing conflicts is acknowledging the involved stakeholders' critical identities in order to minimize feelings that these may be threatened by collaboration. Furthermore, common in-group identities, which enlarge stakeholders' frames, can enable collaboration (Gray, 2007). Conflict may also be addressed through the identification of leaders who can help stakeholders focus their attention on key issues, create a sense of urgency, and persuade stakeholders to collaborate (Gray & Purdy, 2018). When power differences exist, an important strategy is 'levelling the playing field' where the focus is on increasing the voice of low power stakeholders and increasing trust (Gray & Purdy, 2018; Purdy, 2012). Furthermore, stakeholders may overcome conflict by exploring each other's frames which may enable overcoming misconceptions about stakeholders' interests and discover shared frames. Reypens et al. (2019) also show that domination-based strategies

may be necessary in addition to consensus-based strategies usually emphasized in issue-focused stakeholder management. Within these strategies core stakeholders set the collaborative agenda, recruit partners, and steer relationships (Reypens et al., 2019).

Despite the use of these tactics, it may not be possible to prevent conflict and create consensus in multi-stakeholder initiatives. As multi-stakeholder initiatives bring together multiple stakeholders from various cultural and ideological backgrounds and with conflicting objectives, consensual solutions may not be achieved (Mena & Palazzo, 2012). Challenges and conflicts may even have an important role in multi-stakeholder initiatives, stimulating deeper investigation of issues and generating new understandings and novel solutions (Gray & Purdy, 2018). While the above section shows that more knowledge is being developed in relation to challenges in multi-stakeholder initiatives, little is known about the specific challenges that arise when communities are involved in these initiatives, including how these challenges can be managed (Khazaei et al., 2015; Lu et al., 2018).

5.2.2 The circular economy

The circular economy is a key approach for achieving sustainable development, offering a systematic solution to the waste of resources and environmental pollution caused by current consumption and production patterns (Chen et al., 2020). The circular economy can assist organizations in achieving sustainable development, for instance by allowing them to contribute to resource productivity, job creation and GDP growth (Bocken et al., 2016; Geissdoerfer et al., 2017). Researchers envisage the circular economy as having no net effect on the environment as it restores any damage done in resource acquisition, while ensuring that little waste is generated throughout the production process and in the life history of a product or service (Murray et al., 2017). Several different definitions of the circular economy are proposed and critically reviewed by Kirchherr et al. (2017) resulting in the following definition: 'the circular economy is an economic system that replaces the 'end-of-life' concept with reducing, reusing, recycling and recovering materials in production, distribution and consumption processes and simultaneously generating environmental quality, economic prosperity and social equity to the benefit of current and future generations'. Multiple circular 'R' principles describe the circular economy approaches organizations can take, including refuse, rethink, reuse, repair, remanufacture, recycle, and recover (Potting et al., 2017). The adoption of these approaches can assist organizations in achieving economic objectives, for instance through a reduction in costs due to the efficient use of materials, environmental objectives, for example through the mitigation of resource scarcity, and social objectives, for instance through the creation of employment (Geissdoerfer et al., 2017; Murray et al., 2017).

The focus in the circular economy literature has been on the environmental and economic objectives of these approaches, such as the redesign of manufacturing and service systems to benefit the environment (Geissdoerfer et al., 2017). Recently, this focus has been critiqued as it can result in narrow circular economy approaches that do not include societal participation nor address societal perspectives (Millar et al., 2019; Murray et al., 2017). Addressing these aspects is important in order to transform consumption patterns and lifestyles and change the course of the current unsustainable economic paradigm (Millar et al., 2019). Furthermore, not taking a systematic perspective, and not involving societal perspectives, could lead to rebound effects (Zink & Geyer, 2017). Circular economy approaches may for instance not reduce resource usage when secondary goods are less desirable to users or when customers increase their consumption due to the lower prices provided by circular economy approaches (Zink & Geyer, 2017). Other critiques on the circular economy concept include its diffused limits, unclear theoretical grounds, and problematic implementation which faces several structural obstacles (such as uncertain returns and issues surrounding ownership) (Corvellec et al., 2021). Bringing together these critiques demonstrates that the circular economy is far from delivering its promised outcomes (Corvellec et al., 2021).

The circular economy concept has received increased attention in the context of cities and neighbourhoods (Fratini et al., 2019). Cities can play an important role in translating the circular economy concept into action as they are breeding grounds for new discourses, for example about the sharing economy and waste management (Fratini et al., 2019). Prendeville et al. (2018) propose that a circular city is a city that practices circular economy principles to close resource loops and, in partnership with the city's stakeholders (businesses, public sector, knowledge institutions, and local communities), realizes its vision of a future-proof city. It has been argued that the involvement of local communities in the design and implementation of circular economy approaches in cities and neighbourhoods is essential (Prendeville et al., 2018). Local communities can play a role in urban sustainability by leading sustainable lifestyles, engaging in co-creating future visions and participating in governance (Pomponi & Moncaster, 2017). Furthermore, the involvement of communities could lead to multiple benefits, such as the introduction of small-scale activities in neighbourhoods for the recollection and reuse of water and waste (Fratini et al., 2019). However, project implementation is often dominated by businesses and other large incumbent actors, where communities are not engaged or only after-the-fact (Prendeville et al., 2018). This can lead to negative implications for local communities, for example in the case of sharing initiatives and access models (delivering products as services) which can erode citizen autonomy (Fratini et al., 2019). It has therefore been proposed that more participatory approaches to involve communities in the circular economy approaches of cities and neighbourhoods are necessary from the outset (Pomponi & Moncaster, 2017;

Prendeville et al., 2018). This can assist in integrating societal perspectives in circular economy approaches, enable legitimate decision-making processes, and increase the social and environmental benefits of circular economy approaches as they often require changes in social behaviours and lifestyles (Geissdoerfer et al., 2017; Inigo & Blok, 2019; Murray et al., 2017).

5.3 Method

5.3.1 Case description

This study focusses on an initiative to involve local communities, next to other stakeholders, in the design and implementation of circular economy approaches in a low-income neighbourhood in the Netherlands. This neighbourhood had around 4000 inhabitants with 80% of the houses owned by a local housing association. The neighbourhood had been classified as one of the poorest neighbourhoods in the region (17,4% of inhabitants had an income below the Dutch poverty line, while the national average is 5,2% of inhabitants) due to unemployment (21% of the labour force) and health challenges. Furthermore, there were a multitude of social challenges in the neighbourhood including nuisance (17% of the inhabitants reported nuisance due to neighbours), social isolation, waste, and addictions (17% of all problematic cases handled by the provincial social services department were of individuals located in the neighbourhood, while only 4% of the total number of inhabitants of the province were located in the neighbourhood). Simultaneously, most buildings in the neighbourhood had been built in the 1960s and were in need of large-scale renewal. Despite the challenges, the neighbourhood also possessed several strengths including multiple green spaces, a core of involved community members, and an increasing amount of community initiatives. Due to the challenges, the local housing association identified the need to design an action plan for the neighbourhood. This action plan was developed, led and funded by the housing association in cooperation with the municipality. The aims of the plan were to renew the buildings in the neighbourhood and address multiple social challenges within this process, for instance by increasing diversity in the types of housing.

A potential role for the circular economy was highlighted in the action plan, for instance by reusing materials and implementing sharing principles. The ambition was set to transform the neighbourhood into one of the first circular neighbourhoods in the region. However, prior to the research, the plans were unclear, especially in terms of how circular economy approaches could be implemented in the neighbourhood. Communication and collaboration between stakeholders was seen as highly important for the successful implementation of circular economy approaches, especially in terms of closing resource loops. Therefore, as part of the action plan, an initiative involving multiple stakeholders was established with the aim to design and implement circular economy approaches in the neighbourhood in

close cooperation with community members. We understand this initiative as a local partnership for problem solving and idea generation on a community level, similar to the Grainger Town Project discussed by Roloff (2008). It is important to note that the initiative was terminated early due to the Covid-19 pandemic (further details can be found in the results section). While the initiative was executed and circular economy approaches were being designed in teams of diverse stakeholders, it was terminated before these approaches could be implemented in the neighbourhood.

The initiative was established, designed, executed and funded by a local housing association. Dutch social housing associations are private non-profit-making organizations with social goals: providing low-income communities with affordable housing and improving their overall well-being. The housing association addressed in this paper rented out over 20,000 houses and had 185 employees. Relationships with communities, and tenants in particular, were important for the association and these stakeholders participated in new initiatives through information sessions and consultations. The housing association had been a national leader in the adoption of environmental approaches, for example by constructing energy neutral houses.

The local municipality was responsible for laying the foundations of the action plan for the neighbourhood in collaboration with the housing association. Furthermore, the municipality assisted the housing association in designing and executing the initiative. The municipality included 123,000 inhabitants and was located in the North of the Netherlands. The circular economy had received increased attention in the municipality and a circular economy network organization, with over 100 members from business, government and civil society, and several circular economy projects with local businesses, had been established in the years preceding the project.

Several businesses were involved in the initiative and its execution. Emphasis was placed on the local waste-collector, architects and building companies. These businesses were seen as important for the implementation of circular economy approaches and technologies in the neighbourhood, such as modular housing techniques and new waste collection methods.

The local community, including individual community members (4000 inhabitants) and community organizations (such as a community centre, social working space and neighbourhood company), was involved in the initiative. The vulnerable position of community members was emphasized due to several challenges including unemployment, social isolation and addictions. Concerns were raised about the potential negative impacts of circular economy approaches on the community due to an increase in living expenses and a corresponding reduction in wellbeing. In order to prevent such negative social consequences

and increase support from community members, the importance of involving the community in the design and implementation of circular economy approaches in the neighbourhood was emphasized. However, prior to the research, it was unclear how this could be achieved and it was emphasized that community involvement may be difficult due to the vulnerable position of community members and their limited awareness of the circular economy.

The local university was represented by the first author who joined the housing association with the objective to collaboratively design, execute and evaluate how the local community, next to other stakeholders, could be involved in the design and implementation of circular economy approaches in the neighbourhood.

5.3.2 Action research approach

An action research approach facilitated the answering of our main research question: which conflicts arise when communities are involved in a multi-stakeholder initiative focused on the adoption of circular economy approaches in a neighbourhood and how can these conflicts be addressed? Action research fits our research purposes as (1) we are guided by a research topic that emerged from a real-world organization, (2) our research is intended to have real-world effects and involves real people in real settings, and (3) our research requires a collaborative involvement with different organizations (Rapoport, 1970: p. 499). Action research has the dual purpose of advancing knowledge and contributing to the practical concerns of individuals by joint collaboration (Rapoport, 1970). This means that the researcher is embedded in an organization and contributes to generating the phenomena that are intended to be analysed (Perrot, 2017). In this way, data is not only obtained, but also generated through collaboration between the researcher and organizational members (Susman & Evered, 1978). Susman and Evered (1978) argue that rigor can be achieved in action research through an iterative process of data collection and analysis and the systematic triangulation of multiple perspectives and data sources.

The action research methodology required us to work as co-creators and co-leaners with the stakeholders involved in the initiative. The action research collaboration started in September 2018 and terminated at the end of December 2020. For this collaboration the first author joined the strategy department of the housing association, working dually at the housing association and university. For this arrangement the first author received a non-paid position at the housing association as an intern/researcher; employees were informed that the first author would observe the initiative and assist where possible using insights from the observations, interviews and literature. The first author was thus actively involved in the multi-stakeholder initiative and its execution. The second author was involved at a distance, focussing on reviewing and interpreting the data, without directly engaging in the initiative. The role of the second author assisted in reducing the risk

of subjective interpretations. The action research cycle steps proposed by Susman and Evered (1978) were followed to conduct the research. The steps include (1) diagnosing: identifying and defining the situation, (2) action planning: collaboration between the researcher and practitioners to consider alternative remedies to a problem, (3) action taking: the implementation of the planned action, (4) evaluating: studying the consequences of the action, and (5) specifying learning: identifying general findings. Although we followed these steps, our research design was flexible and iterative in nature. For instance, our evaluation already started during the action planning step.

Action researchers can make use of a variety of data collection techniques during the action research cycle steps (Susman & Evered, 1978). In this study data was collected during the diagnosing, action planning, actions taking and evaluation steps through observations during the meetings and the other activities (see table 5.1). Furthermore, interviews were used during the diagnosing and evaluation step in order to get more insights into the neighbourhood and the perspectives of the different stakeholders (in the diagnosing step) and their experiences during the initiative (in the evaluation step) (see table 5.2). Lastly, during all steps archival data was collected, including documents on the neighbourhood, the action plan and the initiative, and internal/external communications such as e-mails and messages on the housing association's intranet.

Action researchers have a dual role, aiming to advance knowledge and contribute to the practical concerns of individuals by joint collaboration (Rapoport, 1970). The general role of the first author in the initiative was to assist in developing and executing the initiative, while leading the evaluation of the initiative. In doing so, the first author influenced the initiative, for instance by providing insights from the literature to guide the initiative and reflecting on the activities with the participants. The dual role helped to bridge the gap between the theoretical and practical (Bartunek, 2007), but also introduced ethical concerns regarding the potential of the researchers to exploit participants for their own research gains. To reduce these concerns, we made sure that all the participants knew and respected the first author's combined role. To reduce the potential for patronization and exploitation by the researcher, the participants were included in and given the lead over the decision-making process in all phases of the action research process.

The next sections will explore the action research cycle steps in further detail, elaborating on the data collection methods and role of the researcher in each step. Figure 5.2 provides a time-line of the research activities.

Table 5.1 Observations during the diagnosing, action planning, action taking and evaluation steps

Occasion	Number of times	Duration
Observations in office	1 time per week, for 40 weeks	8 hours a day
Site visits to the neighbourhood	2	2-3 hours per visit
Action planning meetings	10	1-2 hours per meeting
Workshops at the school	2	4 hours per workshop
Discussion meetings	4	2 hours per meeting

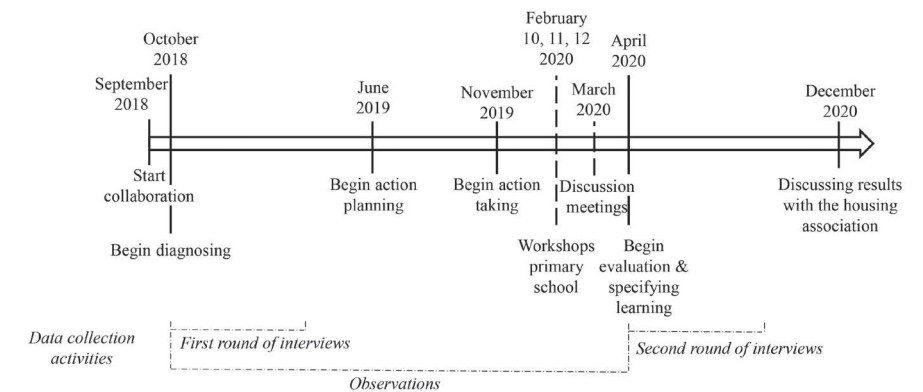


Figure 5.2 Time-line of the research activities

Diagnosing. The diagnosing step started in October 2018 after initial discussions at the housing association between the researchers, the manager of the strategy department, the strategic relations manager and asset manager. Within these meetings it was confirmed that the idea was to collaboratively develop, execute and evaluate an initiative for involving the community, next to other stakeholders, in the design and implementation of circular economy approaches in the neighbourhood. In order to build a solid research base, we firstly focused on developing an increased understanding of the context, including the neighbourhood and its challenges, and the different involved stakeholders, as well as the initial understandings of the involved stakeholders of circular economy approaches in the neighbourhood and the potential for community involvement. Data collection during this phase involved 2 site visits to the neighbourhood, 23 semi-structured interviews (table 5.2), and the analysis of archival data, including documents on the neighbourhood and the action plan. Interviewees were identified based on their involvement in the action plan and initiative. Furthermore, interviewees from the community were identified by asking the housing association which individuals or organizations had an important role in the community. We focused on interviewing those community

members and organizations with different roles in the community including shops, the community centre and social team. The duration of the interviews was between 30 and 60 minutes and all interviews were recorded and transcribed. Interviewees were asked about their role in developing the action plan for the neighbourhood, their perspectives on the challenges and strengths of the neighbourhood, their understandings of the circular economy and the adoption of circular economy approaches in the neighbourhood, and their perspective on involving the community in the design and implementation of circular economy approaches in the neighbourhood (interview guide is provided in Appendix E). During this step the role of the researcher was to build a solid research base and identify the possibilities and challenges for the involvement of the community, next to other stakeholders, in the design and implementation of circular economy approaches in the neighbourhood.

Action planning. After analysing the materials from the diagnosing step, the action planning step started in June 2019. The aim of this step was to design an initiative for involving the community, next to other stakeholders, in the design and implementation of circular economy approaches in the neighbourhood. Action planning was conducted in cooperation with a team of housing association employees who had responsibility for the neighbourhood and/or the action plan. These included: (1) the manager of the strategy department, (2) the strategic relations manager, (3) the asset manager, (4) the tenant affairs advisor and (5) the social affairs project leader. In total 10 meetings were held (where at least two of the above employees joined) in which the findings of the diagnosing step and insights from the multi-stakeholder network literature were discussed. Furthermore, the meetings involved brainstorming activities to design ways in which the community could be involved. The researcher took notes from the meetings which were transcribed. The role of the researcher during this step was to share the findings from the diagnosing step and insights from the literature and join the brainstorming activities.

Action taking. During the action taking step the designed initiative was executed. This involved organizing two workshops at a local primary school and multiple discussion meetings with different stakeholders (table 5.3). The workshops at the primary school were planned during November 2019 and executed in February 2020. Thereafter, multiple discussion meetings were planned and executed in March 2020. The researcher joined all workshops and meetings and took notes. The researcher had three roles in the action taking step including (1) jointly planning the workshops and discussion meetings, (2) assisting in giving the workshops, and (3) coordinating the different stakeholders.

Evaluating. After the action taking step, the evaluation step started in April 2020 in which the initiative was evaluated. This was done through formal conversations

with multiple stakeholders after the discussion meetings took place, as well as through observations and the analysis of archival data concerning the initiative and action plan for the neighbourhood. We asked stakeholders to evaluate the discussion meetings, including questions like 'How did you experience working together with the other stakeholders during the meetings?' and 'Do you think the involvement of community members in the discussion meetings was valuable for the design and implementation of circular economy approaches in the neighbourhood?' (interview guide is provided in Appendix E). Evaluation was not solely conducted during the evaluation step, as during each step evaluations were collected through informal conversations with the involved stakeholders during or right after the activities took place. The role of the researcher in this step was to evaluate the initiative and encourage the involved stakeholders to reflect on the initiative.

Table 5.2 Interviewees diagnosing step

Stakeholder	Interviewee function	Duration (in minutes)
Housing association	1. Rental collections	30
	2. Rental collections	35
	3. Portfolio analyst	30
	4. Advisor housing	40
	5. Tenant affairs	35
	6. Executive secretary	40
	7. Maintenance advisor	30
	8. Project leader social affairs	50
	9. Construction professional	40
	10. Rental manager	40
Social team	11. District manager	40
Social working space	12. Supervisor & manager	50
Community centre	13. Manager	30
	14. Project manager	25
Tenant association	15. Board member	30
Community space & restaurant	16. Owner	40
Second-hand shop	17. Manager	45
School	18. Sustainability coordinator	45
Municipality	19. Project manager	50
	20. Senior policy officer	60
	21. Sustainability officer	60
Waste processor	22. Director	50
Builder/architect	23. Manager circularity	60

Table 5.3 Stakeholders involved in action taking

Activity	Stakeholder	Employee/actor	Role
Workshops at the primary school	Housing association	Tenant affairs advisor Project leader social affairs	Planning & assisting in the workshops
	Primary school	Teachers	Authority in the class
		Director	Planning the workshops
	Primary school	22 students (7 th & 8 th grade)	Participating in the workshops, making documentaries
		Circular network organization	Educational manager
	University	Researcher	Planning & giving the workshops & coordinating stakeholders
		Bachelor students (14)	Assisting in the workshops
	Community organizations	Neighbourhood company, energy manager, social working space, community centre, social team, concierge, sport clubs.	Participating in the workshops (being interview for the documentaries)
	Community	Community members in the neighbourhood	
		Parents of the students	Attending the premiere of the documentaries

Table 5.3 [Continued]

Activity	Stakeholder	Employee/actor	Role
Discussion meetings	Housing association	Tenant affairs advisor	Planning & coordinating & attending
		Project leader social affairs	
		Strategic relations manager	
	Municipality	Director	Attending
		District manager	Planning & attending
	Municipality	Sustainability manager	Attending
		Primary school	Director
	22 students		Showing the documentaries
	University	Researcher	Planning & attending & coordinating stakeholders
	Circular network organization	Educational manager	Director
Strategy manager			
Builder/architect		Architect	
Waste processor		Director	
Community		Interested community members	Attending
Community organizations	Neighbourhood company, energy manager, social working space, community centre, social team, concierge, sport clubs.		

Specifying learning. During the last step general findings were identified. All materials were coded using a 1st and 2nd order coding methodology (Gioia et al., 2012) in Atlas.ti 8. Data analysis involved two rounds: one round focussing on data gathered during the diagnosing step and one round performed after the evaluation step. In the two analysis rounds, a similar data analysis approach was adopted which involved three stages. First, we conducted text queries to search for keywords and phrases, as informed by our research question. We focussed on labelling the challenges experienced in the involvement of the community and approaches to manage these challenges. Different data sources, including interviews, observations

and archival data, were used to validate the researchers' interpretations. After re-reading the interviews and other data sources, we gradually combined the original labels into first-order codes. Second, we combined the first-order codes into second-order themes, to create a coherent storyline that articulates our understanding of the approaches for, and challenges encountered during, the involvement of the community in the multi-stakeholder initiative. Finally, we gathered the second-order themes into aggregate dimensions. Our data analysis also involved discussing the emerging themes and dimensions with the participants. We did this during the action planning step, discussing and agreeing on themes emerging from the data gathered during the diagnosing step, and in an evaluation meeting in December 2020, discussing and agreeing on themes and dimensions emerging from all data. Figure 5.3 shows the data structure.

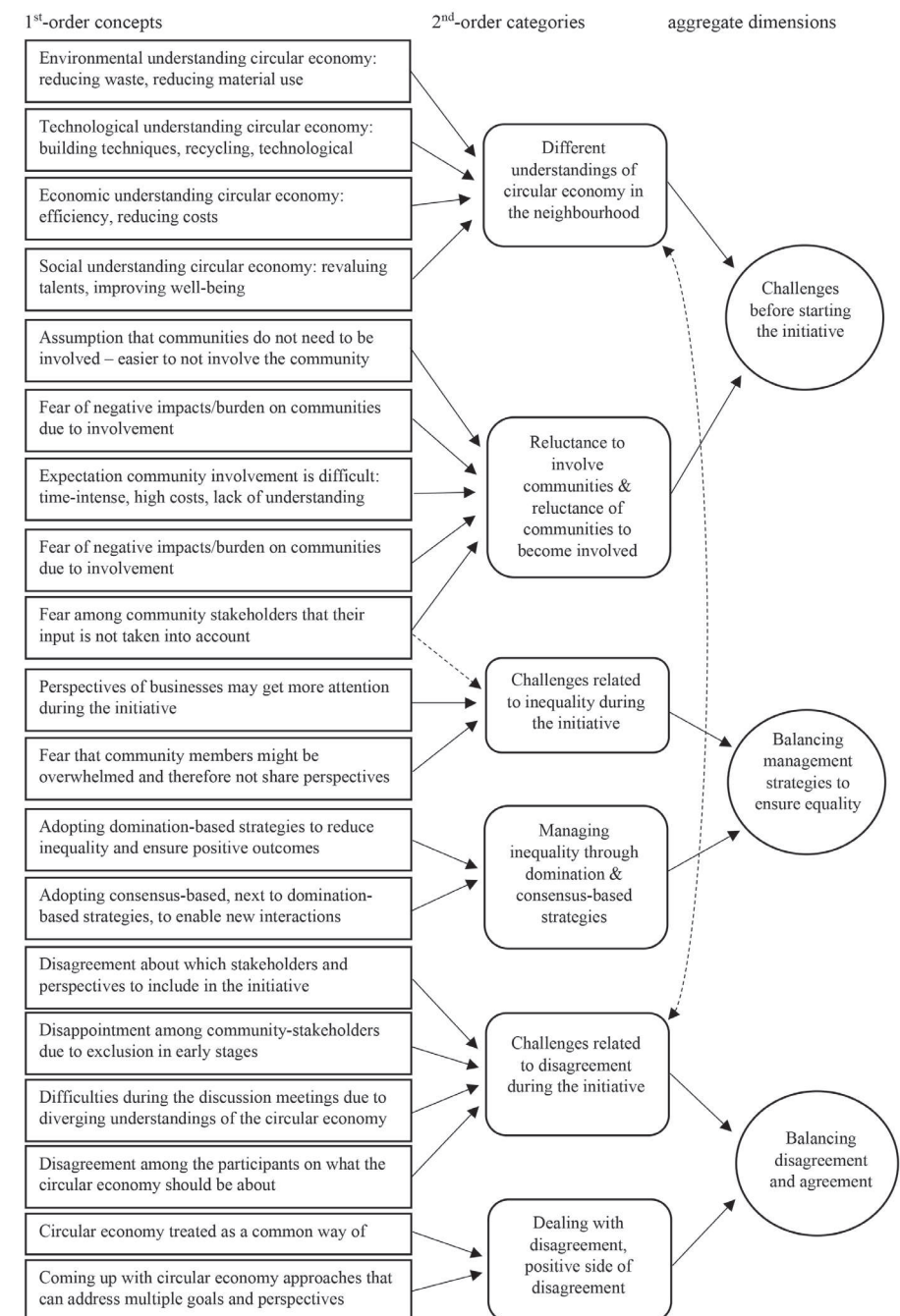
In the coding process we built on the previously discussed multi-stakeholder network literature. We analysed our data against the literature, eliminating concepts and theories that did not match the emerging patterns. This corresponds to an abductive approach, which focusses on the continuous interplay between theory and empirical observations with the aim of integrating these streams, as well as advancing knowledge, through an in-depth analysis (Dubois & Gadde, 2002). Abduction is useful to explain new and surprising empirical data through the elaboration, modification, or combination of pre-existing concepts as it confronts theory with the empirical world (Richardson & Kramer, 2006). The abductive approach is thus useful when the objective is to discover new things, other variables or relationships, leading to the generation of new concepts and the development of theory, rather than confirming existing theory (Dubois & Gadde, 2002).

5.4 Results

5.4.1 Diagnosing step - initial challenges

During the diagnosing step several initial challenges to involving the community, next to other stakeholders, in the design and implementation of circular economy approaches in the neighbourhood were identified, including the need to 1) deal with different understandings of the circular economy by the stakeholders and 2) overcome the reluctance of multiple stakeholders to involve the community in the initiative and the reluctance of community members to become involved.

Different stakeholder understandings. Several different understandings of the circular economy in the neighbourhood were indicated by the involved stakeholders,



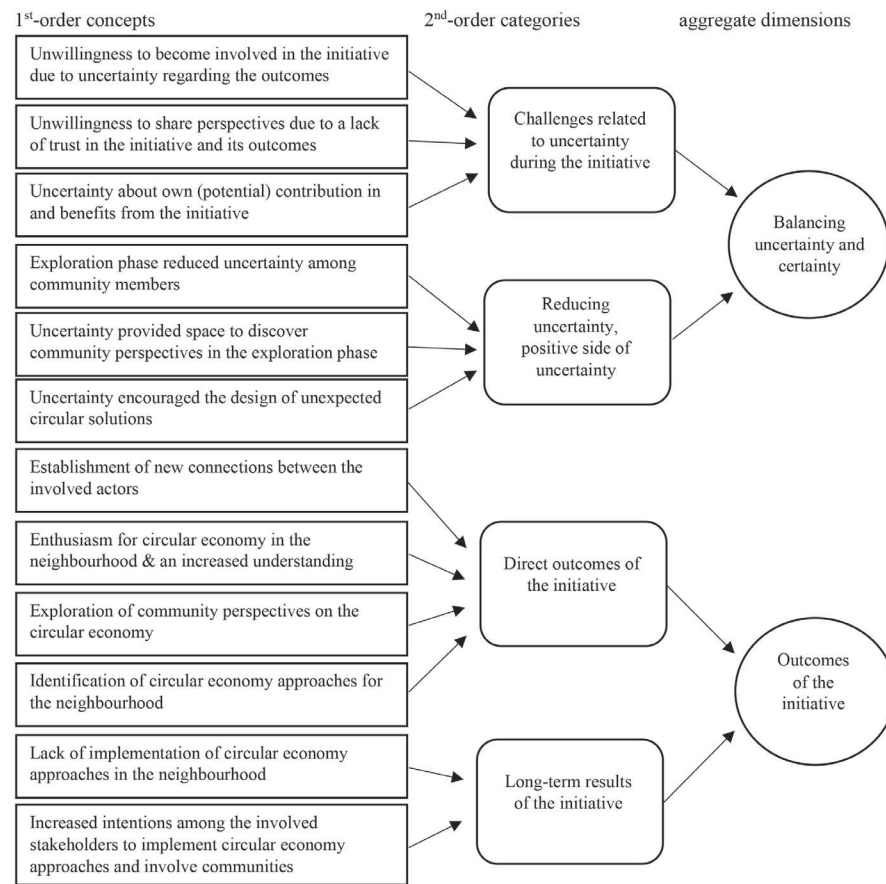


Figure 5.3 Data structure

including an environmental, technical, economic and social understanding. Most interviewees working on the construction of houses (including the builder, architect and housing association's construction professional and advisor housing), understood the circular economy as being technological and/or environmental in nature. Within this understanding the importance of reusing and recycling technologies in the neighbourhood to achieve environmental goals was emphasized:

The circular economy is about the process of making something, in our case houses, making sure that we do not throw materials away but recycle them in order to decrease our impacts on the environment. We need smart solutions for that, we need new technologies. (Interview: housing association - advisor housing)

Other interviewees, mainly those supervising and supporting construction projects (including the municipality and the housing association's portfolio analyst), had a more economic understanding of the circular economy, where the focus was on implementing circular economy approaches to reduce costs:

It [referring to the circular economy] is about efficiency and reducing costs, you have to evaluate carefully if reusing water or warmth leads to decreased costs in the neighbourhood. Otherwise, circular economy approaches might not be worthwhile. (Interview: municipality - senior policy officer)

Finally, a fourth understanding of the circular economy was indicated by interviewees in the community and those with close relationships to the community (including the community space, social team and the housing association's social affairs project leader), which was more socially oriented. The interviewees understood the circular economy as a way to improve the wellbeing of community members through revaluing their qualities:

I really see the circular economy as a social practice, revaluing the talents of people in the neighbourhood. We have to find out what people want and can do and make use of these talents, instead of leaving people without a job at home. (Interview: community space - owner)

Multiple interviewees were 'fluid' in their understanding of the circular economy, highlighting technical, environmental, economic and social aspects. However, most interviewees only emphasized one or two aspects and some did not see a relation with other aspects:

I think the circular economy is about buildings, adopting new technologies in houses, I do not see a link between the circular economy and the social problems in the neighbourhood. (Interview: housing association - construction professional)

Multiple understandings of the circular economy also existed within organizations, especially in the housing association. These differences were mostly related to the functions of the interviewees. For instance, individuals working in the construction of buildings mostly emphasized the technological and environmental understandings, whereas individuals working closely with or in the community emphasized a more social understanding. The resulting challenge was to find ways to deal with and combine these different understandings during the initiative.

Reluctance to involve and become involved. There was a reluctance among multiple stakeholders to involve the community in the design and implementation of circular economy approaches due to several reasons. First, most stakeholders working on

the construction of houses (including the builder and the housing association's construction professional and maintenance advisor), felt that there was no need to involve community members as they would likely not be interested in nor effected by circular economy approaches. Some interviewees argued, for instance, that the circular economy is a technical matter which is not directly related to the community:

We can adopt circular building practices in the neighbourhood, making it easier to take the buildings apart. We developed these technologies in such a way that people living in the houses will not notice it, therefore there is no need to actively involve them. (Interview: builder – manager circularity)

Stakeholders supervising and supporting construction projects (including the municipality and members of the housing association) did recognize the importance of involving the community in order to increase their support for circular economy approaches and create social benefits. However, these stakeholders, especially members of the municipality, also stressed that involving the community would be a complex and costly process:

In order to involve local people in circular economy approaches we need new methods in which we keep intensive contact with them. The question is if we have the time and money for such a process. (Interview: municipality – sustainability officer)

Several members of the housing association supervising construction projects (including the portfolio analyst and executive secretary) and those working in close contact with the community (including the rental collectors and project leader social affairs) stressed that community involvement might lead to expectations that could not be met and pose a burden on vulnerable community members. Additionally, multiple stakeholders with close contact to the community (including the housing association's project leader social affairs and social team) mentioned that it can be difficult for community members to get involved in circular economy approaches as they may not know what it entails in practice:

I am afraid that when you talk about circular economy approaches, many community members will not understand what you are talking about. You have to find a way to talk about these topics with community members, making it relevant for them. (Interview: social team – district manager)

Simultaneously, it was stressed by stakeholders in the community (including the community centre) and by those with close contact to the community (including the social team) that the community may be reluctant to become involved in circular economy approaches. For instance, some interviewees feared that, when

community members would become involved in circular economy approaches, nothing would be done with their efforts:

There is an increasing feeling among community members that, if they put efforts in collaborating on topics, especially on less tangible topics such as the circular economy, nothing will be done with their efforts. Therefore, the motivation to become involved is low. (Interview: social team – district manager)

To conclude, the interviews revealed that stakeholders working on the construction of houses and those managing/supporting construction projects (including members of the housing association, municipality and builder/architect) found it difficult to involve the community in the initiative, while stakeholders in the community and those with close contact to the community (including the social team, community space and members of the housing association) stressed the challenges of involving communities in the initiative and the potential reluctance of community members to become involved. This reluctance to involve and get involved had to be overcome in the initiative.

5.4.2 Action planning & taking step: the initiative

Following the insights from the diagnosing step and multi-stakeholder network literature, an initiative to involve the community, next to other stakeholders, in the design and implementation of circular economy approaches was designed and executed in the action planning and taking steps. This initiative included several phases (figure 5.4).

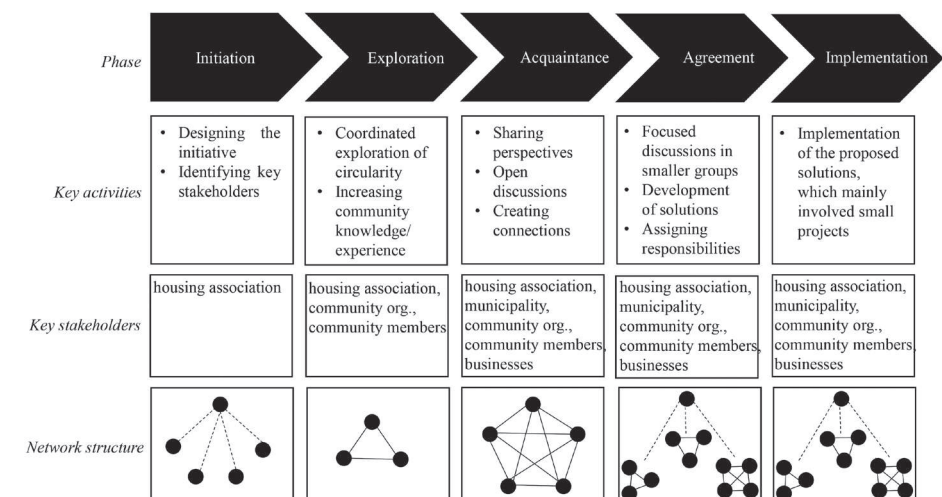


Figure 5.4 The phases of the initiative

The initiative was started by the housing association, involving the design of the initiative and the identification of key stakeholders. An additional phase (not included in issue-focused stakeholder management) was deemed necessary in order to enable the community to become familiar with the circular economy. This was done in the exploration phase, which had several aims: (1) increasing the familiarity of community members with the circular economy, (2) making the connection between the circular economy and the community more tangible for other stakeholders and (3) creating enthusiasm for the circular economy in the neighbourhood. The exploration phase involved a coordinated exploration of what the circular economy could mean in the neighbourhood, highlighting social, economic, and environmental aspects. In order to do this, the housing association collaborated with primary school students who made short documentaries about the different aspects of the circular economy in their neighbourhood. It was decided to collaborate with a local primary school due to the central position of the school in the neighbourhood, its ability to link community members and its capacity to create an enthusiastic and open atmosphere. For their documentaries, primary school students interviewed community members and organizations in the neighbourhood regarding their understanding of the circular economy and ongoing circular economy projects, such as a local second-hand clothing store.

The acquaintance phase involved discussion meetings in which the different stakeholders met each other, learned about each other's perspectives and exchanged opinions. Within this phase the documentaries made by the students served as a conversation starter, enabling open discussions among stakeholders. While the discussions were organized around the documentaries, the aim was to keep them open in terms of the topics that could be discussed. After the acquaintance phase, the agreement phase started in which stakeholders discussed their perspectives to arrive at common approaches. In this phase, stakeholder teams were formed around different topics including waste, reuse and repair, revaluing talents, and sharing. For instance, for the topic 'waste' the team involved several community members, the community centre, the municipality and the waste processor. These teams had focused discussions on the topics and thought about circular economy approaches that could be implemented in the neighbourhood. Furthermore, the teams would assign responsibilities among its members for the implementation of the approaches. The housing association served as a coordinator of the teams and activities during the agreement phase and each team was joined by at least one housing association employee. The designed approaches would be implemented during the implementation phase, however this was not realized during the course of this research due to the COVID-19 pandemic.

5.4.3 Evaluation & specifying learning step - challenges encountered during the planning and execution of the initiative

During the evaluation and specifying learning steps it was identified that three main challenges were encountered during the planning and execution of the initiative, including (1) ensuring equality, (2) dealing with disagreement, and (3) reducing uncertainty.

Ensuring equality. Ensuring equality, especially between community members and the other involved stakeholders, became an important challenge during the initiative. Most of the involved stakeholders, such as businesses and the municipality, possessed more knowledge and resources to propose and execute circular economy approaches compared to community members. This could result in inequality, where the perspectives of community members could potentially be neglected. It was for instance argued that community members may feel overwhelmed and may therefore not be able or willing to share their perspectives:

We need to carefully plan the interactions among the involved stakeholders and the community. There are so many different opinions and assumptions involved, that community members might get overwhelmed or their opinions overshadowed. (Meeting planning discussion meetings: housing association – project leader social affairs)

It was furthermore argued that the perspectives of businesses may receive more attention compared to the perspectives of communities:

Businesses are more used to work with other businesses and stakeholders such as the municipality. Therefore, these actors find each other more easily in the discussions and may forget to include the perspectives of the community. (Evaluation after the discussion meetings: community centre – manager)

The housing association decided to adopt domination-based strategies to ensure equality during the initiative. In these strategies, the housing association (sometimes in cooperation with the municipality) set the agenda, decided which stakeholders to include and steered interactions. For example, the housing association coordinated teams during the agreement and implementation phases and made sure approaches were feasible and beneficial for all stakeholders. The use of domination-based strategies to manage the initiative enabled the housing association to steer the relationships and outcomes in a positive direction for the community. However, it was also emphasized that domination-based strategies should be combined with consensus-based strategies. A consensus-based strategy was for example adopted in the acquaintance phase, where the involved stakeholders openly shared their perspectives in relation to the documentaries made by the students.

It was acknowledged by the housing association that the adoption of consensus-based strategies was important to allow for the emergence of new interactions and solutions:

We cannot fully plan the interactions upfront, it really depends on the individuals that are involved and their interactions. We need to give participants freedom to find new ways of working together. (Meeting planning discussion meetings: housing association – strategic relations manager)

Finding the right balance between domination-based and consensus-based strategies was difficult and required a long process of discussions among the housing association employees. For example, employees with a close relationship to the community applauded the adoption of a consensus-based strategy in the first phases of the initiative, as it enabled community members to share their perspectives and indicate important topics for them. However, employees working on the construction of houses argued that this was an unnecessary step which would delay the initiative. Instead, they argued that the housing association and municipality should decide on the topics to better guide the discussions. The employees agreed to go for the middle-ground, where community members and other stakeholders would be able to share their perspectives in the acquaintance phase and have more focussed discussions on topics specified by the housing association (based on the discussion in the acquaintance phase) in the agreement phase. However, the discussion was re-opened during the acquaintance and agreement phases, as some employees and stakeholders felt that the discussions needed more guidance.

Dealing with disagreement. During the initiative, disagreement about two main issues arose. First, there was disagreement among the housing association employees regarding which stakeholders and perspectives to include in the initiative. This was mainly experienced during the initiation phase, as there were different opinions about which stakeholders and perspectives were relevant. Not all employees were in favour of including community members and the school, arguing that only inviting representatives of the community (such as the tenant association) and those directly working with the circular economy (such as the second-hand shop) would be sufficient. However, the housing association's social affairs project leader convinced the other employees by stressing the challenges with community involvement in past projects relating to the energy transition (which often involved unsatisfied community members, as they felt they were unable to share their opinions and concerns in these projects). Furthermore, not all stakeholders and perspectives could be involved due to time and other project constraints. For example, some community organizations could not be involved in the exploration phase as the primary school students did not have time to interview all of them. This

caused disappointment and, while they were invited for the acquaintance phase, some community organizations decided not to join after the initial disappointment.

I was very excited about this project; I already told my two interns to do some research about the circular economy. I really hoped they would involve the whole community this time. (Phone call planning workshops school: neighbourhood company - manager)

Second, during the acquaintance and agreement phases there was a substantial level of disagreement about the meaning and implementation of circular economy approaches in the neighbourhood. While most stakeholder perspectives were not contradictory, combining them was difficult and required an extensive amount of time:

Especially the meetings with the building companies were difficult, as there were people from the social domain that had radically different ideas about the circular economy. We had to find ways to combine these, which involved a lot of time and frustration. (Evaluation after the discussion meetings: housing association – strategy manager)

Disagreement continued in the agreement phase, where some stakeholder teams 'agreed to disagree' and stopped looking for a shared perspective on the circular economy. Instead, they sought for agreement in a circular economy approach, in which the circular economy was treated as a common way of working through which diverse goals in the neighbourhood, involving economic, ecological and/or social goals, could be addressed:

I think in the end it did not really matter what we all thought about the circular economy. I think it was more important that we focused on finding ways to use circular economy approaches to work towards goals we all believe in and create a pleasant neighbourhood. (Evaluation after the discussion meetings: social working space – supervisor & manager)

For example, one team came up with the idea to organize a local marketplace where community members and community-based organizations could share and repair left-over or broken products and materials. This marketplace was a shared approach to address different goals, including increased social interactions (emphasized by the community and municipality), easy access to repairing facilities (emphasized by the community), reduced waste (emphasized by the municipality and waste processor), and the ability to raise awareness (emphasized by the waste processor).

While most teams did agree on a common approach, not all stakeholders felt ownership over this approach. For example, the builder involved in the reuse and repair team did agree with the common approach, enabling community members to use left-over materials for small at home projects (such as sheds), but did not feel like it had much to do with its own activities:

These projects are of course very nice for the community members; however, they do not have much relation to our activities. In this neighbourhood our focus should be on reusing materials in buildings. That will in the end result in more environmental gains. Providing some materials to community members is a side project that should be led by those in the community. (Evaluation after the discussion meetings: social working space – supervisor & manager)

Reducing uncertainty. Some stakeholders were unwilling to collaborate and share their perspectives during the initiative. This was mainly experienced among community members during the initiation and exploration phases. This unwillingness resulted from a lack of trust in and uncertainty about the initiative:

I am unsure about this project, why is my opinion needed when in the end new rules for our waste will be set-up without thinking about the people living here? (Workshop school: conversation between children & community member)

The exploration phase assisted in reducing uncertainty among community members as the resulting documentaries highlighted different aspects of the circular economy in the neighbourhood in a language understandable for community members. However, uncertainty was still an important challenge during the initiative. Several stakeholders were for instance unwilling to collaborate in the acquaintance, agreement and implementation phases due to uncertainty regarding the circular economy approaches that would be developed and their potential contribution towards them:

I am not sure if we can add something to this initiative as I am not certain what our role should be as a partner in the construction value chain. What is the focus of circular economy approaches in this project and what are our responsibilities? (Planning discussion meetings: conversation between researcher and builder – strategy manager)

This argument was mostly used by stakeholders concerned with the construction of houses (including the builder and architect) who also felt that it was not necessary to actively engage community members in the formulation of circular economy approaches. The housing association and municipality tried to persuade these

stakeholders to join by framing the initiative as an experiment for community involvement.

While uncertainty about the initiative and its outcomes could lead to a reluctance to collaborate, it also had a beneficial side. There was for example uncertainty about the way in which circular economy approaches would be implemented in the neighbourhood during the early phases of the initiative. This provided the space necessary to enable the open exploration of community perspectives in the exploration phase and the integration of these perspectives during later phases of the initiative:

I was surprised by what was already happening in the neighbourhood. You wouldn't expect that the community adopts circular economy approaches, however in their way they do a lot already. If we would have imposed our own vision, we might not have gotten a look into how people in the neighbourhood are already thinking about waste and reuse. (Informal evaluation after the primary school workshops: housing association – advisor housing)

5.4.4 Evaluation & specifying learning step - outcomes of the initiative

During the evaluation step it was identified that the initiative resulted in several outcomes. First, new connections were established between the involved stakeholders with the intention to work together on shared goals such as assisting community members in finding suitable job opportunities. Second, the initiative generated enthusiasm for the circular economy in the neighbourhood. For example, after the exploration phase several community-based organizations expressed their interests in learning more about the circular economy. Additionally, the involved stakeholders got the opportunity to experience the way in which circular economy approaches were already used in the neighbourhood, which was argued to be important for initiating new collaborations:

Parties, especially technically oriented parties such as builders, really had to visit the neighbourhood to see what happens there. This helped them to recognize the value of working together with community members on, for them, technically oriented topics such as the circular economy. (Evaluation after discussion meetings: housing association – strategic relations manager).

Furthermore, the ways in which circular economy approaches could be implemented in the neighbourhood became clearer:

The meetings with community members have led to new insights into the circular economy and the documentaries of the students are great. These things are

definitely going to help us and the municipality to design a good action plan for the neighbourhood. (Intranet post: housing association – strategy manager)

However, the initiative did not lead to the direct implementation of circular economy approaches in the neighbourhood during the course of this research. Multiple potential ideas were mentioned by the stakeholder groups, such as placing new 'creative' waste bins in the neighbourhood, organizing a picnic for sharing unused products, and arranging a local marketplace. However, these projects were not implemented due to the early termination of the initiative. Due to the COVID-19 pandemic multiple discussion meetings could not take place, as it was difficult to organize discussion meetings due to restrictions in terms of the number of individuals that could attend meetings. The housing association tried to get around these restrictions considering, for example, the adoption of online meetings or the organization of a picnic. However, these alternatives were difficult to execute (as not all community members had access to computers and the temperature was deemed too low for a comfortable picnic) and the housing association did not want to strain community members during the difficult time of the pandemic. After the restrictions were relaxed, the priorities of most stakeholders had shifted, and instead of focussing on conducting circular economy approaches with the community members, the reconstruction of the neighbourhood, which had experienced delays due to the pandemic, was given priority. While the housing association attempted to continue the initiative, the influence of the pandemic increased the difficulties of involving the community and increased time pressures among the other involved stakeholders (including the builder, architect, municipality), leading to its abandonment. While there were no direct effects of the initiative, in terms of the implementation of circular economy approaches, it was emphasized that in the long-term effects may be experienced:

The project and meetings planted a seed, not only in our organization, but also in the other involved stakeholders and in the neighbourhood itself. We will definitely think about this initiative again in the development of the action plan, investigating how we can integrate the circular economy and work with community members in new ways. (Evaluation after discussion meetings: housing association – strategic relations manager)

5.5 Discussion

The objective of this study was to investigate the challenges that arise when communities are involved in a multi-stakeholder initiative focused on the adoption of circular economy approaches in a neighbourhood and explore how these challenges can be addressed. Our results showed that involving local communities, next to other stakeholders, can enable communities to interact with diverse stakeholders,

generating shared circular economy approaches. The findings furthermore indicated that through community involvement, stakeholders can become aware of community perspectives and initiatives regarding the circular economy, such as local reusing and sharing practices. Our findings also highlighted, however, that the combination of the involvement of vulnerable communities and the focus on the circular economy leads to multiple challenges in multi-stakeholder initiatives, making a difficult process even harder. We identified a set of challenges that needs to be addressed to successfully involve communities in multi-stakeholder initiatives focused on the adoption of circular economy approaches in neighbourhoods, including dealing with uncertainty and disagreement and deciding on the right strategy to manage the initiative (domination vs. consensus-based). Furthermore, our study highlights how these challenges could be managed. The insights of our study regarding the different challenges are outlined below.

5.5.1 Uncertainty

Our results indicated that the involved stakeholders experienced a high level of uncertainty during the initiative. We understand uncertainty here as the feeling of the involved stakeholders of not being sure about the direction and outcomes of the initiative and their roles in the initiative. While uncertainty among stakeholders regarding their tasks and deliverables is often experienced in multi-stakeholder initiatives (Reyppens et al., 2019) and uncertainty regarding project outcomes in circular economy projects (Geissdoerfer et al., 2017), our study showed that involving vulnerable communities increased the relative importance and role of uncertainty. This was mainly caused by the fact that community members did not have a clear understanding of the circular economy, whereas other stakeholders simultaneously did not know what the circular economy could mean for community members. Therefore, the involved stakeholders could not predict the direction and outcomes of the initiative as these were largely dependent on the input of the community members. Our findings highlighted that this could lead to conflicts such as instances in which stakeholders were reluctant to collaborate as they were not certain about their role in the initiative.

To deal with uncertainty, the need to firstly interact with community members on the topic of the circular economy to build their knowledge and skills was identified. Our study showed that this could be achieved through the addition of an 'exploration phase', in which communities were enabled to explore what the circular economy could mean in their local environment. Our study showed that the 'exploration phase' could assist in addressing uncertainty among the stakeholders as it increased the awareness of the involved stakeholders about the perspectives and potential roles of communities in circular economy approaches. This is important, as our study highlighted that not all involved stakeholders may initially perceive community involvement as relevant for circular economy approaches. The 'exploration phase'

was also adopted as a strategy for 'levelling the playing field', enabling low power partners to have a voice and increase trust (Gray & Purdy, 2018; Purdy, 2012).

However, our results also indicated that the 'exploration phase' did not prevent conflicts related to uncertainty entirely. Uncertainty remained an important theme during the initiative and the involved stakeholders expressed uncertainty regarding their roles in and outcomes of the initiative during all phases. These results highlight that in multi-stakeholder initiatives which involve communities and address complex topics such as the circular economy, conflicts surrounding uncertainty may not be easily solved. Instead, it may be necessary to create a situation in which uncertainty is acceptable for the involved stakeholders. Our study showed that this could for example be achieved by framing the initiative as an experiment. Furthermore, the aim should not be to eliminate uncertainty entirely as our study highlighted that a certain level of uncertainty, especially at the start of the initiative, could be beneficial in order to allow for the exploration and inclusion of unexpected community perspectives.

5.5.2 Disagreement

In line with recent multi-stakeholder network literature (e.g., Hovring et al., 2018; Reypens et al., 2019), our results indicated that there were multiple and diverse understandings of the circular economy among the involved stakeholders which led to disagreement. Our study highlighted that community involvement added an additional, more socially oriented, understanding of circular economy approaches which made generating shared approaches even harder. Furthermore, in line with Roloff (2008), we found that including or excluding community stakeholders and their perspectives was a sensitive issue, especially in the initial phases of the initiative. Our results highlighted that, while it may be beneficial to start with a smaller stakeholder group to enable efficient communication (Roloff, 2008), this may lead to disappointment among communities and a reluctance to collaborate in later phases of the initiative.

While issue-focused stakeholder management aims to overcome initial disagreement and generate shared perspectives (Roloff, 2008), we found that this was not always achieved in our case. While disagreement is often framed as undesirable (Brand et al., 2019), our study showed that disagreement could also lead to creative solutions. For instance, because they did not agree on what the circular economy should be about, the involved stakeholders tried to come up with circular economy approaches that could satisfy multiple goals simultaneously. Our findings indicated that shared understanding of the circular economy may thus not be necessary in order to generate shared circular economy approaches. This refers to a weak form of consensus where stakeholders do not hold the same beliefs and values regarding an issue but agree on a course of action (Brand et al., 2019). Furthermore,

conflicts such as disagreement can be useful to identify critical perspectives on the circular economy and help prevent false consensus (Brown & Dillard, 2013). This is important as an emphasis on consensus likely masks differences in perspectives and can limit the input of disadvantaged groups. However, it is important to note that high levels of disagreement may also have negative effects. Our study showed for instance that, due to their disagreement on what the circular economy should be about, stakeholders may not feel ownership over and put effort in shared circular economy approaches.

5.5.3 Domination-consensus-focussed management

Our results showed that inequality regarding knowledge about the circular economy and the resources of communities and other stakeholders may hinder the involvement of communities in multi-stakeholder initiatives. Our study highlighted that domination-based strategies to manage multi-stakeholder initiatives may be adopted to reduce inequality. While Roloff (2008) argues that no organization can or should be in control of the issue-focused stakeholder management process, our study highlighted that the housing association did adopt domination-based strategies to keep some level of control, suggesting that these strategies may bring advantages. This finding is in line with Reypens et al. (2019) who argue that, when dealing with many stakeholders, domination-based strategies may be more effective compared to consensus-based strategies. Our results showed that within contexts where vulnerable communities are involved, the adoption of domination-based strategies may be necessary to deal with knowledge and resource differences, safeguard equality and ensure beneficial outcomes for communities. Our results also highlighted the important role organizations with a close proximity to communities, such as housing associations, can play in this regard. These organizations can, through steering relationships and coordinating exploration efforts, reduce the barriers to community involvement and bring relevant stakeholders together in an equal setting for the benefits of vulnerable communities.

Our results also highlighted the importance of combining domination-based strategies with consensus-based strategies to allow for the emergence of new interactions and solutions. This is important as our findings showed that domination-based strategies may also have negative outcomes for communities, for example when leading stakeholders prespecify topics for discussion and in this way limit the room for input from communities. An emphasis on consensus-based strategies may thus lead to inequality, whereas an extensive focus on domination-based strategies may lead to limited room for new input from communities and a lack of creative solutions. The combination of domination-based and consensus-based strategies can be a challenging task for organizations as they have to decide on the right balance which can lead to conflicts due to different opinions among employees. Our results showed that conflicts about which strategy to adopt were

not only apparent at the start of the initiative, but resurfaced, for instance when organizing the acquaintance and agreement phases. A constant reflection on the right balance between domination- and consensus-based management strategies may thus be needed, taking into account the different phases of the initiative. Our results indicated for example that it may be important to adopt more consensus-based management strategies in the first phases of the initiative to allow for the inclusion of community perspectives, while in later phases it may be beneficial to shift to more domination-based strategies in order to protect the interests of community members and ensure beneficial outcomes.

5.5.4 Conclusion: creating a balance to involve communities in multi-stakeholder initiatives

This study contributes to the multi-stakeholder network literature (e.g., Hovring et al., 2018; Roloff, 2008) in multiple ways. First, this study identified a set of challenges that needs to be addressed in multi-stakeholder initiatives which involve communities and focus on complex topics such as the circular economy, including dealing with uncertainty and disagreement and deciding on the right strategy to manage the initiative (domination vs. consensus-based). Second, and in line with tentative suggestions made by previous research (Gray & Purdy, 2018), our study contributes to the literature by showing how uncertainty and disagreement can play a beneficial role multi-stakeholder initiatives involving communities, for example by enabling the inclusion of unexpected community perspectives. Additionally, our study contributes to the literature (Reypens et al., 2019; Roloff, 2008) by showing that both consensus- and domination-based strategies may have advantages at different phases of multi-stakeholder initiatives involving communities. Third, our study adds to the literature by showing how the identified challenges can be managed. Multi-stakeholder network literature has focused on investigating how challenges, such as conflicts about the scope of a project, can be managed and solved through different tactics in order to keep the partnership on track (Gray & Purdy, 2018). Our study contributes to the literature (e.g., Gray & Purdy; Reypens et al., 2019; Roloff, 2008) by establishing that multi-stakeholder initiatives involving communities require a constant reflection on and management of a balance between uncertainty-certainty, disagreement-agreement and domination-based vs. consensus-based management. Figure 5.5 shows the need for balancing these aspects by highlighting the potentially negative implications of high levels of disagreement, uncertainty and consensus-focussed management, while showing that high levels of certainty, agreement and domination-focussed management in these initiatives may lead to negative outcomes as well. Our findings highlight that this balance may be created by taking a temporally sensitive approach, allowing for more uncertainty, disagreement and adopting consensus-based management approaches at early stages of the initiative, while creating more certainty, agreement and adopting domination-based management approaches in later stages of the initiative. A balance may also be

created by allowing for disagreement and uncertainty on certain aspects of the initiative, such as disagreement in understandings of the circular economy, while focussing on creating more agreement and certainty in other aspects, including agreement on shared circular economy approaches. Our findings also showed that tactics to increase the acceptability of uncertainty and disagreement among the involved stakeholders are important, including for instance framing strategies and relating to past projects.

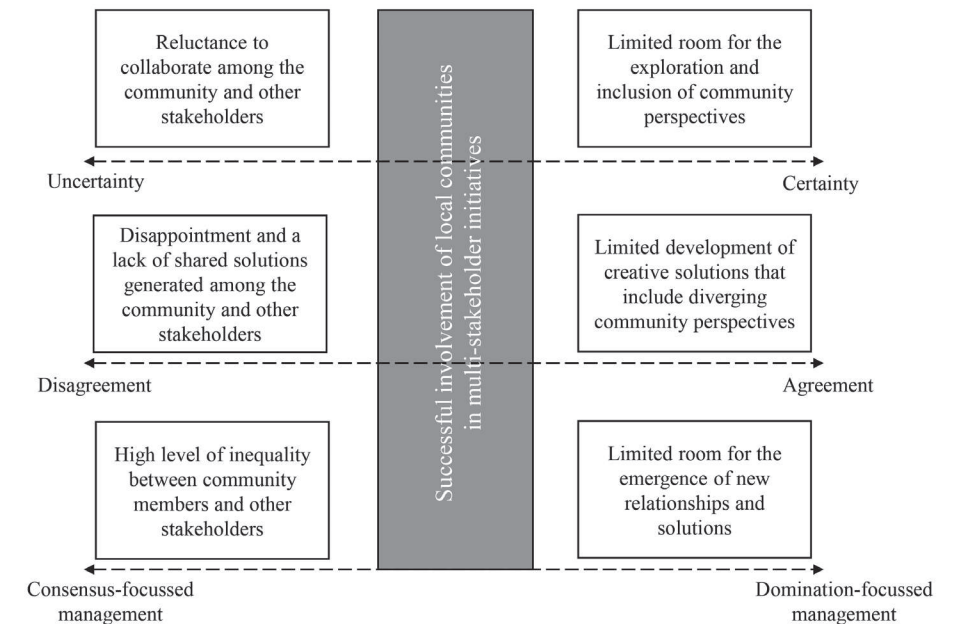


Figure 5.5 Balancing three factors to involve communities in multi-stakeholder initiatives

In addition, our findings contribute to the circular economy literature by showing that social elements can be included in circular economy approaches in neighbourhoods by involving communities. In doing so we respond to calls for a wider recognition of social and ethical issues in the circular economy (Inigo & Blok, 2019; Murray et al., 2017). Involving communities can lead to the generation of shared circular economy approaches with community benefits and increase the awareness of the involved stakeholders about community perspectives. We contribute to the literature by highlighting three important aspects that need to be taken into consideration when involving communities in multi-stakeholder initiatives focused on the circular economy. These include 1) enabling communities to explore the circular economy in their local context, 2) exploring and including the perspectives of the community at the start of an initiative, and 3) allowing

for different understandings of the circular economy to enable the inclusion of critical community perspectives and the formulation of creative circular economy approaches.

Our findings have several implications for practitioners. First, organizations that aim to involve communities in multi-stakeholder networks that address complex topics such as the circular economy should be aware of conflicts that can be caused by uncertainty, disagreement and decisions about the right strategy to manage the initiative. At the same time, these organizations should realize that uncertainty, disagreement and both domination-based and consensus-based management strategies can play a beneficial role in these initiatives. Therefore, organizations should focus on creating a balance between uncertainty-certainty, disagreement-agreement and consensus-domination-focussed management. Second, it is important that organizations constantly re-evaluate how this balance should look like during the initiative. For instance, at the start of the initiative higher levels of uncertainty, disagreement and consensus-based strategies may be beneficial to allow for the inclusion of unexpected community perspectives. While during later stages of the initiative, higher levels of agreement, certainty and domination-based management may be needed to formulate circular solutions and safeguard community interests. Third, organizations should realize that creating the right balance is complex and that the achieved balance can easily be destroyed due to exogenous shocks which may shift the priorities of the involved stakeholders. Furthermore, the balance can easily tip over to one side and could for example, in cases of high levels of disagreement, lead to a lack of perceived ownership of the proposed approaches among the involved stakeholders.

5.5.5 Limitations and future research

There were several limitations in this study, which point to areas for future research. First, this was an exploratory study focussing on a single initiative. Therefore, the results are context specific. Future research is necessary to address different contexts and situations. The involvement of communities may for instance work differently in multi-stakeholder initiatives in which issues closer to local communities, such as health and food, are addressed. Furthermore, this research focussed on a local multi-stakeholder initiative for problem solving and idea generation on a community level. Involving communities in industry-specific or global multi-stakeholder initiatives (Roloff, 2008) may have different implications, for example intensifying challenges related to selecting community members and increasing the relevance of the initiative to community members. Future research is therefore needed to explore community involvement in other types of multi-stakeholder initiatives. Additionally, we focused in this research on communities of place in the Netherlands. Future research is needed to investigate the involvement of communities characterized by interaction or identity, such as communities of

interest. Future research is also needed to focus on the involvement of communities in other countries and cultures. Power distance is for instance relatively low in the Netherlands, making managers and policy officials more open to collaborate with those lower in the hierarchy such as employees and communities (Ringov & Zollo, 2007). More extensive challenges with community involvement may be experienced in countries with high power distance. Furthermore, the involvement of the housing association may provide an exceptional context due to the close proximity of the housing association to the local community. While this context provided relevant insights, future research is necessary to investigate community involvement in multi-stakeholder initiatives where initial interaction with communities is limited.

Second, our research assisted in identifying multiple challenges that have to be addressed in the involvement of communities in multi-stakeholder initiatives. Our study highlighted the importance of striking a balance between agreement-disagreement, certainty-uncertainty and domination-consensus-focussed management. Future research is needed to further develop and assess guidelines specifying how organizations and policymakers can create this balance, which was beyond the empirical scope of our research. Furthermore, our study highlighted that domination-based strategies to manage multi-stakeholder initiatives could bring several advantages. However, this also raises questions about how and by whom appropriate decisions can be made in this regard. Future research is therefore needed to investigate these considerations and explore which organisations can best manage the involvement of communities in multi-stakeholder initiatives. Additionally, future research could explore differences within communities, investigating how different community groups could be best involved.

Third, this research suffers from limitations resulting from the nature of action research and our approach. Our research impacted the involved stakeholders, however the impact was limited due to our research design. Our goals were to support the design and execution of the multi-stakeholder initiative and evaluate the involvement of communities in this initiative. At the start of the research, it was unclear how circular economy approaches could be implemented in the neighbourhood and how communities could be involved in this. Upon the completion of this research, new ways to involve the community and implement circular economy approaches were discovered. However, the lasting value of these insights and the actual implementation of circular economy approaches in the neighbourhood is unknown. Therefore, future research could adopt more longitudinal designs to investigate the lasting impact of action research approaches. Furthermore, future research could explore how researchers can contribute to multi-stakeholder initiatives through action research approaches. Additionally, in our action research approach we were closely involved with the activities of the housing association, relating to their perspectives on community involvement

which may have impacted our results. Future research could therefore explore community involvement from the perspectives of other stakeholders. Our data analysis also involves limitations, as we built our research on pre-existing concepts and involved the stakeholders in selecting emerging themes. Future studies could therefore adopt inductive approaches in their data analysis, identifying new themes that may not have appeared in our analysis.

Fourth, due to the COVID-19 pandemic we were not able to explore the direct outcomes of the initiative as it was terminated before the circular economy approaches were implemented. Future research is therefore needed to explore the circular economy approaches that can result from involving communities in multi-stakeholder initiatives, including their effects. Furthermore, this research did not explore all the phases of the issue-focused stakeholder management process. We were not able to explore the continuation, institutionalization and extinction phases. Future research is therefore necessary to explore these phases, as they may assist in creating lasting relationships with communities.



6

Discussion

6.1 Introduction

This PhD thesis addressed whether and how stakeholder collaborations can assist enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies and achieving social, environmental and economic objectives. Incumbent enterprises can act as change agents for societal sustainability by integrating the principles of corporate sustainability and the circular economy in their strategies (Stubbs & Cocklin, 2008; Urbinati et al., 2017). This is a challenging task which has not been achieved by many enterprises today (Baumgartner & Ebner, 2010; Ormazabal et al., 2018). Capabilities that enable enterprises to interact and collaborate with a diverse set of stakeholders, referred to as collaborative capabilities, have been recognized as fundamental for both corporate sustainability and the circular economy (Geissdoerfer et al., 2017). However, while the importance of collaborative capabilities is increasingly emphasized in the literature, it is still unclear if and how stakeholder collaborations can assist enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies and achieving social, economic and ecological objectives (Fougère & Solitander, 2020; Ghisellini et al., 2016). Furthermore, interacting and collaborating with a diverse set of stakeholders can be a challenging task, which involves dealing with conflicts, uncertainty and disagreement (Niesten et al., 2017; Reypens et al., 2019). There is a lack of research addressing how enterprises can deal with these challenges and successfully collaborate with diverse stakeholders, especially with local communities (Fischer & Mauer, 2020; Inigo & Blok, 2019). In order to address these research gaps this PhD thesis addressed the following main and sub-questions:

Research question 1: *To what extent can stakeholder interactions and collaborations assist enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies and achieving economic, social and environmental objectives?*

Sub question 1: *To what extent can integrative dynamic capabilities (processes that integrate the knowledge and resources of internal and external stakeholders) assist enterprises in achieving social, environmental and economic objectives?*

Sub question 2: *To what extent can circular network interactions assist enterprises in integrating the principles of the circular economy in their strategies?*

Research question 2: *How can enterprises successfully interact and collaborate with local communities in their circular strategies and approaches?*

Sub question 3: *How can social elements be integrated in circular strategies through interactions with local communities?*

Sub question 4: *How can local communities be involved in multi-stakeholder initiatives for the design and implementation of circular approaches?*

The sub-questions have been addressed in the second, third, fourth and fifth chapters of this PhD thesis. This final chapter will provide a summary of the findings, offering answers to the sub- and main research questions. This chapter will also outline the main theoretical and practical implications of this PhD thesis. It will also reflect on the limitations of this PhD thesis and offer directions for future research.

6.2 Summary of the findings

This PhD thesis has shown that interactions and collaborations with diverse stakeholders can play important and diverse roles in enabling enterprises to integrate the principles of corporate sustainability and the circular economy in their strategies and achieve social, environmental and economic objectives. This section will identify these roles through answering the four sub-questions listed in the introduction. Table 6.1 provides an overview of the research questions and main findings of the chapters included in this PhD thesis.

The second chapter of this PhD thesis assists in answering the first sub-question by investigating, through a survey study including 297 Dutch SMEs, if and how integrative dynamic capabilities can assist enterprises in achieving social, environmental and economic objectives. Building on the dynamic capabilities literature, we proposed that external (processes that continuously integrate the knowledge and resources of external stakeholders) and internal (processes that continuously integrate the knowledge and resources of internal stakeholders) integrative dynamic capabilities positively influenced an SME's social, environmental and economic performance (Bowman & Ambrosini, 2003). The results of the second chapter showed that external integration capabilities indeed positively related to the social, environmental and economic performance of SMEs. In contrast, we found that internal integrative dynamic capabilities did not significantly relate to social and economic performance, and even negatively related to environmental performance. These findings highlighted that enterprises may be able to overcome barriers and integrate corporate sustainability principles by developing organizational capabilities that continuously integrate the sustainability knowledge and resources of external stakeholders. Additionally, the results showed that organizational capabilities integrating the knowledge and resources of internal stakeholders may not increase the ability of enterprises to make substantial changes and integrate corporate sustainability principles. Furthermore, drawing on the strategic management literature, we argued that owner/manager transformational leadership and perceptions of sustainability were important in driving integrative dynamic capabilities (Matzler et al., 2008).

Table 6.1 Overview of the research questions and main findings of the chapters

Chapter	Research question	Main findings
2	To what extent can integrative dynamic capabilities assist enterprises in achieving social, environmental and economic objectives?	<ul style="list-style-type: none"> • External integrative capabilities were positively related to social, environmental and economic performance. • Internal integrative dynamic capabilities did not significantly relate to social and economic performance, and negatively related to environmental performance. • Transformational leadership was positively related to internal integrative dynamic capabilities. • The manager's perception of sustainability as a threat was negatively related to external integrative dynamic capabilities.
3	To what extent can circular network interactions assist enterprises in integrating the principles of the circular economy in their strategies?	<ul style="list-style-type: none"> • Circular network interactions were positively related to the integration of circularity in an enterprise's strategy. • The manager's interpretation of circularity as an opportunity was positively related to the integration of circularity in an enterprise's strategy. • The relationship between managerial interpretations of circularity and the integration of circularity in an enterprise's strategy was partially mediated by circular network interactions. • The manager's level of holistic thinking did not strengthen the relationship between managerial interpretations of circularity and circular network interactions.

Table 6.1 [Continued]

Chapter	Research question	Main findings
4	How can social elements be integrated in circular strategies through interactions with local communities?	<ul style="list-style-type: none"> • Different types of relationships could be established with communities in circular strategies, including relationships in the vision formulation, activities involved in and outcomes of the strategies. • Community relationships in the vision formulation and activities involved in the execution of circular strategies could assist in creating synergies between the ecological aims of circular strategies and the perspectives and needs of communities. • Not establishing relationships with communities or only establishing relationships in the outcomes of circular strategies could be detrimental to community needs and the ecological aims of circular strategies.
5	How can local communities be involved in multi-stakeholder initiatives for the design and implementation of circular approaches?	<ul style="list-style-type: none"> • Involving the local community in a multi-stakeholder initiative in the context of a circular neighbourhood could enable the exploration of community perspectives and generation of shared circular approaches. • Involving communities increased the level of complexity in the multi-stakeholder initiative, where an additional set of factors had to be balanced, including uncertainty-certainty, disagreement-agreement and domination-consensus-focused management. • This balance could be achieved by enabling an open exploration of community perspectives, allowing for a moderate level of disagreement and conflict during the initiative, and adopting both consensus- and domination-focused strategies to manage the initiative.

The results showed that transformational leadership positively related to internal integrative dynamic capabilities, while the manager's perception of sustainability as a threat negatively related to external integrative dynamic capabilities. These results highlighted that managers can play an important role in driving, or obstructing, the development of capabilities necessary for addressing social, environmental and economic objectives.

The third chapter of this PhD thesis assists in answering the second sub-question by investigating, through a survey study including 627 Dutch SMEs, if and how circular network interactions can assist enterprises in integrating circular economy principles in their strategies. Building on the strategic issue interpretation literature (Dutton & Jackson, 1987; Sharma, 2000), we proposed that managers who perceive circularity as an opportunity can drive the integration of circularity in their enterprise's strategy. Furthermore, building on the multi-stakeholder network literature (Clarke & Fuller, 2010; Roloff, 2008), we proposed that this relationship is partially mediated by circular network interactions which can enable enterprises to identify collaborative approaches for value preservation (Jonker & Faber, 2018). The results showed that both the manager's interpretation of circularity as an opportunity and circular network interactions were positively related to the integration of circularity in an SME's strategy. The results also indicated that the relationship between the manager's interpretation of circularity as an opportunity and the integration of circularity in an SME's strategy was partially mediated by circular network interactions. These results highlighted that integrating circular principles in enterprise strategy demands an inter-organizational perspective where diverse stakeholders interact and establish collaborative approaches, which can in turn assist enterprises in specifying and integrating enterprise-level strategies. The findings also showed that an essential role for managers is to encourage the development of circular network interactions, enabling them to lead the way toward collaborative approaches and the successful integration of circular principles in enterprise strategy.

The fourth chapter of this PhD thesis assists in answering the third sub-question by investigating, through an in-depth case study in a social housing association, how social elements can be integrated in circular strategies via the establishment of relationships with local communities. Building on social network theory and social-ecological systems theory, we proposed that social elements can be integrated in circular strategies through the establishment of two-way interactions with local communities in which communities adapt their needs to circular strategies and in which circular strategies are adapted to suit community needs (Jochim, 1981; Stringer et al., 2006). It was identified in the fourth chapter that different types of circular strategies could be adopted by social housing associations, including a strategy focussed on extending the residual value of materials and a strategy

aiming to develop integrative circular solutions through combining the materials, resources and knowledge of diverse stakeholders. The results furthermore showed that different types of relationships could be established with local communities in these circular strategies, including relationships in the vision formulation of, activities involved in and outcomes of the strategies. The findings highlighted that community relationships established in the vision formulation of and activities involved in the execution of circular strategies could assist in creating synergies between the ecological aims of circular strategies and the perspectives and needs of communities. On the other hand, the findings showed that not establishing relationships with communities or only establishing relationships in the strategy outcomes could be detrimental to community needs and the ecological aims of circular strategies. These results showed that the establishment of active relationships with local communities was important and could assist in integrating social elements in circular strategies and reducing their potential rebound effects.

The fifth chapter of this PhD thesis assists in answering the fourth sub-question by investigating, through an action research inquiry in the context of a circular neighbourhood, how local communities can be involved in multi-stakeholder initiatives for the design and implementation of circular approaches. We used insights from the multi-stakeholder network literature, and the process of issue-focused stakeholder management in particular (Roloff, 2008), as a lens to guide and evaluate the involvement of local communities in a multi-stakeholder initiative in the context of a circular neighbourhood. The results showed that involving local communities, next to other stakeholders, in the multi-stakeholder initiative could enable the exploration of community perspectives and the generation of shared circular approaches. However, the findings also showed that involving communities increased the level of complexity in the multi-stakeholder initiative, making a difficult process even harder. In the chapter a set of factors was identified that had to be balanced to successfully involve the community in the multi-stakeholder initiative, including uncertainty-certainty, disagreement-agreement and domination-consensus-focused management. The results showed that this balance could be achieved by enabling an open exploration of community perspectives in the early stages of the initiative, allowing for a moderate level of disagreement and conflict during the initiative, and adopting both consensus- and domination-focused strategies to manage the initiative focusing on ensuring equality. The findings nonetheless also highlighted that involving the local community in the multi-stakeholder initiative was complex and prone to conflicts and disruptions.

6.3 Answering the main research questions

The first main research question included in this PhD thesis addressed to what extent stakeholder interactions and collaborations can assist enterprises in integrating the

principles of corporate sustainability and the circular economy in their strategies and achieving economic, social and environmental objectives. The second and third chapter assisted in answering this research question. Both chapters focused on the context of SMEs, which provides an interesting research context due to the unique challenges faced by SMEs which have only received limited attention in the literature (Bos-Brouwers, 2010; Graafland & Smid, 2016). Chapter 2 showed that capabilities which continuously integrate the sustainability knowledge and resources of external stakeholders can enable SMEs to achieve social, environmental and economic objectives. In contrast, the chapter indicated that capabilities which integrate the knowledge and resources of internal stakeholders did not provide this advantage. Chapter 3 confirmed the importance of interactions with external stakeholders, by showing that circular network interactions can enable SMEs to integrate circularity in their strategies.

Both chapters thus highlighted that it is crucial for enterprises to collaborate and interact with external stakeholders, such as other businesses, knowledge institutions and governmental organizations, for both corporate sustainability and the circular economy. In particular, the chapters provided evidence for the positive effects of circular network interactions and external integrative dynamic capabilities, showing that these capabilities can assist enterprises in integrating circularity in their strategies and achieving economic, social and environmental objectives. The chapters furthermore showed that organizational managers, and positive managerial interpretations of sustainability and circularity in particular, can play an important role in driving these capabilities.

The second main research question included in this PhD thesis addressed how enterprises can successfully interact and collaborate with local communities in their circular strategies and approaches. The fourth and fifth chapter assisted in answering this research question. Both chapters addressed the context of the building sector, where the fourth chapter focussed on a social housing association which provided a unique opportunity for studying interactions with local communities. Both chapters 4 and 5 showed that it is important to involve local communities in circular strategies and approaches, as it can increase the acceptance of circular strategies, reduce rebound effects, and lead to the generation of shared circular approaches. Chapter 4 identified different ways in which social housing associations can involve local communities in circular strategies. The chapter furthermore highlighted that relationships formed in circular strategy vision formulation and in the execution of activities could assist in creating synergies between social and ecological objectives. Chapter 5 showed how local communities could be involved in a multi-stakeholder initiative in the context of a circular neighbourhood. The results highlighted that successful community involvement required an open exploration of community perspectives in the early stages of the initiative, allowance for a moderate level of

disagreement and conflict during the initiative, and the adoption of both consensus- and domination-focused strategies to manage the initiative.

In conclusion, both chapters 4 and 5 provided evidence for the importance of an early and active involvement of local communities in circular strategies and approaches, where a two-way communication between incumbent businesses, local communities and other stakeholders was crucial. However, both chapters also showed that interacting with local communities can be complex, intensifying for example challenges related to uncertainty and disagreement.

6.4 Theoretical contributions

This PhD thesis contributes to the literature by offering foundations for a new theory on stakeholder collaborations for corporate sustainability and the circular economy by defining key concepts, developing new hypotheses and identifying relationships between the key concepts. This section discusses the general and over-arching theoretical contributions of this PhD thesis.

First, the chapters in this PhD thesis, and chapters 2 and 3 in particular, contribute to the literature by providing a rationale for how incumbent enterprises can overcome barriers and successfully integrate the principles of corporate sustainability and the circular economy in their strategies and achieve social, environmental and economic objectives. Corporate sustainability literature has identified a multitude of challenges that incumbent enterprises in general, and SMEs in particular, face when integrating corporate sustainability principles, including for example financial, human and operational resource constraints (Dyllick and Hockerts, 2002; Hockerts and Wüstenhagen, 2010). Additionally, circular economy research has shown that enterprises face several barriers in the integration of circular principles, including cultural, regulatory, technical and market barriers (Kirchherr et al., 2018; Rizos et al., 2016; Zacho et al., 2018). However, the question of whether and how enterprises can overcome these barriers and develop the necessary enabling organizational capabilities to integrate the principles of corporate sustainability and the circularity economy has remained unexplored to date (Kirchherr et al., 2018; Paletta et al., 2019). This PhD thesis contributes to the literature by investigating the next step. Using the existing knowledge on the barriers enterprises face in the integration of corporate sustainability and circular economy principles, this PhD thesis investigated the organizational attributes that can assist enterprises in overcoming these barriers. This was achieved through the application of strategic management, dynamic capabilities and multi-stakeholder network literature. In doing so, this PhD thesis contributes to the corporate sustainability and circular economy literature by developing new hypotheses and contributing to generating a better understanding of how enterprises can integrate the principles of corporate

sustainability and the circular economy at a strategic level, a research area which has often been critiqued for being atheoretical and academically underdeveloped (Borland et al., 2014).

Second, this PhD thesis contributes to the corporate sustainability and circular economy literature focussed on stakeholder collaborations. While the importance of stakeholder interactions and collaborations has been increasingly emphasized in the literature (e.g., Geissdoerfer et al. 2017; Ghisellini et al., 2016; Jonker & Faber, 2018; Oskam et al., 2020; Reypens et al., 2016), the question remains as to whether and how stakeholder interactions and collaborations can assist enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies (Fougère & Solitander, 2020; Gond et al., 2012). This PhD thesis adds to previous research by providing new insights into the roles stakeholder interactions and collaborations can play in the integration of corporate sustainability and circular economy principles in the strategies of incumbent enterprises. In doing so, this PhD thesis bridges research focusing on the network level and research focusing on the firm level. While research is increasingly paying attention to networks and network-level outcomes (Baas & Huisingh, 2008; Jonker et al., 2020), limited emphasis has been placed on how networks can assist businesses in integrating corporate sustainability and circular economy principles at the firm-level (Walls & Paquin, 2015). This PhD thesis contributes to the literature by showing that interacting and collaborating with diverse stakeholders in the network can assist incumbent enterprises in integrating circular economy and corporate sustainability principles at the firm-level and achieving economic, social and environmental objectives. In chapter 2, new hypotheses were developed and evidence was provided for the positive relationship between external integrative dynamic capabilities and the achievement of social, ecological and economic objectives. Additionally, in chapter 3 new hypotheses were developed and insights were generated regarding the importance of circular network interactions for the integration of circularity in enterprise strategy. Furthermore, chapters 4 and 5 provided new insights regarding the involvement of local communities in circular strategies and showed that this could assist enterprises in preventing the potential rebound effects of their circular strategies. Combined, the chapters in this PhD thesis thus showed that integrating the principles of corporate sustainability and the circular economy in enterprises demands an inter-organizational perspective.

Third, the chapters in the PhD thesis, and chapters 2 and 3 in particular, contribute to the literature on leadership for corporate sustainability and the circular economy (Patzelt & Shepherd, 2011; Revell et al., 2010; Rizos et al., 2016; Ünal et al., 2018). Researchers have proposed that managers can be highly influential in determining whether enterprises embrace corporate sustainability and circular strategies (Perez-Sanchez et al., 2003; Rizos et al., 2016; Sharma, 2000; Thomas

et al., 1993). This proposition is confirmed in this PhD thesis, as chapter 2 and 3 provided new evidence for the importance of managerial perceptions and leadership styles for the achievement of social, environmental and economic objectives and the integration of circularity in enterprise strategy. This PhD thesis adds to the literature by developing new hypotheses and providing evidence for the indirect influence of managers on the integration of corporate sustainability and circular economy principles via their ability to drive interactions and collaborations with external stakeholders. This also indicates a convergence between managerial and network research streams. Research has for instance emphasized the importance of organizational networks (Bocken et al., 2016; Ghisellini et al., 2016); however, it has not placed much emphasis on how organizational managers can function to facilitate these networks. This PhD thesis highlights that an essential role for the managers of enterprises is to encourage interactions and collaborations with external stakeholders, which can be achieved via the development of positive managerial perceptions of corporate sustainability and circularity. This can enable managers to lead the way towards collaborative approaches and the successful integration of corporate sustainability and circular economy principles in enterprise strategy.

Fourth, this PhD thesis adds to the circular economy literature and recent research that has critiqued the circular economy literature for being silent on the social dimension in particular (Geissdoerfer et al., 2017; Inigo and Blok, 2019; Kirchherr et al., 2017; Kristensen & Mosgaard, 2020; Moreau et al., 2017; Murray et al., 2017). Researchers have argued that the circular economy will remain a technical tool which is not able to change the course of the current unsustainable economic paradigm if it does not involve the social dimension, including interactions with consumers and local communities (Hobson & Lynch, 2016; Korhonen et al., 2018; Millar et al., 2019). This PhD thesis confirms this critique by showing that the exclusion of local communities from circular strategies can lead to rebound effects and limited social and environmental achievements. The chapters in this PhD thesis furthermore highlighted the importance of involving local communities in circular strategies, which can result in enhanced acceptance of circular strategies, enable the creation of local partnerships, and generate shared circular approaches that provide local benefits. This PhD thesis adds to the literature by providing new insights into how local communities, and in doing so also social elements, can be involved in circular strategies. In doing so, this PhD thesis also contributes to the circular economy literature (e.g., Hobson & Lynch, 2016; Tukker, 2013) by showing that communities can play a bigger role in the circular economy than merely their role as consumers having to accept or reject new business models. This PhD thesis shows that communities can act as co-creators of circular strategies, which can for instance result in non-monetary approaches that adhere to local norms and values, such as local sharing initiatives. However, chapters 4 and 5 also highlighted

that involving communities, next to other stakeholders, in circular strategies and approaches may lead to several challenges. In doing so, this PhD thesis contributes to the wider multi-stakeholder network literature (e.g., Roloff, 2008; Hovring et al., 2018; Khazaei et al., 2015; Reypens et al., 2019) by identifying an additional set of challenges that must be managed in order to successfully involve communities in multi-stakeholder initiatives. This PhD thesis furthermore showed that new ways of managing multi-stakeholder initiatives are needed to overcome these challenges, such as including community perspectives from the start and adopting both domination and consensus-based management strategies.

Fifth, this PhD thesis adds to the corporate sustainability and circular economy literature by highlighting the potential for action research approaches in these research areas. The 'Quadruple Helix' approach has emphasized the importance of combining the knowledge of academics, organizations, governments and citizens (Carayannis & Campbell, 2009). It has been argued that, in order to address the complex societal challenges related to corporate sustainability and the circular economy, working within the Quadruple Helix is essential (e.g., Hockerts & Wüstenhagen, 2010). Action research approaches can enable researchers to collaborate with diverse societal actors and assist in solving complex challenges related to corporate sustainability and the circular economy (Wittmayer et al., 2014). Different scholars have been performing action research, however the potential of action research approaches in addressing challenges related to corporate sustainability and the circular economy has been underexplored in the literature (Lang et al., 2012; Martins et al., 2019; Wittmayer et al., 2014). Although action research is accompanied with several challenges, such as identifying the exact impact of the researcher and establishing appropriate quality standards, this PhD thesis showed that this approach can bring important advantages to corporate sustainability and circular economy research. Most importantly, this PhD thesis highlighted that action research approaches can assist in creating spaces in which alternative ideas, practices and social relations can emerge. Chapter 5 showed that the action research approach enabled both practitioners and researchers to identify new approaches for community involvement, exchange alternative ideas about circularity and co-create local circular solutions. In doing so, this PhD thesis highlighted that action research approaches may enable researchers to reduce the distance between knowledge and practice and contribute to solving local sustainability challenges.

6.5 Practical contributions

The chapters in this PhD thesis have important implications for enterprises aiming to integrate corporate sustainability and/or circular economy principles and policy makers. Suggestions and guidelines for businesses resulting from this PhD

thesis have been distributed to practitioners through local outreach activities. All enterprises that participated in the survey conducted in chapter 2 received a report containing the results of the study including practical guidelines. In the third chapter a cooperation was initiated with the municipality of Friesland in order to collect data and share insights. Furthermore, the chapter resulted in practically oriented articles, such as an article on the website of the circular network organization of the region (Circulair Friesland, 2019). Chapters 4 and 5 both involved close collaborations with practitioners including a social housing association, local businesses and the local community, which resulted in direct practical implications. Due to the close interaction between the researchers and local organizations in these chapters, the outcomes are closely related to the organizations and their day-to-day practices. These chapters also resulted in an article in the local newspaper (Leeuwarder Courant, 2020). Next to these outreach activities, this PhD thesis provides five main practical implications.

First, the results of this PhD thesis showed that awareness of the crucial role of stakeholder collaborations is the important first step to the successful integration of corporate sustainability and circular economy principles in enterprise strategy. Once enterprises have decided to focus on corporate sustainability and/or circularity, they need to recognize that collaboration presents a prerequisite for its realization. This PhD thesis showed that enterprises need to interact and collaborate with a diverse set of stakeholders, including suppliers, customers, competitors, knowledge institutions, governmental organizations and local communities. Interacting and collaborating with these diverse stakeholders can bring several advantages including the ability to overcome resource constraints, develop strategies and solutions that the enterprise could not have developed alone, increase acceptance and support, and reduce potential rebound effects. Managers who perceive corporate sustainability and the circular economy as opportunities can play an important role in encouraging interactions and collaborations with diverse stakeholders. Therefore, as a first step, managers should update their knowledge about corporate sustainability and the circular economy by engaging in knowledge-related events and workshops or hiring professionals for in-company workshops. This can help managers to look beyond the challenges inherent in corporate sustainability and the circular economy, and view corporate sustainability and circularity as opportunities which can result in increased efficiency and new competitive advantages. Furthermore, knowledge-related events can enable managers to establish interactions with new partners, such as suppliers, and knowledge institutions, in order to design collaborative approaches.

Second, this PhD thesis showed how enterprises can engage in interactions and collaborations with diverse stakeholders. Incumbent enterprises should first reflect on their capabilities in the light of corporate sustainability and the circular economy.

Does the organization have the appropriate capabilities, visions and mindsets necessary for interacting and collaborating with a diverse set of stakeholders? Developing the appropriate capabilities, such as processes that integrate the knowledge and resources of external stakeholders and networking capabilities, can support the integration of corporate sustainability and circular economy principles in enterprise strategy. As a first step in developing these capabilities, enterprises should explore the network in which their company is situated (e.g., via the net-map method by Schiffer & Hauck, 2010). This method can help enterprises to identify their position in the value chain and wider environment, including for instance relevant legislations and cultural habits. In doing so, enterprises should not only focus on identifying the usual suspects, such as suppliers and consumers, but also extend their view to other stakeholders such as civil society organizations and local communities. This approach can assist enterprises in building sustainable and/or circular networks. Enterprises can for instance make use of existing relationships identified through the net-map method to benefit from their existing knowledge-sharing routines. Furthermore, enterprises may identify the need to establish new relationships which can be achieved through attending events such as conferences and communities of practice. Enterprises can also become involved in multi-stakeholder networks, for instance through contacting mediators which link various stakeholders. Engaging in open conversations with diverse stakeholders can enable enterprises to come to both formal (e.g., financial, confidentiality) and informal (shared mission, collaborative goals) agreements. These conversations can furthermore enable enterprises to explore their stakeholders' stance towards corporate sustainability and the circular economy, understand how to combine different perspectives, capabilities and resources, develop collaborative approaches and safeguard sustainable outcomes. Once enterprises have established active collaborations, they can get started and jointly work towards sustainability and/or circularity.

Third, this PhD thesis highlighted that enterprises should extend their view beyond environmental and technical perspectives in their circular strategies. Including social perspectives is important in order to create acceptance for circular strategies, reduce rebound effects, increase inclusivity, and create shared circular approaches which provide economic, social and ecological benefits. This can be achieved when enterprises focus on an early and active involvement of local communities in their circular strategies, such as their involvement in the vision formulation and execution of activities. Additionally, becoming involved in multi-stakeholder networks can assist enterprises in interacting with local communities. When involving local communities in these networks, three considerations should be taken into account. First, time should be allocated to the exploration of community perspectives in order to build the knowledge and skills of community members. Second, communities should be enabled to play an equal role in the network,

which can be achieved through adopting both domination and consensus-based strategies to manage the network. Third, there should be room for a moderate level of disagreement and uncertainty in the network and enterprises should realize that this is not problematic but can provide beneficial outcomes. Disagreement can for instance prevent false consensus and assist in the development of creative circular solutions. Businesses can take the lead in involving communities in circular strategies, however they can also collaborate with stakeholders with a close proximity to local communities, such as social housing associations, that can fulfil this role. Such organizations possess several benefits as they already have established relationships with local communities and can play a more 'neutral' role in the network due to their non-profit oriented nature.

Fourth, this PhD thesis showed that interacting and collaborating with diverse stakeholders involves dealing with several challenges. First, enterprises need to transform their capabilities, develop sustainable and/or circular networks and adjust managerial mindsets. Enterprises should acknowledge that this can be a challenging process and they should be prepared to allocate a considerable amount of time and effort to this process. Second, interacting and collaborating with diverse stakeholders likely increases the time and resources needed in early phases of the development of sustainable and circular strategies. For instance, involving local communities in circular strategies requires additional time at the start of the process to allow for the exploration of their perspectives. Furthermore, interacting and collaborating with diverse stakeholders requires the continuous adjustment and modification of ideas to establish collaborative approaches. It is important for enterprises to ensure that there is commitment inside the enterprise to spend this additional time and effort before making collaborative agreements. Third, involving local communities in circular strategies involves dealing with an additional set of challenges including uncertainty and disagreement. Enterprises have to find ways to deal with these challenges and reduce uncertainty and disagreement, while at the same time creating sufficient room for the emergence of unexpected and creative circular solutions. Although interacting and collaborating with diverse stakeholders involves dealing with several challenges, enterprises should realize that not doing so can be detrimental to the integration of corporate sustainability and circular economy principles. It may for instance result in high costs in later stages due to the development of circular and/or sustainable strategies that are unacceptable for local communities and unable to achieve their long-term environmental benefits.

Lastly, although this PhD thesis concentrated on enterprises, it also provides several implications for policy makers. First, policy makers can play an important role in changing managerial mindsets by investing in training programs for corporate leaders to increase their knowledge about corporate sustainability and the circular economy and develop collaborative mindsets. Furthermore, policy

makers can support the interpretation of corporate sustainability and circularity as opportunities, for instance by highlighting opportunities instead of barriers and redesigning existing laws and regulations in order to consider waste as a meaningful production input. Second, policy makers can encourage interactions and collaborations among diverse stakeholders by facilitating the formation of new interactions, enabling shared visioning and providing regulatory support. Policy makers could for instance support regional stakeholders such as educational institutes to design transdisciplinary and interdisciplinary programs that bring different stakeholders together. Third, policy makers can assist in stimulating the inclusion of social elements and local communities in the circular economy. For instance, in the context of cities, policy makers can provide 'best practice' examples by actively involving local communities in the development and execution of circular approaches. Furthermore, policy makers can focus on reformulating of the circular economy concept by actively including and rewarding the inclusion of social elements in circular strategies.

6.6 Limitations and future research

Each of the chapters included in this PhD thesis has its own limitations, which have been explored in their respective 'limitations and future research' sections. In this section, the overall limitations of this PhD thesis will be discussed, which point to areas for future research. First, the chapters in this PhD thesis in general, and chapters 2 and 3 in particular, adopted cross-sectional data to study if and how stakeholder interactions can assist enterprises in integrating the principles of corporate sustainability and the circular economy in their strategies. This resulted in useful and unique datasets and new insights regarding the relationships between collaborative capabilities, managerial interpretations and the integration of corporate sustainability and circular economy principles in enterprise strategy. However, these datasets did not enable us to study the role of collaborative capabilities from a process-oriented perspective. Furthermore, the datasets did not allow us to investigate more complex causalities, such as feedback loops. Future research is therefore needed to adopt long-term quantitative or qualitative research designs to explore the role of collaborative capabilities from a process perspective. Research could for instance focus on investigating when collaborative capabilities are important and explore how these capabilities can assist enterprises in adjusting their strategies over time and transition towards becoming sustainable and/or circular enterprises.

Second, the chapters in this PhD thesis focussed on specific contexts which offered useful insights but also provided limitations. The second and third chapter focussed on the context of SMEs, a context that is accompanied with specific challenges, which are only limitedly addressed in the literature (Graafland & Smid,

2016). Future research is needed to explore relationships in larger enterprises with large-enterprise-specific characteristics. Relationships, in particular between managerial interpretations and the integration of corporate sustainability and circular economy principles, may be weaker in this context as managers of larger enterprises often have less influence over the strategic decisions of the company (Augier & Teece, 2009). The fourth and fifth chapters focussed on the building sector and chapter four addressed the specific context of a social housing association. This context provided valuable insights into the social dimension of the circular economy, due to the increased attention given to social aspects in the housing association context. We expect that the findings are relevant beyond the housing association context, as the circular economy increasingly requires attention to social elements such as customer and community perspectives. However, the housing association context provided an exceptional context due to the non-profit oriented nature of housing associations and their close proximity to local communities. Future research is thus necessary to investigate community involvement in the circular strategies and approaches of for-profit enterprises where initial interaction with local communities is limited. Furthermore, future research is needed to explore community involvement in circular strategies and approaches in other sectors, for instance the food sector.

Third, this PhD thesis provided new insights into how local communities can be involved in circular strategies and approaches. However, this PhD thesis did not include a detailed analysis of the long-term outcomes of community involvement in circular strategies and approaches. The chapters indicated that community involvement could reduce rebound effects, increase acceptance and result in shared strategies. Future research is needed to study these and other long-term outcomes in detail. Researchers could for instance explore the long-term social, environmental and economic outcomes of circular strategies and approaches that result from community involvement. Furthermore, future research could investigate the long-term effects of community involvement and its resulting circular approaches for local communities, including for instance their effects on community resilience.

Fourth, this PhD thesis highlighted that action research approaches can bring important advantages to corporate sustainability and circular economy research. However, future research is needed to explore the advantages and disadvantages of this approach in more detail. Researchers could for instance explore the challenges, tensions and conflicts researchers encounter during the action research process and investigate how these challenges can be addressed. Furthermore, researchers could investigate the type of activities academics can engage in and explore the effects of the involvement of academics in these activities. Finally, researchers could investigate in detail how academics can assist in solving complex sustainability

challenges, for instance through the involvement of researchers in multi-stakeholder networks.

Fifth, this PhD thesis focused on specific research streams and concepts, including the dynamic capabilities literature, strategic management literature and multi-stakeholder network theory. However, many other relevant concepts and perspectives exist that have been omitted from this thesis. Two examples are the sustainable/circular business model literature (e.g., Antikainen et al., 2017; Bocken et al., 2018) and the degrowth literature (e.g., Hankammer et al., 2021; Kerschner et al., 2018). Future research could for instance build on the sustainable business model literature to investigate if and how stakeholder interactions can enable enterprises to integrate corporate sustainability and/or circular economy principles in their businesses models and establish collaborative business models. Furthermore, researchers could explore if and how local communities can be involved in the collaborative business modelling process. Additionally, the degrowth literature may provide a useful perspective to explore how the circular economy can move beyond continued economic growth and mass consumption. It may assist researchers in further exploring the potential and outcomes of low-tech and locally oriented circular practices led by local communities.

6.7 Concluding remarks

While managers are becoming increasingly positive about corporate sustainability and the circular economy, the integration of corporate sustainability and circular economy principles in the strategies of incumbent enterprises is still limited. This is a critical issue as the adoption of corporate sustainability and circular economy principles by mainstream enterprises can make a significant contribution to solving the complex sustainability challenges we face today. This PhD thesis showed that interacting and collaborating with diverse stakeholders is crucial for the integration of corporate sustainability and circular economy principles in enterprise strategy and the achievement of social, environmental and economic objectives. However, collaborating with diverse stakeholders can be a challenging process, which may be seen as an obstacle or risk by incumbent enterprises. This is especially the case for interactions and collaborations with local communities, which are often neglected in circular strategies due to the technical and economic focus of these strategies.

Without collaborating with diverse stakeholders, including local communities, enterprises may not be able to act as change agents for achieving societal sustainability. Without collaboration, corporate sustainability and circular economy approaches are likely to induce rebound effects, provide limited long-term social and environmental benefits, and may be unable to change the course of our current economic system. Thus, while interacting and collaborating with diverse stakeholders can be challenging, enterprises should not ignore this complexity if their aim is to successfully aid in achieving societal sustainability. This PhD thesis addressed this challenge and aims to inspire researchers and practitioners to continue to investigate how enterprises can collaborate with diverse stakeholders and achieve societal sustainability together.



Appendix

Appendix

Appendix A Survey for chapter 2 (in Dutch)

A. De volgende vragen gaan over uw persoonlijke mening en leiderschap.

1. In hoeverre bent u het eens met de volgende stellingen:

	Volledig oneens	Oneens	Een beetje oneens	Neutraal	Een beetje eens	Eens	Volledig eens
Deelnemen aan acties op het gebied van duurzaamheid zal mij eerder verlies opleveren dan winst.	1	2	3	4	5	6	7
Activiteiten die ik onderneem op het gebied van duurzaamheid worden belemmerd door anderen in de organisatie.	1	2	3	4	5	6	7
Ik bezit niet de kennis die nodig is om de impact van mijn organisatie op het (natuurlijke en sociale) milieu te verminderen.	1	2	3	4	5	6	7

2. Hoe vaak houdt u zich bezig met de volgende activiteiten?

	Nooit	Redelijk zelden	Neutraal	Redelijk vaak	Heel vaak
Het geven van een duidelijk en optimistisch beeld van de toekomst.	1	2	3	4	5
Het ondersteunen van de ontwikkeling van werknemers.	1	2	3	4	5
Het aanmoedigen en erkennen van werknemers.	1	2	3	4	5
Het bevorderen van het vertrouwen en de samenwerking tussen werknemers.	1	2	3	4	5
Het aanmoedigen van werknemers om problemen van verschillende kanten te bekijken en aannames in twijfel te trekken.	1	2	3	4	5
Het geven van een duidelijk beeld van uw opvattingen en waarden.	1	2	3	4	5
Het inspireren van anderen in de organisatie.	1	2	3	4	5

B. De volgende vragen gaan over uw achtergrondinformatie.

3. Uw leeftijd: _____

4. Hoe lang bent u al werkzaam bij dit bedrijf? _____ jaar.

5. Hoeveel ervaring heeft u met duurzaamheid?

Heel weinig of geen ervaring	Weinig ervaring	Neutraal	Redelijk veel ervaring	Veel ervaring
1	2	3	4	5

6. Wat is uw hoogst genoten opleiding?

- Lager- of basisonderwijs
 Voortgezet onderwijs (Mavo/Vmbo/Havo/Vwo)
 Middelbaar beroepsonderwijs (MBO)
 Hoger beroepsonderwijs (HBO)
 Universiteit

7. Bent u (mede)oprichter van dit bedrijf? Ja / Nee

C. De volgende vragen gaan over uw organisatie.

8. Medewerkers in deze organisatie:

	Klopt helemaal niet	Klopt niet	Neutraal	Klopt	Klopt helemaal
... zijn bereid om nieuwe collega's te helpen zich aan te passen aan de werkomgeving.	1	2	3	4	5
... zijn bereid collega's te helpen bij het oplossen van werk-gerelateerde problemen.	1	2	3	4	5
... zijn bereid om, wanneer nodig, werk-gerelateerde opdrachten van collega's over te nemen.	1	2	3	4	5
... zijn bereid om samen te werken en te communiceren met collega's.	1	2	3	4	5

9. Houdt uw bedrijf rekening met de volgende aspecten?

	Nooit	Weinig	Neutraal	Af en toe	Vaak
De wensen van consumenten op het gebied van duurzaamheid.	1	2	3	4	5
De kennis van consumenten op het gebied van duurzaamheid.	1	2	3	4	5
De kennis en vaardigheden van leveranciers op het gebied van duurzaamheid.	1	2	3	4	5
De samenwerking met partners op het gebied van duurzaamheid.	1	2	3	4	5

10. In welk jaar is uw bedrijf of dit bedrijfs onderdeel opgericht?
In het jaar: _____
11. Is uw bedrijf een familiebedrijf? Ja / Nee
12. Hoe hoog was uw gemiddelde jaarmzet in de afgelopen twee jaar?
- Minder dan 100.000 euro
 100.001 – 250.000 euro
 250.001 – 500.000 euro
 500.001 – 750.000 euro
 750.001 – 1.000.000 euro
 1.000.001 – 1.500.000 euro
 1.500.001 – 2.500.000 euro
 Meer dan 2.500.000 euro
13. Het afgelopen jaar was de algehele prestatie van uw bedrijf:
- | Zeet laag | 1 | 2 | 3 | Break-even | 4 | 5 | 6 | 7 | Zeet hoog |
|-----------|---|---|---|------------|---|---|---|---|-----------|
| | | | | | | | | | |

D. De volgende vragen gaan over duurzaamheid.

We zien vaak dat kleine en middel grote bedrijven zich niet kunnen bezighouden met duurzame activiteiten door een tekort aan middelen en tijd.

14. Organisaties hebben verschillende doelen die kunnen bestaan uit het vermogen om economische waarde, sociale waarde en ecologische waarde te creëren. Wij vragen u om een totaal van 100 punten te verdelen onder economische, sociale en ecologische waarden met betrekking tot uw doelen. Bijvoorbeeld, de doelen van een organisatie kunnen 80 punten aan economische waarde verbinden, 10 aan sociale waarden en 10 aan ecologische waarden.
- Hoeveel punten geeft u aan economische waarden? _____
 - Hoeveel punten geeft u aan sociale waarden? _____
 - En als laatste, hoeveel punten geeft u aan ecologische waarden? _____

15. Hoe vaak houdt uw bedrijf zich bezig met de volgende activiteiten?

	Nooit	Redelijk zelden	Neutraal	Redelijk vaak	Heel vaak
Het meenemen van de belangen van de lokale gemeenschap in beslissingen.	1	2	3	4	5
Het ondersteunen van culturele en sportieve activiteiten.	1	2	3	4	5
Rekening houden met de ontwikkeling van de lokale gemeenschap.	1	2	3	4	5
Het uitvoeren van ontwikkelingsprogramma's voor achtergestelde groepen.	1	2	3	4	5

16. Vink aan of uw bedrijf zich bezig houdt met de volgende activiteiten:

- Het recyclen en hergebruiken van afval.
- Het kennen en naleven van milieuvoorschriften.
- Het investeren in energiebesparingen.
- Het ontwikkelen van ecologische producten/diensten.
- Het toepassen van waterbesparende programma's.
- Het regelmatig uitvoeren van milieuaudits/controles.

Hartelijk bedankt voor uw tijd en medewerking!

Appendix B Survey for chapter 3 (in Dutch)**A. De volgende vragen gaan over de ervaringen van uw onderneming met de circulaire economie**

1. In hoeverre bent u het eens met de volgende stellingen:

	Volledig oneens	Oneens	Enigszin oneens	Neutraal	Enigszin eens	Eens	Volledig eens
Ik verwacht dat de circulaire economie voordelen op zal leveren voor mijn onderneming.	1	2	3	4	5	6	7
Ik zie de circulaire economie als een veelbelovende ontwikkeling voor mijn onderneming.	1	2	3	4	5	6	7
Ik verwacht dat de circulaire economie een positieve impact zal hebben op de toekomst van mijn onderneming.	1	2	3	4	5	6	7
Ik zie de circulaire economie als een goede ontwikkeling voor mijn onderneming.	1	2	3	4	5	6	7

B. De volgende vragen gaan over het netwerk van uw onderneming en circulariteit

	2. Hoe vaak heeft uw onderneming contact over circulariteit met:					3. Hoe hecht is het contact tussen uw onderneming en de volgende partij op het gebied van circulariteit?				
	Nooit	Bijna nooit	Soms	Frequent	Heel frequent	Heel afstank delijk	Afstank delijk	Neutraal	Hecht	Heel hecht
Leveranciers	1	2	3	4	5	1	2	3	4	5
Consumenten	1	2	3	4	5	1	2	3	4	5
Collega ondernemers	1	2	3	4	5	1	2	3	4	5
Kennis instellingen	1	2	3	4	5	1	2	3	4	5
Concurrenten	1	2	3	4	5	1	2	3	4	5
Overheid/provincie	1	2	3	4	5	1	2	3	4	5
Netwerk organisaties	1	2	3	4	5	1	2	3	4	5

C. De volgende vragen gaan over circulariteit binnen uw onderneming

4. In welke mate wordt circulariteit toegepast in uw onderneming?

	Volledig oneens	Oneen s	Enigszin s oneens	Neutraal	Enigszin s eens	Eens	Volledig eens
Mijn onderneming heeft circulair denken toegepast in haar strategie.	1	2	3	4	5	6	7
Mijn onderneming heeft een langetermijnvisie op het gebied van circulariteit.	1	2	3	4	5	6	7
Mijn onderneming stelt doelen op het gebied van circulariteit.	1	2	3	4	5	6	7
Vooruitgang op het gebied van circulariteit wordt gerapporteerd.	1	2	3	4	5	6	7
Het is duidelijk wie verantwoordelijk is voor de implementatie en uitvoering van circulariteit in mijn onderneming	1	2	3	4	5	6	7

D. De volgende vragen gaan over uw onderneming

5. In welk jaar is uw onderneming opgericht?
In het jaar: _____6. Hoe groot is het aantal werknemers omgerekend in voltijdse banen in uw onderneming?
_____ FTEs.

7. Hoe belangrijk is het externe netwerk van uw onderneming (relaties met partijen als leveranciers, consumenten en de overheid) voor uw onderneming?

	Volledig oneens	Oneen s	Enigszin s oneens	Neutraal	Enigszin s eens	Eens	Volledig eens
We zijn erg toegewijd aan de relaties met partijen in ons netwerk	1	2	3	4	5	6	7
De relaties met partijen in ons netwerk zijn erg belangrijk voor onze onderneming	1	2	3	4	5	6	7
We zijn van plan om de relaties met partijen in ons netwerk goed te onderhouden	1	2	3	4	5	6	7
De relaties met partijen in ons netwerk verdienen maximale aandacht	1	2	3	4	5	6	7

8. Het afgelopen jaar was de financiële prestatie van uw bedrijf:

Ze er laag	1	2	3	Break-even	4	5	6	Ze er hoog	7
---------------	---	---	---	------------	---	---	---	---------------	---

9. In welke sector is uw onderneming werkzaam?

- | | |
|--|--|
| <input type="checkbox"/> Landbouw, bosbouw en visserij | <input type="checkbox"/> Financiële instellingen |
| <input type="checkbox"/> Industrie | <input type="checkbox"/> Zakelijke dienstverlening |
| <input type="checkbox"/> Energie, water en milieu | <input type="checkbox"/> ICT en media |
| <input type="checkbox"/> Bouw | <input type="checkbox"/> Gezondheid |
| <input type="checkbox"/> Detailhandel | <input type="checkbox"/> Horeca |
| <input type="checkbox"/> Groothandel | <input type="checkbox"/> Cultuur, sport en recreatie |
| <input type="checkbox"/> Logistiek | <input type="checkbox"/> Overig |

10. In welke markt is uw onderneming hoofdzakelijk actief?

- B2B (bedrijf naar bedrijf)
 B2C (bedrijf naar consument)

11. In hoeverre bent u het eens met de volgende stellingen:

	Volledig oneens	Oneen s	Enigszin s oneens	Neutraal	Enigszin s eens	Eens	Volledig eens
Er moet gekeken worden naar het geheel, in plaats van naar de losse onderdelen, om een verschijnsel te begrijpen.	1	2	3	4	5	6	7
Het is belangrijker om aandacht te besteden aan het geheel in plaats van aan de losse onderdelen.	1	2	3	4	5	6	7
Het is belangrijker om te kijken naar de gehele context in plaats van naar de details.	1	2	3	4	5	6	7
Het geheel is iets wat groter is dan de som van de losse onderdelen.	1	2	3	4	5	6	7

E. De volgende vragen gaan over uw achtergrondinformatie.

12. Uw leeftijd: _____ jaar

13. Hoe lang bent u al werkzaam bij dit bedrijf? _____ jaar

14. Wat is uw functie binnen dit bedrijf?

- Directeur of eigenaar
 Leidinggevende of manager
 Anders, namelijk _____

Hartelijk bedankt voor uw tijd en medewerking!

Appendix C Interview protocol chapter 4

Interview goals

Gain insights into the potential relationships with communities in the networks in which the two circular strategies of the housing association, 'extending product value' and 'industrial symbiosis', are situated.

Sub goals

Gain insights in:

- The interpretations of and activities around circularity of the different (community) actors involved in the networks.
- The potential involvement of the different (community) actors in the networks in which the circular strategies are situated.
- The potential roles and positions of different (community) actors in the networks in which the circular strategies are situated.
- The potential relationships with communities in the networks in which the circular strategies are situated.
- The potential outcomes of relationships with communities in the networks in which the circular strategies are situated.

Interview questions

1. Introduction of the organization and interviewee
2. Exploring the topic of the circularity:
 - a. Are you familiar with the concept of the circularity? If yes, how would you define circularity? (if not, the definition of circularity by Kirchherr et al., 2017 is discussed)
 - b. Are you involved in any projects or activities around circularity?
 - c. Are you currently working on or have you worked on projects or activities around circularity in cooperation with the housing association?
3. Exploring the potential involvement of the actors in the circular strategies (preceded by an explanation of the two circular strategies 'extending product value' and 'industrial symbiosis'):
 - a. (for both strategies) If the housing association would adopt this approach, do you think your organization could be involved in it? If yes, how could your organization be involved? If no, why not?
 - b. (for both strategies) How could the involvement of your organization in this approach be valuable for the approach?
 - c. (for both strategies) How could the involvement of your organization in this approach be valuable for your organization?
4. Exploring the position and role of different actors in the network:
 - a. (for both strategies) If your organization would be involved in this approach, what would be its role?
 - b. (for both strategies) If your organization would be involved in the approach, with which other stakeholders would your organization interact and why?
 - c. (for both strategies) If your organization would be involved in the approach, how would your organization interact with communities? (for community actors the question involves how they would interact with other community actors)

- d. (for both strategies) If your organization would be involved in this approach, what would be its position in the network and why?
5. Exploring potential relationships with communities:
 - a. (for both strategies) How do you think relationships with communities could be established for this approach?
 - b. (for both strategies) What do you think could be challenges that might be encountered when building relationships with communities for this approach?
6. Exploring the potential outcomes of relationships with communities:
 - a. (for both strategies) Do you think building relationships with communities could be valuable for this approach and why?
 - b. (for both strategies) What are the potential positive and negative outcomes of establishing relationships with communities for this approach?
 - c. (for both strategies) Do you think that building relationships with communities could assist in integrating social elements within this approach and how?

Appendix D Focus group script chapter 4

Focus group goals

Gain insights into the networks in which the two circular strategies, 'extending product value' and 'industrial symbiosis' of the housing association would be situated, including informal and formal relationships with different actors, focusing on relationships with communities.

Subgoals

Gain insights in:

- The actors influencing and being influenced by the two circular strategies.
- The relationships between the different actors.
- The roles of the different actors in the circular strategies.
- The relationships with communities in the circular strategies.
- The differences in the networks and relationships with communities in the two circular strategies.

Pre-focus group activities

- Individual meet and greets between the researcher and each participant, introducing participants to the research and its goals.
- During the meet and greets short interviews with each participant were conducted to gain insights in: their function, understanding of circularity and current involvement in circularity.

Focus group activities (in this order):

- The two circular strategies, 'extending product value' and 'industrial symbiosis', are introduced and discussed among the participants.
- The basic ideas and goals of the net-map approach (Schiffer & Hauck, 2010) are explained (highlighting that the approach helps explore those relationships that shape and affect the strategy but are not necessarily reflected in formal hierarchies).

- A group division for the two circular strategies is made according to participant function (resulting in two groups of comparable size).
- Participants brainstorm about all external individuals, groups or organizations that could be involved in and/or affected by the strategy, using post-it notes. Different colour cards are used for different actor groups (including for instance communities, governmental actors, private sector actors).
- Participants distribute actor cards on a large empty sheet of paper.
- Participants indicate relationships between the identified actors by drawing coloured arrows between them, including the direction and transactional content of the relationship. This step starts with an explanation of what relationships are (highlighting that something, such as resources, knowledge or financing, is transferred from one actor to the other, or both ways). Additional actor cards can be added in this step.
- Participants add information on the actor cards about the perceived role of each actor in the circular strategy. Additional actor cards and relationships can be added in this step.
- Participants evaluate on their own work within their group and discuss and compare their work with the other group. The evaluation focusses on reflecting on the relationships with communities in both networks.

Role of the facilitator during the focus group

- Setting a friendly and collaborative atmosphere.
- Providing guidelines and information (provide outline of the focus group, explain the circular strategies, approach and steps).
- Guiding the process (for instance when only a limited number of relationships was identified the facilitator asked why this was the case and if this was purposeful).
- Leading the discussion by asking questions, probing, and summarizing main ideas.

Appendix E Interview protocols chapter 5

Interview protocol – Interviews with stakeholders during the diagnosing phase

Interview goals

Gain insights into the neighbourhood, the action plan being designed for the neighbourhood, the potential for circular economy approaches in the neighbourhood and the potential for community involvement in the design and implementation of circular economy approaches in the neighbourhood.

Sub goals

Gain insights in:

- The neighbourhood, including its challenges and opportunities.
- The action plan being designed for the neighbourhood.
- The different stakeholders involved in the neighbourhood and the action plan.
- The understandings of the involved stakeholders on the circular economy and the adoption of circular economy approaches in the neighbourhood.
- The perspectives of the involved stakeholders on the involvement of the community in the design and implementation of circular economy approaches in the neighbourhood.

Interview questions

1. Introduction of the organization and interviewee:
 - a. Can you shortly introduce your organization and function?
 - b. What is/has been your role in the action plan being designed for the neighbourhood?
2. Exploring the neighbourhood and action plan:
 - a. What are, in your opinion, challenges in the neighbourhood?
 - b. What are, in your opinion, opportunities in the neighbourhood?
 - c. What are, in your opinion, ways in which these challenges and opportunities can be addressed in the action plan for the neighbourhood?
 - d. How is the action plan for the neighbourhood being developed?
 - e. What are the focus points in the action plan for the neighbourhood?
3. Exploring the topic of the circular economy:
 - a. Are you familiar with the concept of the circular economy? If yes, how would you define the circular economy? (if not, the definition of the circular economy by Kircherr et al. 2017 is discussed)
 - b. Are you involved in any projects or activities around the circular economy?
4. Exploring the potential for circular economy approaches in the neighbourhood:
 - a. Do you think circular economy approaches could be implemented in the neighbourhood and the action plan? If not, why not? If yes, how do you think it could be implemented?
 - b. Do you think circular economy approaches could be valuable for the neighbourhood? If not, why not? If yes, why and how?
 - c. If circular economy approaches would be implemented in the neighbourhood, how and where should it, in your opinion, be implemented?
 - d. What do you think would be challenges of adopting circular economy approaches in the neighbourhood?
 - e. What do you think would be opportunities for adopting circular economy approaches in the neighbourhood?
5. Exploring the potential for community involvement:
 - a. Do you think that the community should be involved in the design and implementation of circular economy approaches in the neighbourhood? If yes, why? If not, why not?
 - b. How do you think the community could be involved in the design and implementation of circular economy approaches in the neighbourhood?
 - c. What do you think would be the outcomes of involving the community in the design and implementation of circular economy approaches in the neighbourhood?
 - d. What do you think would be challenges of involving the community in the design and implementation of circular economy approaches in the neighbourhood?
 - e. What do you think would be opportunities of involving the community in the design and implementation of circular economy approaches in the neighbourhood?

Interview protocol – Evaluative conversations after the discussion meetings

Interview goals

Gain insights into the experiences during and opinions on the discussion meetings of the involved stakeholders.

Sub goals

Gain insights in:

- The involved stakeholders and their reasons for participating in the discussion meetings.
- The experiences of the involved stakeholders during the discussion meetings.
- The evaluation of the involved stakeholders on the discussion meetings, and the involvement of community members in these meetings in particular.

Interview questions

1. Introduction of the organization and interviewee:
 - a. Can you shortly introduce your organization and function?
 - b. What was your reason for participating in the discussion meetings?
 - c. What were your expectations of the discussion meetings?
2. Exploring the experiences of the interviewee during the discussion meetings:
 - a. How did you experience the discussion meetings? Was it a positive or negative experience?
 - b. How did you experience working together with other stakeholders during the discussion meetings? Was it easy or difficult to discuss with the others?
 - c. What were challenges you experienced during the discussion meetings? Were you able to deal with these challenges?
 - d. What were opportunities you experienced during the discussion meetings?
3. Exploring the evaluations of the stakeholders on the discussion meetings:
 - a. Did you learn anything from the discussion meetings? If yes, what did you learn? If not, why not?
 - b. Are you happy with how the discussion meetings went? If yes, why? If not, why not?
 - c. Did your perspective on the adoption of circular economy approaches in the neighbourhood change as a result of the discussion meetings? If yes, how did it change? If not, why not?
 - d. Do you think the involvement of community members in the discussion meetings was valuable for the design and implementation of circular economy approaches in the neighbourhood? If yes, why? If not, why not?

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Nederlandse samenvatting

Bedrijven zijn van cruciaal belang om een duurzame samenleving te kunnen realiseren. Zij kunnen deze rol vervullen door duurzame bedrijfsprincipes te implementeren, waarbij ze hun economische, sociale en ecologische prestaties op elkaar afstemmen en in stand houden op de lange termijn. Bedrijven kunnen ook bijdragen aan een duurzame samenleving door circulaire bedrijfsprincipes toe te passen. Dit zijn principes zoals verminderen, hergebruiken en recyclen, die bedrijven in staat stellen om materialenkringlopen te sluiten en gesloten te houden. Duurzame en circulaire bedrijfsprincipes zijn beiden van groot belang in het realiseren van een duurzame samenleving en bedrijven kunnen in overeenstemming met hun doelen, focus en industrie, kiezen of ze duurzame, circulaire of beide bedrijfsprincipes toepassen.

Om een bijdrage te leveren aan een duurzame samenleving moeten bestaande bedrijven diepgaande veranderingen doorvoeren en duurzame en circulaire bedrijfsprincipes integreren in hun strategieën. Dit is een moeilijke doelstelling die maar door weinig bestaande bedrijven behaald wordt. Veel bedrijven kiezen voor een korte-termijn aanpak; ze focussen op het 'laaghangende fruit' en integreren duurzame en circulaire bedrijfsprincipes niet op een strategisch niveau. Deze aanpak leidt vaak tot tegenstrijdigheden in de bedrijfsvoering en minimale economische, sociale en ecologische winsten voor het bedrijf en de samenleving. Daarom is het van belang dat bedrijven duurzame en circulaire bedrijfsprincipes integreren in hun strategieën. Hierbij zal de strategische focus verschuiven van een focus op economische waarde vermeerdering voor het bedrijf en zijn aandeelhouders naar een focus op de creatie, het behoud en de regeneratie van economische, sociale en ecologische waarde.

Capaciteiten die bedrijven in staat stellen om effectief samen te werken met verschillende stakeholders kunnen hen assisteren bij het integreren van duurzame en circulaire bedrijfsprincipes. Deze capaciteiten kunnen bedrijven bijvoorbeeld helpen om complexe duurzaamheidsuitdagingen aan te gaan en optimaal gebruik te maken van de kennis en vaardigheden van hun stakeholders. Daarnaast helpen deze capaciteiten bedrijven bij het delen en combineren van kennis, middelen en verantwoordelijkheden met diverse stakeholders om zo gedeelde visies te ontwikkelen voor het creëren en behouden van sociale en ecologische waarde. Een kernargument van dit proefschrift is dat bedrijven samen moeten werken met diverse stakeholders om duurzame en circulaire bedrijfsprincipes te kunnen integreren in hun strategieën en zo een bijdrage te leveren aan een duurzame samenleving.

Het proces van samenwerken is niet zonder uitdagingen, vooral als bedrijven gaan samenwerken met partijen die weinig kennis hebben van en ervaring hebben met duurzaamheid en circulariteit, zoals in het geval van de lokale bevolking. Samenwerking met de lokale bevolking is wel van groot belang, met name bij het implementeren van circulaire bedrijfsprincipes, omdat deze samenwerking kan helpen om het succes van en de acceptatie voor circulaire principes te vergroten. Daarnaast is er nog maar weinig bekend over hoe samenwerking met diverse stakeholders bedrijven kan helpen in het integreren van duurzame en circulaire bedrijfsprincipes en het behalen van economische, sociale en ecologische doelen. Om deze vraagstukken verder te onderzoeken bevat dit proefschrift vier deelvragen, die elk onderzocht worden in een empirisch hoofdstuk (hoofdstuk 2, 3, 4 en 5 van dit proefschrift):

- *Deelvraag 1: In hoeverre kunnen dynamische capaciteiten die de kennis en middelen van interne en externe stakeholders integreren, bedrijven assisteren in het behalen van economische, sociale en ecologische doelen?*
- *Deelvraag 2: In hoeverre kunnen interacties met stakeholders in het bedrijfsnetwerk bedrijven assisteren in het integreren van circulaire bedrijfsprincipes in hun strategie?*
- *Deelvraag 3: Hoe kunnen samenwerkingsverbanden met lokale inwoners helpen om sociale elementen te integreren in circulaire strategieën?*
- *Deelvraag 4: Hoe kunnen lokale inwoners betrokken worden bij multi-stakeholder initiatieven voor het ontwikkelen en implementeren van circulaire principes?*

De vier empirische hoofdstukken hebben verschillende focuspunten: het tweede hoofdstuk focust op duurzame bedrijfsprincipes en de andere hoofdstukken op circulaire bedrijfsprincipes. Daarnaast behandelen de hoofdstukken verschillende contexten, waarbij hoofdstuk twee en drie focussen op het MKB (midden en klein bedrijf) en hoofdstuk vier en vijf op de sociale woningbouw. De focus op het MKB is gekozen omdat het MKB specifieke uitdagingen tegenkomt in het integreren van duurzame bedrijfsprincipes, zoals een tekort aan middelen en mankracht, wat nog maar weinig aandacht krijgt in de literatuur. De focus op de woningbouw is gekozen vanwege het belang van de adoptie van circulaire bedrijfsprincipes in de bouwsector om de ecologische impact van de sector te verminderen. Daarnaast geeft de context van de sociale woningbouw een unieke mogelijkheid om samenwerkingsverbanden met lokale inwoners voor de circulaire economie te onderzoeken, omdat meer aandacht voor lokale inwoners vereist is in deze context. De hoofdstukken gebruiken ook andere methodologieën, waarbij in hoofdstuk twee en drie een vragenlijstonderzoek is uitgevoerd. In hoofdstuk 4 een casusstudie en

in het hoofdstuk 5 een actieonderzoek. De vier hoofdstukken die de deelvragen onderzoeken worden hieronder kort samengevat.

Het tweede hoofdstuk van dit proefschrift combineert de literatuur over dynamische capaciteiten en strategisch management en onderzoekt in hoeverre dynamische capaciteiten, die de kennis en middelen van interne en externe stakeholders integreren, bedrijven kunnen assisteren in het behalen van economische, sociale en ecologische doelen. Het MKB komt veel uitdagingen tegen bij het implementeren van duurzame bedrijfsprincipes, waaronder beperkte financiële middelen en een tekort aan kennis over duurzame technologieën. De centrale hypothese in dit hoofdstuk is dat het MKB deze uitdagingen kan managen door middel van dynamische capaciteiten die de kennis en middelen van interne en externe stakeholders integreren. Deze capaciteiten zouden het MKB kunnen helpen in het ontwikkelen en implementeren van succesvolle duurzame bedrijfsprincipes, en daarmee het behalen van economische, ecologische en sociale doelen. Managers met een transformationele leiderschapsstijl die tevens duurzame bedrijfsprincipes interpreteren als een kans in plaats van als een risico zouden daarnaast kunnen helpen om deze dynamische capaciteiten te ontwikkelen. Om deze hypothesen te testen is een vragenlijstonderzoek onder 297 Nederlandse MKB bedrijven uitgevoerd. De resultaten laten zien dat dynamische capaciteiten die de kennis en middelen van externe stakeholders integreren het MKB op een positieve manier kunnen helpen in het behalen van economische, sociale en ecologische doelen. Daarentegen blijkt uit de bevindingen dat dynamische capaciteiten die de kennis en middelen van interne stakeholders integreren, geen effect hebben op economische en sociale doelen en zelfs een negatief effect hebben op ecologische doelen. Als laatste laten de resultaten zien dat managers met een transformationele leiderschapsstijl de dynamische capaciteiten positief beïnvloeden en dat managers die duurzame bedrijfsprincipes interpreteren als risico een negatief effect hebben op deze dynamische capaciteiten. Deze resultaten zijn belangrijk omdat ze laten zien dat het MKB dynamische capaciteiten moet ontwikkelen die de samenwerking met externe stakeholders, zoals andere bedrijven, kennisinstellingen en overheden, bevorderen. Daarnaast laat dit onderzoek zien dat managers een belangrijke rol kunnen spelen in het aanjagen, of juist belemmeren, van deze capaciteiten.

Het derde hoofdstuk van dit proefschrift combineert literatuur over multi-stakeholder netwerken met strategisch management en onderzoekt in hoeverre interacties met stakeholders in het bedrijfsnetwerk bedrijven kunnen assisteren bij het integreren van circulaire bedrijfsprincipes in hun strategieën. Onderzoek laat zien dat bedrijven tal van barrières tegenkomen bij het integreren van circulaire bedrijfsprincipes, waaronder technische en culturele barrières. De centrale hypothese in het derde hoofdstuk is dat interacties met stakeholders in het bedrijfsnetwerk bedrijven kunnen helpen bij het overwinnen van deze barrières en

het integreren van circulaire bedrijfsprincipes in hun strategieën. Deze interacties zijn van cruciaal belang omdat ze bedrijven kunnen helpen samen met hun stakeholders gezamenlijke visies en strategieën te ontwikkelen die nodig zijn om waarde te creëren en te behouden in een circulaire economie. Daarnaast stelt dit hoofdstuk dat managers die circulaire bedrijfsprincipes als kans interpreteren, deze interacties en de integratie van circulaire bedrijfsprincipes in de strategie van hun onderneming kunnen bevorderen. Om de hypothesen te testen is een vragenlijstonderzoek onder 627 Nederlandse MKB bedrijven uitgevoerd. De bevindingen laten zien dat interacties met stakeholders in het bedrijfsnetwerk positief gerelateerd zijn aan de integratie van circulaire bedrijfsprincipes in de strategie van een bedrijf. Daarnaast laten de resultaten zien dat managers die circulaire bedrijfsprincipes interpreteren als kans, de integratie van deze principes in de strategie van hun bedrijf direct en indirect, via hun positieve invloed op interacties met stakeholders in het bedrijfsnetwerk, kunnen bevorderen. Deze resultaten zijn van belang omdat ze tonen dat het integreren van circulaire bedrijfsprincipes in de strategie van een bedrijf een inter-organisatorisch perspectief vereist. Daarnaast geven ze aan dat managers een essentiële rol kunnen spelen in het stimuleren van interacties en samenwerkingen met verschillende stakeholders.

Het vierde hoofdstuk van dit proefschrift bekijkt de literatuur over sociaalecologische systemen en onderzoekt hoe samenwerkingen met lokale inwoners kunnen helpen om sociale elementen in circulaire strategieën te integreren. In de praktijk en literatuur over de circulaire economie wordt weinig aandacht besteed aan sociale elementen. Dit is echter wel van belang omdat de circulaire economie een impact op sociale elementen kan hebben en sociale elementen nodig heeft om succesvol te kunnen zijn (bijvoorbeeld een verandering in consumptiegewoonten). Het centrale argument in dit hoofdstuk is dat sociale elementen geïntegreerd kunnen worden in circulaire strategieën door middel van samenwerking met lokale inwoners. In deze samenwerkingsverbanden is het van belang dat circulaire strategieën aangepast worden aan de behoeften van lokale inwoners, maar ook dat zij hun gedrag aanpassen aan de doelen van circulaire strategieën. De hoofdvraag in dit hoofdstuk is onderzocht door middel van een casusstudie in een sociale woningbouwcorporatie. De bevindingen laten zien dat sociale woningbouwcorporaties verschillende circulaire strategieën kunnen implementeren en geven daarnaast ook aan dat verschillende soorten samenwerkingsverbanden met inwoners geïnitieerd kunnen worden binnen deze strategieën. De resultaten geven aan dat samenwerkingsverbanden die geïnitieerd worden tijdens de visievorming en uitvoering van de circulaire strategie kunnen helpen om synergieën te creëren tussen de ecologische doelen van de circulaire strategie en de behoeften van lokale inwoners. Samenwerkingsverbanden die geïnitieerd worden tijdens de eindfase van de circulaire strategie, of een gebrek aan samenwerking met lokale inwoners in de strategie, leiden vaak niet tot deze

synergieën en kunnen zelfs resulteren in circulaire strategieën met negatieve ecologische en sociale effecten. Deze resultaten zijn van belang omdat ze aangeven dat actieve en vroegtijdige samenwerkingsverbanden met lokale inwoners essentieel zijn in circulaire strategieën om te zorgen dat door middel van deze strategieën de beoogde ecologische en sociale doelen behaald kunnen worden.

Het vijfde hoofdstuk van dit proefschrift bouwt op de literatuur over multi-stakeholder netwerken en onderzoekt hoe lokale inwoners betrokken kunnen worden bij deze initiatieven voor het ontwikkelen en de implementatie van circulaire principes. Lokale inwoners worden vaak niet betrokken bij multi-stakeholder initiatieven door verschillende barrières zoals tijdgebrek en een tekort aan vaardigheden onder inwoners. Dit is voornamelijk het geval als deze initiatieven complexe onderwerpen, zoals de circulaire economie, behandelen omdat inwoners vaak weinig kennis over deze onderwerpen hebben. Om de hoofdvraag te onderzoeken is een actie-onderzoek uitgevoerd, waarbij de onderzoeker actief samenwerkte met de deelnemers in het opzetten en uitvoeren van een multi-stakeholder initiatief. In dit initiatief werden lokale inwoners, naast verschillende andere stakeholders, betrokken bij het ontwikkelen en implementeren van circulaire oplossingen voor één van de armste wijken van Noord-Nederland. De bevindingen geven aan dat het betrekken van lokale inwoners bij multi-stakeholder initiatieven kan leiden tot de ontwikkeling van gedeelde circulaire oplossingen die een positief effect hebben op de wijk en haar inwoners. Maar de resultaten laten ook zien dat het betrekken van inwoners complex is omdat er een balans gezocht moet worden tussen onzekerheid versus zekerheid, overeenstemming versus onenigheid, en netwerk management gefocust op vrije interacties versus gestuurde interacties. Te veel onenigheid kan er bijvoorbeeld voor zorgen dat stakeholders uit het initiatief stappen, terwijl te veel overeenstemming er voor kan zorgen dat er geen nieuwe en creatieve circulaire oplossingen ontwikkeld worden. De resultaten geven ook aan dat een balans bereikt zou kunnen worden door (1) een verkenning van de kennis en perspectieven van lokale inwoners uit te voeren aan het begin van het initiatief, (2) een gemiddeld niveau van onenigheid en conflict toe te laten tijdens het initiatief, en (3) gebruik te maken van een combinatie van vrije en gestuurde interacties tijdens het initiatief. Deze resultaten zijn van belang omdat ze aangeven dat het betrekken van lokale inwoners bij multi-stakeholder initiatieven complex is en een andere vorm van management vereist.

Concluderend laat dit proefschrift zien dat samenwerkingen met verschillende stakeholders, inclusief lokale bewoners, van cruciaal belang zijn voor bedrijven om duurzame en circulaire bedrijfsprincipes te integreren in hun strategieën en een bijdrage te leveren aan een duurzame samenleving. In de beantwoording van de deelvragen laat dit proefschrift zien dat: (1) dynamische capaciteiten die de kennis en vaardigheden van externe stakeholders integreren en managers die

duurzame bedrijfsprincipes zien als kans van belang zijn voor bedrijven om sociale, ecologische en economische doelen te behalen, (2) interacties met stakeholders in het bedrijfsnetwerk en managers die circulaire bedrijfsprincipes interpreteren als kans cruciaal zijn voor bedrijven om circulaire bedrijfsprincipes te integreren in hun strategie, (3) actieve en vroegtijdige samenwerkingen met lokale inwoners essentieel zijn in circulaire strategieën om te zorgen dat de beoogde ecologische en sociale doelen van deze strategieën behaald kunnen worden, en (4) het betrekken van lokale inwoners bij multi-stakeholder initiatieven in de context van de circulaire economie complex is en een andere vorm van management vereist waarbij tijdig aandacht moet worden besteed aan het verkennen van de perspectieven van inwoners.

De bevindingen van dit proefschrift dragen bij aan de literatuur over een duurzame bedrijfsvoering omdat ze helpen een beter begrip te creëren over de integratie van duurzame en circulaire bedrijfsprincipes en de rollen die samenwerkingsverbanden met stakeholders hierin spelen. Daarnaast dragen de resultaten bij aan de literatuur over de circulaire economie door het geven van verdere inzichten in de, vaak vergeten, sociale elementen van de circulaire economie en het belang van het betrekken van lokale inwoners. De resultaten van dit proefschrift kunnen bedrijven helpen om nieuwe samenwerkingsverbanden aan te gaan en duurzame en circulaire bedrijfsprincipes te integreren in hun strategieën. Met deze resultaten hopen we praktische experimenten en toekomstig onderzoek te stimuleren in de richting van samenwerking tussen bedrijven en diverse stakeholders om samen toe te werken naar een duurzame samenleving.

Curriculum vitae

Personalia

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Education

2017- 2021	PhD "Stakeholder collaboration for corporate sustainability and the circular economy"	Campus Fryslân, University of Groningen
Supervisors	Prof. Gjalt de Jong, Dr. Thomas B. Long	
2015- 2017	Research Master in Global Economics & Management	University of Groningen
2014- 2015	BSc International Business Exchange	Singapore Management University
2012- 2015	BSc International Business	University of Groningen

Work experience

2021- now	PostDoc Circular Transitions	Vrije Universiteit Amsterdam
2020- 2021	Researcher/intern FASCINATING	Institute for Sustainable Process Technology & EmpowerMi
2017- 2020	Researcher circular strategies	Social housing association
2016-2017	Research assistant sustainable entrepreneurship	University of Groningen

Published papers and working papers

Eikelenboom, M. & de Jong, G. 2019. The impact of dynamic capabilities on the sustainability performance of SMEs. *Journal of Cleaner Production*. <https://doi.org/10.1016/j.jclepro.2019.07.013>

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Eikelenboom, M. & Long, T.B. How can local communities be involved in multi-stakeholder initiatives focussed on the adoption of circular economy approaches in neighbourhoods? An action research inquiry. *Working paper, revise & resubmit at Journal of Business Ethics*.

Conference presentations

Eikelenboom, M. & de Jong, G. 'The impact of dynamic capabilities on the sustainability performance of SMEs'
Presented at:

- AOM: *Academy of Management Conference, Chicago, 2018*

Eikelenboom, M. & Long, T.B. & de Jong, G. 'Circular strategies for social housing associations'
Presented at:

- Exeter Circular Economy Symposium: *Circular Economy Disruptions Symposium, Exeter, 2018*
- NBM: *New Business Models Conference, Berlin, 2019*
- EURAM: *European Academy of Management Conference, Lisbon, 2019*

Eikelenboom, M. & de Jong, G. 'Integrating circularity in business strategy: theory and evidence from Dutch SMEs'
Presented at:

- EURAM: *European Academy of Management Conference, Lisbon, 2019*

Eikelenboom, M. & Long, T.B. 'Involving local communities in multi-stakeholder initiatives: an action research inquiry in the context of a circular neighbourhood'

Presented at:

- NBM: *New Business Models Conference, online, 2020*
- RENT: *Research in Entrepreneurship and Small Business, online, 2020*

Nominations and Awards

Nominated for best research master student, University of Groningen, 2017

Nominated for best paper award AOM conference, Chicago, 2018. Eikelenboom, M. & de Jong, G. 2019. *The impact of dynamic capabilities on the sustainability performance of SMEs*

Best paper award NBM conference, Berlin, 2019: Eikelenboom, M., Long, T.B. & de Jong, G. 2021. *'Circular strategies for social housing associations: Lessons from a Dutch case'*

University of Groningen Sustainable Society PhD research grant, 2020. Grant obtained for the Research project *'Involving local communities in multi-stakeholder initiatives: an action research inquiry in the context of a circular neighbourhood'*

Outreach Publications

Eikelenboom, M. 2020. Circulaire woningbouw: van gordijnen tot kozijnen. Leeuwarder Courant.
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<https://circulairfriesland.frl/netwerk-essentieel-voor-friese-circulaire-economie/>

Eikelenboom, M. 2021. Contribution to: How can the circular economy mindset and practices help us create distributed social value? Circular Conversations.
<https://www.circularconversations.com/expert-series/how-can-the-circular-economy-create-social-value>

Teaching and supervision experience

2018-2021	Lecturer for the MSc course ' <i>Sustainable Organization</i> '	University of Groningen
2018-2020	Lecturer for the MSc course ' <i>Sustainable Strategy</i> '	University of Groningen
2019-2020	Sustainable Entrepreneurship MSc thesis supervision	University of Groningen

Other academic activities

2020	Track chair NBM conference ' <i>New business models and societal interactions</i> '	NBM conference
2018-2020	Chair Green Office Embassy	Campus Fryslân

Reviewing experience

- Research in Entrepreneurship and Small Business (RENT) conference
- European Academy of Management (EURAM) conference
- New Business Models (NBM) conference
- Journal of Cleaner Production
- Organization & Environment