



UMEÅ UNIVERSITY

Understanding and managing Coopetition for Sustainability: Process and Outcomes

Siarhei Manzhynski

Umeå School of Business, Economics and Statistics
Umeå 2021

This work is protected by the Swedish Copyright Legislation (Act 1960:729)
Dissertation for PhD
ISBN print: 978-91-7855-680-9
ISBN PDF: 978-91-7855-681-6
ISSN: 0346-8291
Studies in Business Administration, Series B, No. 107
Cover design: Alena Mikhedava
Electronic version available at: <http://umu.diva-portal.org/>
Printed by Cityprint i Norr AB
Umeå, Sweden 2021

To my family

Acknowledgements

When I finished my first PhD journey in 2008, I would never have thought that I could want to repeat something like that. But now, in 2021, when I am writing the final words of this thesis, I just confirm that the 'never say never' paradox happens, and it is better 'to accept and live with it'. Looking back, I do not see my last four years as a repetition – in contrast I regard them as an amazing and unique professional experience that has enriched me as a researcher and a person. So, I thank destiny for this fantastic time at Umeå School of Business, Economics and Statistics.

I would like to express sincere gratitude to my main supervisors, Maria Bengtsson and Herman Stål. It has been a great pleasure working with you! I remember I perceived your task and feedback quite challenging and stressful in the beginning, but your difficult yet relevant questions inspired me to work harder and, hopefully, that led to good progress in the end. Thank you for believing in my potential, for your patience, for guiding my PhD way wisely (I know sometimes it was not easy as I tended to cover so many things simultaneously), for providing encouraging words in hard personal moments. Thank you for involving Tatbeeq Raza-Ullah in the supervision process. Tatbeeq, I appreciate your contribution to the project, your constructive feedback really helped me to take a fresh look at the study and advance it. Hopefully we all continue our fruitful collaboration in the future (hey, we have to see how our Tomtebostrand case ends up in reality).

This research could have been incomplete without my friends and co-authors Frank Figge and Andrea Stevenson Thorpe. Frank and Andrea, your contributions to our mutual articles, your advice and informal mentorship, your constant willingness to help and discuss even insane research ideas have been and remain an immeasurable support. We were friends and worked together before my start in 2017 but this PhD study only strengthened our crew creating a real symbiosis. Let's keep this up!

My greatest appreciation goes out to Tobias Hahn, Medhanie Gaim, Jessica Eriksson, and Peter Gustafsson who acted as discussants and opponents during the earlier stages of this thesis, including the research proposal and internal seminar. Thank you for investing your time, knowledge, and energy. Your constructive comments, helpful suggestions, and inspiring words were simply treasure for me.

I would like to thank participants and coordinators of the EGOS paradox track. For four years you have given me a great opportunity not only to improve my working studies but also to become familiar with cutting-edge research in the paradox field. I also direct my appreciation to my co-authors Sabina Żróbek and Krystyna Radecka-Romaniuk for their help in exploring cooperation for sustainability in Poland that added the international perspective to my thesis.

A big thanks goes to all my colleagues at the business school for a very pleasant working environment. Lars Lindbergh, thank you for involving me in your research projects and separately for revealing Tomtebostrand for me. Vladimir Vanyushyn, thank you for valuable tips on STATA and quantitative analysis. Johan Jansson, thank you for an opportunity to be a coordinator of the department research seminar where I could come up with many fruitful ideas. Lars Hassel, thank you for inviting me to USBE and mentoring my research visits in 2014 and 2016. Without you, I probably would not even have been to Umeå.

I am grateful to fellow (and former) PhD candidates who shared this journey with me. Johan, Peter, Lukas, Ivan, Sergio, Robert, Sofia, Angelos, Maxim – thank you for many pleasant chats over these years. Ivan, we started on the same day and shared the office for several years – I appreciate your patience, support, and friendship. I wish all of you, who are still working on PhD studies, the best in completing your theses.

I thank Umeå School of Business, Economics and Statistics, the department of Business Administration and the Entrepreneurship section for providing me with all needed support during my study. I also gratefully acknowledge the Kamprad Family Foundation and Kempefonden for funding my research.

Most importantly, I could not have made this without my family. Alena, you endured all the effects of the dark side of my research: despair, doubt, irritability. Thank you for your patience, care, and help. My lovely son and daughter, Ivan and Vasilisa, thank you for being in my life and for giving meaning to it. You might change your opinion about the cover of this thesis in the future, but I appreciate your help in creating the symbol of the topic.

Lastly, I would like to thank my parents, my brother and all my friends in Belarus. We are going through a big challenge in our history, but we will win. Жыве Беларусь!

Siarhei Manzhynski
Umeå, November 3, 2021

Table of Contents

- Acknowledgements**.....i
- Figures and Tables** v
- Appended Papers**.....vi
- Abstract** vii
- Sammanfattning** viii
- 1. Introduction**..... 1
- 2. Theoretical Framework**8
 - 2.1. Coopetition for Sustainability: An extant literature review*8
 - 2.1.1. Coopetition8
 - 2.1.2. Sustainability..... 10
 - 2.1.3. Coopetition for Sustainability 14
 - 2.2. Drivers of Coopetition for Sustainability*..... 18
 - 2.3. Process of Coopetition for Sustainability. Paradox perspective*21
 - 2.3.1. Paradoxes in organization studies21
 - 2.3.2. Dealing with paradox: rendering–framing–responding.....22
 - 2.3.3. Coopetition for Sustainability as a knotted paradox25
 - 2.4. Outcomes of Coopetition for Sustainability*.....28
 - 2.5. Theoretical concept of the study and research questions*32
- 3. Research methodology**36
 - 3.1 Ontological and Epistemological Foundations*36
 - 3.2 Research strategy and empirical setting*39
 - 3.2.1. Research strategy39
 - 3.2.2. Empirical setting41
 - 3.3 Qualitative Study*42
 - 3.3.1. Case selection42
 - 3.3.2. Data collection44
 - 3.3.3. Data analysis45
 - 3.4 Quantitative Study*48
 - 3.4.1. Data and sample48
 - 3.4.2. Measures and data analysis50
- 4. Overview and extended abstracts of the individual papers**.....52
 - 4.1. Extended abstract of Paper 1*.....53

4.2. <i>Extended abstract of Paper 2</i>	54
4.3. <i>Extended abstract of Paper 3</i>	55
4.4. <i>Extended abstract of Paper 4</i>	57
4.5. <i>Extended abstract of Paper 5</i>	58
4.6. <i>Extended abstract of Paper 6</i>	59
5. Research Findings and Discussion	61
5.1. <i>Addressing the Research Questions</i>	61
5.2. <i>Theoretical contributions</i>	66
5.3. <i>Managerial implications</i>	70
5.4. <i>Limitations and future research</i>	71
5.5. <i>Concluding remarks</i>	72
References	73

Figures and Tables

- Figure 1.** The literature body framework..... 15
- Figure 2.** Managing a paradox 22
- Figure 3.** Types of coepetition 31
- Figure 4.** The conceptual frame of the study 32
- Figure 5.** Latent and salient paradoxes grounded in critical realism .. 38
- Figure 6.** The coding structure of the data in Paper 2 46
- Figure 7.** Positioning of the papers in the theoretical model, their key points and links to the research questions 52
- Figure 8.** The principal model of the study 61

- Table 1.** Coepetition for sustainability studies: short summary 16
- Table 2.** Characteristics of data collection 44
- Table 3.** Firms and interviewed respondents 44
- Table 4.** Conceptualization of outcomes of coepetition for sustainability 64

Appended Papers

Paper 1: Manzhynski, S., Stål, H., & Bengtsson, M. Dealing with knotted paradoxes: A system dynamics approach to cooptition for sustainability. Earlier versions of the paper were presented at 2020 EGOS Colloquium and 2020 Annual Meeting of the Academy of Management.

Paper 2: Bengtsson, M., Manzhynski, S., Stål, H., & Raza-Ullah, T. Out of the ashes and into the fire? Organizing mechanisms navigating multiple paradoxes in cross-sectoral collaboration for sustainability. Earlier version of this paper was presented at 15th Organization Studies Summer Workshop 2020.

Paper 3: Manzhynski, S., & Figge, F. (2020). Cooptition for sustainability: Between organizational benefit and societal good. *Business strategy and the environment*, 29(3), 827–837

Paper 4: Figge, F., Thorpe, A. S., & Manzhynski, S. (2021). Between you and I: A portfolio theory of the circular economy. *Ecological Economics*, 190, 107190.

Paper 5: Manzhynski, S., Zrobek, S., & Radecka-Romaniuk, K. Does cooptition enhance corporate sustainability in housing? Evidence from Poland. This paper is in the second round of review for *Housing studies*.

Paper 6: Manzhynski S. Sailing close to the wind: Interplay between intensity, balance, and outcome in the knotted cooptition for sustainability paradox. Earlier version of this paper was presented at 2021 EGOS Colloquium.

Abstract

Scholars highlight the potential gains of collaboration between competitors for supporting sustainability but there is a lack of both theoretical and empirical studies. In this thesis I aim to enhance the understanding of ‘coopetition for sustainability’, which I define as ‘*an inter-firm phenomenon where actors from the same industry simultaneously cooperate and compete with the intent to achieve environmental, economic, and social benefits*’. By investigating the process and outcomes of coopetition for sustainability I develop several analytical tools for the systematic exploration of the coopetitive interaction for reaching sustainability goals and show that coopetition for sustainability raises numerous knotted paradoxical tensions. I further reveal organizing and regulating mechanisms that actors use to address these tensions, and which can motivate greater extents of sustainability in terms of outcomes.

This thesis consists of six appended papers (two conceptual, two qualitative, and two quantitative) that explore coopetition for sustainability in three contextual settings (Swedish, Polish, and Belarusian housing). Collectively, the papers span several theoretical frameworks (paradox theory, sustainable value, modern portfolio theory) and methodological approaches (system dynamics, in-depth case study, survey questionnaires). Overall, my explorations in this thesis show that whilst coopetition for sustainability is a complex, tension-filled phenomenon, it has great potential to advance sustainability in both theory and practice. I contribute to theory by generating novel insights into: (i) The process of coopetition for sustainability showing how actors organize collaboration for sustainability and how they respond to paradoxical tensions they frequently experience; (ii) The outcomes of coopetition for sustainability, which I systematically conceptualize and model. I also offer several implications for practice that can help managers to navigate the process of coopetition for sustainability in order to enhance economic, social and environmental outcomes.

Sammanfattning

Forskare lyfter fram de potentiella vinsterna med samarbete mellan konkurrenter för att främja hållbarhet, men det saknas både teoretiska och empiriska studier. Syftet med denna avhandling är att öka förståelsen för "coopetition för hållbarhet", som jag definierar som "*ett fenomen mellan företag där aktörer från samma bransch samtidigt samarbetar och konkurrerar med avsikt att uppnå ekologiska, ekonomiska och sociala fördelar*". Genom att undersöka processen och utfallet av coopetition för hållbarhet utvecklar jag flera analytiska verktyg för att systematiskt utforska den coopetitiva interaktionen i syfte att nå hållbarhetsmål och visar att coopetition för hållbarhet ger upphov till många sammanvävda paradoxala spänningar. Vidare visar jag hur ett antal organiserings- och regleringsmekanismer används för att ta itu med dessa spänningar, mekanismer som kan medföra bättre hållbarhetsutfall.

Denna avhandling består av sex, bifogade, artiklar (två konceptuella, två kvalitativa och två kvantitativa) som utforskar coopetition för hållbarhet i tre kontextuella miljöer (den svenska-, polska- och belarusiska bostadsbranschen). Sammantaget spänner artiklarna över flera teoretiska ramverk (paradoختهori, hållbar värde-teori, modern portföljteori) och olika metodologiska tillvägagångssätt (systemdynamik, fördjupad fallstudie, enkätstudie). Avhandlingens undersökningar visar att även om coopetition för hållbarhet är ett komplext och spänningsfyllt fenomen har det samtidigt stor potential för att främja hållbarhet i både teori och praktik. Jag bidrar till teori genom att generera nya insikter om: (i) 'coopetition för hållbarhets'-processen, vilket visar hur aktörer organiserar samarbete för hållbarhet och hur de reagerar på de paradoxala spänningar som de ofta upplever; (ii) utfallen av coopetition för hållbarhet, som jag systematiskt konceptualiserar och modellerar. Jag förslår även implikationer för praxis, för att hjälpa ledare att navigera i processen för coopetition för hållbarhet och för att förbättra dess ekonomiska, sociala och ekologiska utfall.

1. Introduction

Sustainable development implies a balance between meeting present generations' needs and the impact on the ability to meet those of future generations (WCED, 1987). This refers to many processes and pathways (e.g., sustainable production and consumption, governance, innovation) to reach sustainability (i.e., a more sustainable world) as a long term goal where economic, social, and environmental interests are in harmony with each other (Lee et al., 2016). Businesses play a key role in enabling sustainable development because it is firms that, by producing and providing goods and services, extensively exploit natural and social resources. Current environmental issues such as wastewater, air emissions, land pollution, ozone layer depletion, global warming, and deforestation can to a large extent be considered a result of the negative impact of business on sustainability (UN Environment, 2016). At the same time, firms meet human needs by providing essential goods and services and significantly contribute to addressing environmental and social issues. For example, firms can develop and market environmentally beneficial products and services that reduce the environmental impact and make a profit at the same time. By undertaking corporate sustainability efforts (Dyllick & Hockerts, 2002) firms are able to bring about products, services, and ideas which improve natural, societal, and economic resources use, and, hence, they are beneficial economically, socially and environmentally (Boons & Lüdeke-Freund, 2013). Electric vehicles, digital sharing platforms, renewable energy, and fair trade products serve as good examples of environmentally and socially friendly innovations that facilitate sustainability. Accordingly, it is of key importance to understand how firms can work to decrease their negative footprints and improve their work for sustainability.

The sustainability literature has done much to explore the role of businesses in this context but has focused on the organizational level, that is on how companies organize themselves internally to address sustainability issues. Approaches such as corporate social responsibility (McWilliams, 2000), the sustainable company approach (Vitols & Kluge, 2011), and sustainable entrepreneurship (Cohen & Winn, 2007) are attempts by researchers and practitioners to align internal business processes with the concerns of sustainable development. However, despite some positive trends, initiatives and examples, humanity still seems to be far from the trajectory of sustainable development. One reason that achieving sustainability is very challenging lies in the systemic nature of sustainability issues (Scoones et al., 2020): They are highly interlinked, so any process or solution encountered always comes with a risk of sub-optimization. Moreover, the economic, social and environmental demands of sustainability are

interdependent yet often contradicting, making the selection of solutions and paths towards sustainability controversial and filled with tensions (Hahn, Pinkse, Preuss, & Figge, 2015). Another reason is the scale of sustainability issues (Bansal, Kim, & Wood, 2018; Williams, Whiteman, & Kennedy, 2021). Problems such as climate change, the loss of biodiversity, and air pollution are global challenges (George, Howard-Grenville, Joshi, & Tihanyi, 2016; Jarzabkowski, Bednarek, Chalkias, & Cacciatori, 2019) and require massive efforts which are very unlikely to be delivered by a single actor, for example, a single firm or country.

Both the systemic nature and the large scale of sustainability challenges demand dedicated interactions of multiple actors at different levels: within and between industries, sectors, and countries. These interactions are usually associated with collaboration among actors, and scholars have started to shed light on how to support sustainability by coordination and cooperation within supplier–producer–customer (Vachon & Klassen, 2008) chains, as well as business–university (Cortese, 2003), and company–government (Koontz, 2006) partnerships. A considerable body of literature is devoted to inter-organizational collaboration across sectors, i.e., cross-sectoral collaboration for sustainability (Pedersen, Lüdeke-Freund, Henriques, & Seitanidi, 2021; Stadtler, 2018; van Hille, de Bakker, Ferguson, & Groenewegen, 2019). Even though this literature emphasizes the importance of interactions between actors from the same industry (see, e.g., Stadtler, 2018), it mainly focuses on relationships across sectors, and hence, little attention has so far been paid to inter-firm collaboration for sustainability within an industry (Christ, Burritt, & Varsei, 2017). Moreover, in rare exceptions, which particularly approach collaboration for sustainability between competitors from the same industry, scholars come to contradictory conclusions: while some scholars suggest that collaboration within an industry can be favorable in terms of certain aspects of sustainability — e.g., sustainable logistics (Limoubratum, Shee, & Ahsan, 2015), sustainable procurement (Meehan & Bryde, 2015), and environmentally friendly packaging (Christ et al., 2017) — others (Hahn & Pinkse, 2014; Peloza & Falkenberg, 2009) question the usefulness of such collaborations due to tensions and the risk of conflicts and opportunistic behavior (Hahn, Figge, Pinkse, & Preuss, 2018). Further studies of collaboration for sustainability among competing companies are therefore needed.

I refer to this phenomenon as *coopetition for sustainability* implying that while companies collaborate for sustainability they also compete, for example, for better positions in the market. In the organization and management literature the phenomenon of coopetition, simultaneous cooperation and competition between firms (Bengtsson & Kock, 2000; Nalebuff & Brandenburg, 1996), is well known

and has been extensively studied. For example, scholars have shown that although coopetition can facilitate financial performance (Luo, Rindfleisch, & Tse, 2007), enhance resource efficiency (Dussauge, Garrette, & Mitchell, 2000), and create new markets (Ritala, Golnam, & Wegmann, 2014), it is a risky strategy that can lead to negative consequences such as opportunistic behavior, conflicts and free-riding (Quintana-Garcia & Benavides-Velasco, 2004). However, coopetition for sustainability cannot be seen as a classic “business case” of coopetition focusing mainly on economic gains (e.g., when competitors consider sustainability just as a means to advance financial performance) for three main reasons.

First, coopetition for sustainability includes two additional concerns (environmental and social) that go beyond a classic “business case” of coopetition. For instance, if competitors employ the integrative perspective on sustainability (Gao & Bansal, 2013) in their collaboration, this implies that they aim to address economic, environmental and social needs *simultaneously* without prioritizing one direction over others, even if they are contradictory (Hahn et al., 2015). That, in turn, increases the complexity dramatically and can substantially modify the motives of cooperating partners. Economic losses by one partner, which seems to be a main reason to interrupt collaboration in the business case of coopetition (Crick, Crick, & Chaudhry, 2020), might be compensated for by significant environmental and social benefits and thus encourage the partner to continue with coopetition for sustainability (Manzhynski & Figge, 2020). Sustainability gains can open up new opportunities, which differs from the business case of coopetition, and therefore be a reason to maintain a cooperative alliance.

Second, the difference in scopes of issues between the business case of coopetition and coopetition for sustainability is essential and makes the latter a unique type of coopetition. While the scope of issues in the business case of coopetition is usually limited to the boundaries of the involved partners or their alliance/network, sustainability as an overarching goal requires partners to go beyond such boundaries in trying to address issues that are common to society. That can affect the cooperative relationship substantially. For example, producing public goods as a goal of coopetition for sustainability lies beyond the classic value dynamics of “value creation–value appropriation” recognized in the coopetition literature (Ritala & Hurmelinna-Laukkanen, 2009) because public goods are unlikely to be appropriated by competing partners (Volschenk, Ungerer, & Smit, 2016).

Third, it is worth noting that in the real world coopetition for sustainability often occurs in the context of a wider collaboration, which also involves other types of stakeholders. For example, coopetition for sustainability is often observed in the frames of cross-sectoral collaboration (Hahn & Pinkse, 2014; Stadler, 2018). While

previous research has explored cross-sectoral collaboration for sustainability, we still know little about co-competition for sustainability in this context. Co-competition for sustainability here represents as a specific type of relationship between actors from the same industry which affects and is affected by the larger cross-sectoral context rather than just being an isolated inter-organizational relationship. The focus of my thesis is therefore on co-competitive interactions, which I approach particularly, but acknowledging their context. The fact that firms which are involved in a larger cross-sectoral partnership simultaneously cooperate *and* compete in the market influences their mutual work on sustainability significantly and represents a unique type of collaboration that we, to date, know little about.

Empirically, the topic of co-competition for sustainability has important practical implications. As many sustainability issues have an industry-specific rather than a firm-specific character (Etzion, 2007; Stål, 2015), one firm is often unable to handle such issues effectively alone (Berkowitz, 2018). This brings cooperation with other representatives of the same industry who are facing similar issues to the fore. Such interactions can include pooling resources to prevent their inefficient use or depletion via participating in voluntary programs, mutual innovation, and developing and/or adapting under industry-specific standards and requirements for certification of products (Helfen & Sydow, 2013; Planko, Cramer, Chappin, & Hekkert, 2016). This can lead to better use of resources, greater efficiencies through economies of scale, and even dematerialization of some processes (Christ et al., 2017). Hahn et al. (2015) used the Renault Nissan Alliance as an example of such collaboration where two competitors (Renault and Nissan) combined their knowledge to develop eco-innovation in the form of electric vehicles. The Alliance invested more than \$5 billion to offer electric vehicles under both brands. As a result, the Alliance is the world's leading plug-in electric vehicle manufacturer, with global sales of almost 425,000 pure electric vehicles since 2010 (Nissan News, 2017). Another possible way of co-competition for sustainability within an industry is co-building technological infrastructure, e.g., mutual logistics systems or waste disposal facilities (Bowen, Bansal, & Slawinski, 2018; Corvellec, Campos, & Zapata, 2013), which contributes to sustainability and which is unlikely to be built by a single firm. Moreover, a detrimental impact on the environment (pollution, natural resource depletion etc.) caused by firms' activities brings about pressure from numerous stakeholders, e.g., governing agencies, customers, and NGOs. That makes firms collaborate with other companies from the same industry to adequately respond to this pressure (Sarkis, Gonzalez-Torre, & Adenso-Diaz, 2010) and to increase the legitimacy of the entire industry. In this sense, collaboration with other firms from the industry can be beneficial for sustainability because it helps build barriers for those who do not meet certain social and environmental standards (Freeman, 2010). Furthermore, collaboration with other firms for innovative sustainability solutions can also help novel practices to gain

legitimacy and help firms achieve common technological and regulatory standards. At the same time, contradictory logics between competition and cooperation, and between economic, social, and environmental demands, make such collaboration tension-filled and difficult to handle. This can hinder the development of such a form of collaboration in practice.

To sum up, cooptation for sustainability is an interesting, albeit under-explored, phenomenon with potentially promising practical implications. Though collaboration between competitors for sustainability is becoming more and more frequent in practice (Planko, Chappin, Cramer, & Hekkert, 2019), we know little about it, and there are many open questions regarding the phenomenon. First, there is an extreme scarcity of knowledge on what cooptation for sustainability actually looks like: how such collaboration is initiated and run; how multiple demands of competition, cooperation, economic, environmental, and social demands interrelate and evolve over time; and how actors organize themselves to address these multiple demands and deal with potentially numerous tensions. In other words, we need more insights on the “How?” question of cooptation for sustainability. This refers to processual nuances of the phenomenon, and I therefore conduct an explorative study to investigate the process of cooptation for sustainability. Second, we also need more knowledge about different types of outcomes of cooptation for sustainability (the “What?” question), since prior research is rather contradictory and fragmented (Manzhynski & Figge, 2020). It is contradictory because some scholars emphasize cooptation as a potentially viable business approach in the context of sustainability (Christ et al., 2017; Planko et al., 2019; Volschenk et al., 2016), while other scholars argue that it is probably impossible to avoid detrimental effects of cooptation for sustainability (opportunistic behavior, free-riding, conflicts) that would hamper the achievement of sustainability objectives (Hahn & Pinkse, 2014; Pelozo & Falkenberg, 2009). Prior research on outcomes of cooptation for sustainability is fragmented because it covers either separate aspects of sustainability (e.g., logistics (Limoubpratum et al., 2015), procurement (Meehan & Bryde, 2015), or packaging (Christ et al., 2017)) or limits itself to the individual benefits of the focal firm (Planko et al., 2019) neglecting joint outcomes. Hence, more evidence and systematization of outcomes of cooptation for sustainability are needed.

To address these gaps, in this thesis I approach both the *process* of cooptation for sustainability and the *outcomes* to which the process leads. Therefore, **the purpose of this dissertation is to increase our understanding of the process and outcomes of cooptation for sustainability.**

To study the process, i.e., how coopetition for sustainability is undertaken, I employ the paradox theory perspective (Lewis, 2000). There are two main reasons I choose paradox theory as the central theoretical framework for exploring the process of coopetition for sustainability.

First, paradox theory is devoted to investigating paradoxes, i.e., phenomena with “persistent contradictions between interdependent elements” (Schad, Lewis, Raisch, & Smith, 2016, p. 6) that “seem logical individually but inconsistent and even absurd when juxtaposed” (Smith & Lewis, 2011, p. 382). I assume that coopetition for sustainability can be approached as a paradox and, hence, paradox theory can be leveraged to explore coopetition for sustainability. Previous research has consistently called attention to the paradoxical nature of both coopetition and sustainability, which can raise numerous tensions but has done so in isolation (Hahn et al., 2018; Raza-Ullah, Bengtsson, & Kock, 2014). Coopetition, for example, entails tensions between competitive and cooperative logics of interaction (Bengtsson & Kock, 2000), between knowledge sharing and knowledge protection (Raza-Ullah et al., 2014), between value creation and appropriation (Gnyawali, Madhavan, He, & Bengtsson, 2016), and between common and private goals (Chin, Chan, & Lam, 2008; Raza-Ullah, 2020). Analogously, sustainability entails multiple tensions as well: economic vs. environmental vs social value (Hahn et al., 2015), short- vs. long-term focus (Van der Byl & Slawinski, 2015), shareholder vs. stakeholder interests (Scherer, Palazzo, & Seidl, 2013). Competing demands in coopetition and sustainability often seem logical and desirable in isolation, but appear irrational, inconsistent, and even absurd when considered simultaneously, as in any paradox (Lewis, 2000). Therefore, both coopetition and sustainability can be considered as paradoxes. I suppose in this thesis that when coopetition and sustainability are brought together in the coopetition for sustainability process, they are intertwined, creating a knotted paradox. This knotted paradox, by its paradoxical nature, has unique features (e.g., additional complexity) beyond those of the sustainability and coopetition paradoxes in isolation (Sheep, Fairhurst, & Khazanchi, 2017). Hence, insights from paradox theory can be used to explore coopetition for sustainability as a unique paradox, rather than the separate coopetition and sustainability paradoxes. This, however, requires a particular investigation of the coopetition for sustainability paradox.

Second, paradox theory has shown potential not only to investigate complex phenomena but also to help manage them, for example in dealing with paradoxical tensions. Paradox theory is based on the use of both/and logic rather than either/or (Cuganesan, 2017; Lewis, 2000), and that makes it possible to handle tensions without prioritizing or choosing one demand over others. Instead of conventional, defensive responses to paradoxical tensions, such as avoiding or splitting contradictory elements, paradox theory proposes to acknowledge,

accept, and embrace tensions (Smith & Lewis, 2011) that can lead to more effective managerial solutions and outcomes. Therefore, a paradox perspective represents a potentially more powerful framework for managerial decision-making than, for example, contingency-based approaches (e.g., Qiu, Donaldson, & Luo, 2012) because paradox theory implies benefits from addressing paradoxical tensions while largely avoiding the need for trade-offs, sacrifices, or compromises. This is particularly important for coopetition for sustainability, where prioritizing some demands over others does not seem advisable.

In Chapter 2, I introduce the conceptual framework of the thesis. More specifically, I characterize the phenomenon of coopetition for sustainability by uncovering its drivers, processual nuances, and outcomes. In Chapter 3, I present the methodology of the study, including philosophical standpoints and description of the empirical settings, data collection, and analysis. Chapter 4 gives an overview of the individual papers and the rationale of how they are related to the research questions. Finally, in Chapter 5, I provide the contributions of this thesis as well as practical and societal implications, limitations, and avenues for future research.

2. Theoretical Framework

As this thesis aims to explore coopetition for sustainability, I start this chapter with a brief overview of the coopetition and sustainability concepts. I then present the results of a review of prior research on coopetition for sustainability specifically. Further, I introduce different aspects of coopetition for sustainability, reflecting on its basic building blocks, namely, its drivers, process, and outcomes. In this chapter, I present paradox theory as the main lens of the study and discuss why and how it can be applied to explore coopetition for sustainability. Based on the revealed research gaps, I problematize the current understanding of coopetition for sustainability in prior literature and justify the research questions of this thesis.

2.1. Coopetition for Sustainability: An extant literature review

In this thesis, I define *coopetition for sustainability as inter-firm interactions in which actors from the same industry simultaneously cooperate and compete with the intent to achieve environmental, economic, and social benefits* (Manzhynski & Figge, 2020). Below, I first introduce the coopetition and sustainability concepts and then outline prior research on coopetition for sustainability.

2.1.1. Coopetition

Coopetition, a portmanteau of COOperation and comPETITION, means a phenomenon in which competition and cooperation occur simultaneously. So, the theoretical origins of coopetition derive from different theoretical fields — mainly from research on competition (Porter, 1980) and that on cooperation (Dyer & Singh, 1998). Scholars also acknowledge other theoretical approaches adopted in cooperative research as theoretical roots, e.g., game theory and transaction costs economics (Bengtsson, Kock, Lundgren-Henriksson, & Näsholm, 2016).

The competitive approach is mainly considered based on the resource-based view and the competitive dynamics literature. The resource-based view (e.g., Barney, 1991; Porter, 1980) focuses on competitive advantages which

under-resourced firms can gain via collaboration with their competitors and thus get access to scarce resources (e.g., natural and financial resources, know-how). In the frames of this approach co-competition can be explained rather as a step which has to be taken in order to access resources, which would otherwise be inaccessible, and, hence, to create competitive advantages (Crick et al., 2020; Gnyawali & Park, 2011; Ritala, 2012). Within the competitive dynamics literature, competition is discussed by considering the structure of the industry and its firms' behavior as key factors of a firm's competitive action and reaction (e.g., Bengtsson, Raza-Ullah, & Vanyushyn, 2016; Chen, 1996). Analogously, the process of co-competition can be also partly explained by these factors, e.g., exchanges of competitive attacks and responses.

The cooperative approach, on the contrary, focuses on a collaborative advantage via building relationships to reach mutual benefits such as sharing knowledge, obtaining social capital, and increasing efficiency (Ahuja, 2000; Raza-Ullah, 2017). The cooperation stream is based on network theories, e.g., business network theory and social network theory (Håkansson & Snehota, 2006), where embeddedness of inter-organizational relationships is under scrutiny. Within networks, participants achieve their goals through the strength of collective initiatives rather than individualistic actions (Child, Faulkner, & Tallman, 2005). Cooperation can cut costs and decrease risks by using complementarity and reciprocity (Griesinger, 1990). However, despite obvious opportunities and potential benefits, the cooperative approach has also limitations. Firstly, cooperation is based on trust, which increases the risks of opportunistic behavior. Secondly, purely collaborative relationships rely too much on mutual collective actions, which can lead to strategic inflexibility and inertia (Bresser & Harl, 1986). Moreover, in "pure" cooperative networks, the growth of one firm's performance leads to the growth of the others' performance as well, which does not provide a relative advantage within the group.

Cooperative and competitive paradigms in isolation suggest only a limited view of reality (Raza-Ullah, 2017). Co-competition, as the complementary concept that embraces both competition and cooperation, aims to overcome the abovementioned limitations and implies simultaneous coexistence of competition and cooperation within an inter-organizational relationship (Dagnino & Padula, 2002). Generally, it is assumed that relationships in the form of co-competition can emerge either when competitors collaborate with each other (e.g., Ritala et al., 2014) or when collaborative partners initiate a competition race (e.g., Luo, Slotegraaf, & Pan, 2006).

Co-competition has also been explored at different levels and two partly different views (schools of thought) on co-competition have emerged from this

perspective: the actor school of thought and the activity school of thought. While in the frames of the actor school of thought (Nalebuff & Brandenburg, 1996), coopetition is studied at the network level and cooperative and competitive parts are divided between actors, within the activity school of thought (Bengtsson & Kock, 2000), coopetition is scrutinized at the dyadic level where competition and cooperation are divided between activities.

The actor school of thought considers coopetition in a broad sense, i.e., as a context (Bengtsson & Raza-Ullah, 2016), and explores the phenomenon as the relationship between different actors (suppliers, customers, complementors, and competitors) in value-nets. According to this school, coopetitors are not necessarily direct competitors in a market sense, i.e., they produce and sell the same products and thus compete for consumers. Rather, suppliers and customers can also act as coopetitors, for example, when they compete for a specific resource in a network. Coopetition develops through cooperation within alliance portfolios (e.g., Bengtsson & Johansson, 2014), multiparty alliances (Zeng & Chen, 2003), value-chains (e.g., Eriksson, 2008; Pathak, Wu, & Johnston, 2014), and ecosystems (Hurmelinna-Laukkanen & Ritala, 2010) that also involve competition. This school has provided insights on how actors in a network context combine cooperative and competitive relationships and reconfigure them over time to pursue mutual benefits (Raza-Ullah, 2017). In contrast, the activity school focuses on the one-to-one direct coopetition relationships between the focal firm and the same (in terms of its place in a supply chain) coopting firm at the same time (Gnyawali & Park, 2011). That implies concentrating on the dyadic character of coopetition, which requires a more detailed analysis of the nature and processes of coopetition (Bengtsson & Raza-Ullah, 2016).

In my thesis, I apply the view of the activity school because I directly aim to study companies from the same industry, which are most often competitors, and which simultaneously collaborate for sustainability. Moreover, the activity school focuses on the coopetition process, providing an opportunity to scrutinize more processual nuances of specific relationships. These nuances are especially important when competitive interactions intend to contribute to such a special area as sustainability.

2.1.2. Sustainability

There is increasing evidence that natural systems are now under escalating stress worldwide (Goudie, 2018; Hoegh-Guldberg et al., 2018), and the global scale of environmental issues has huge negative effects on our planet. The concept

of sustainable development is an attempt to address this global challenge. Sustainable development represents a normative concept describing desirable paths of human development, aiming to meet “present needs without compromising the ability of future generations to meet their needs” (WCED, 1987, p. 43). While sustainable development can be introduced as a process or evolution of human society, sustainability is usually interpreted as a long-term goal of this process (Glavič & Lukman, 2007). The range of issues related to sustainability is very wide: from problems of economic efficiency to challenges of social equality, production emissions, and the impact on biodiversity.

Despite broad coverage of the areas of sustainability, there is a consensus that environmental, social, and economic dimensions are central to its conceptualization (Gladwin, Kennelly, & Krause, 1995; Van der Byl & Slawinski, 2015). To reach sustainability in the business context, firms are supposed to undertake “activities . . . demonstrating the inclusion of social and environmental concerns in business operations and in interactions with stakeholders” (Van Marrewijk, 2003, p. 102). Therefore, corporate sustainability aims to mitigate environmental impact, deliver societal values, and improve economic development (Azapagic, 2003). Sustainability demands that firms use rather a long-term orientation, a high level of stakeholder engagement, transparency, and multi-criteria (mutually environmental, economic, and social) performance targets (Manzhynski & Hassel, 2014; Van Marrewijk, 2003). That in turn often requires transforming the technological, social, and economic patterns of producing and consuming goods and services (Carrillo-Hermosilla, del González, & Könnölä, 2009). However, such a transformation is usually hard to implement effectively because of the sheer scale of most sustainability issues. Climate change, depletion of scarce natural resources, poverty, inequality, carbonization — all these issues have rather a global character and represent grand challenges (George et al., 2016; Jarzabkowski et al., 2019; Reid et al., 2010). These challenges are impossible for a single actor (firm) to address, and thus, sustainability requires mutual coherent actions of numerous stakeholders (Lee et al., 2016).

Sustainability represents an overarching goal that is desirable on the societal level: “individual organizations cannot become sustainable: Individual organizations simply contribute to the large system in which sustainability may or may not be achieved” (Jennings & Zandbergen, 1995, pp. 1,023). Thus, sustainability is a macro-level concept (Bansal, 2002). However, representatives of the micro-level, e.g., firms, play an essential role in sustainability, since they are critically involved in using the finite and scarce resources of “spaceship earth” (Boulding, 1966; Daly & Daly, 1973). Put differently, sustainability on the societal (macro) level is ultimately decided on the organizational (micro) level (Figge, Givry,

Canning, Johnson, & Thorpe, 2017). This argument has an important implication for my study: If sustainability can only be reached on a higher level than that of a single firm, then firms should consider not only their individual efforts for sustainability but also the activities of other economic agents. Therefore, it is not surprising that in practice, more and more firms are initiating collaboration with other companies and organizations (including competitors) for the sake of sustainability via coordinating their goals or via mutual implementation of sustainability strategies (Chen et al., 2017; Kiron, Kruschwitz, Haanaes, & Reeves, 2015; Lozano, 2007) because the achievement of sustainability depends on many if not all actors. For example, competitors can collaborate regarding their resource use by organizing resource circles, within which resources flow back and forth between firms, and sustainability in the sense of minimizing resource use can be reached at the group level (Figge, Thorpe, & Good, 2021). At the same time, the area of collaboration for sustainability is challenging and contains many pitfalls (Tura, Keränen, & Patala, 2019). For example, self-interested firms are tempted to free-ride and thus let other firms make collaborative efforts to address sustainability but still benefit from the process, since many aspects of sustainability relate to public goods.

An essential aspect of corporate sustainability is how sustainability is embedded into the core logic of business activities. Corporate sustainability research suggests two different approaches in this context: instrumental and integrative (Gao & Bansal, 2013).

A considerable body of the sustainability literature employs an instrumental logic that points to a causal link between corporations' social and environmental efforts and their financial performance (Margolis & Walsh, 2003; Van der Byl & Slawinski, 2015). In other words, according to the instrumental approach businesses use social or environmental commitments as a means to enhance financial outcomes (Gao & Bansal, 2013). For example, marketing eco-friendly products improves consumer loyalty and stimulates sales. Proponents of the instrumental view legitimize and integrate corporate sustainability into business activities as instruments to increase profits (Dentchev, 2004; Husted & de Jesus Salazar, 2006). By doing so, firms discriminate the social and environmental dimensions of sustainability from the economic one, which is considered as prioritizing. The instrumental logic seems to comprise several considerable shortcomings that limit its use from both practical and theoretical perspectives. Practically, scholars question the cause–effect relationship between social or environmental demands and financial benefits (Hahn et al., 2015; Margolis & Walsh, 2003), pointing to situations when environmental and social concerns cannot be aligned with financial performance. Moreover, prioritizing the economic aspect when firms seek financial gains from their social and

environmental investments can polarize business and society, reinforcing the tensions between economic demands and social needs that are inherent in organizational life (Kleine & Von Hauff, 2009; Margolis & Walsh, 2003). Theoretically, the instrumental approach, where social and environmental elements are treated as independent variables, contradicts the theoretical premise of sustainability, which is based on a system perspective and implies interdependence and integration among economic, environmental, and social demands (Gao & Bansal, 2013). By prioritizing economic interests, the instrumental logic in corporate sustainability is limited to comprehensively addressing the underlying environmental and social concerns of sustainability.

To address the problems of the instrumental logic, scholars have developed an integrative view on sustainability (Gao & Bansal, 2013; Hahn, Figge, Pinkse, & Preuss, 2010; Kleine & Von Hauff, 2009). The integrative approach implies that companies are supposed to address interdependent economic, environmental, and social concerns simultaneously without prioritizing one dimension over others, even if they are contradictory (Hahn et al., 2015). Since businesses are embedded in social and ecological systems, the three dimensions of sustainability are part of the same whole and should not be separated in business decision-making. When employing the integrative approach, managers “recognize and embrace the contradictions among the financial, social and environmental dimensions” (Gao & Bansal, 2013, p. 244) and emphasize the systemic nature of sustainability, where different social, environmental, and economic issues are interrelated. The integrative approach goes beyond the well-known Triple Bottom Line (Elkington, 1998), which only puts together three dimensions of sustainability, by recognizing the oftentimes conflicting relationships between economic, social, and environmental aspects (Hahn et al., 2015). Despite the attractiveness of simultaneously embracing economic, environmental, and social demands in line with the integrative approach, the task is seen as extremely challenging. Addressing interconnected and often contradictory sustainability interests brings forth numerous tensions and conflicts, which can lead to detrimental consequences (Carollo & Guerri, 2017; Hahn et al., 2015; Van der Byl & Slawinski, 2015). For example, the impossibility of achieving environmental and economic objectives simultaneously can evoke managers’ inability to make decisions and can lead to failures in both environmental and economic directions (Hahn et al., 2010; Van der Byl & Slawinski, 2015).

It is important to understand how the instrumental and integrative views on sustainability can be applied in the context of cooptation. According to the instrumental view, actors can consider cooptation for sustainability as an opportunity to enhance their financial and economic benefits. Therefore, due to the main focus on economic gains, the classic cooptation literature seems to be

in line with the instrumental approach. For example, firms within an industry can cooperate to create a new sustainability standard by which partners aim to attract consumers, restrict access to the market for other (third) competitors, or make the standard more suitable for their current business practices (Bonnedahl & Eriksson, 2011). That makes the process similar to the way cooptation is initiated for product innovation (Gnyawali & Park, 2009). However, current cooptation research concentrating on economic benefits is difficult to apply in line with the integrative view on sustainability.

Inspired by the integrative approach researchers have recently suggested a paradoxical framework to deal with the tensions in corporate sustainability (Hahn et al., 2018; Hahn, Preuss, Pinkse, & Figge, 2014). The paradoxical framework on corporate sustainability contains “interrelated yet conflicting economic, environmental, and social concerns with the objective of achieving superior business contributions to sustainable development” (Hahn et al., 2018, p. 237). A paradox perspective on corporate sustainability is based on a both/and logic of making decisions and implies that managers should try to accept the contradictions inherent within corporate sustainability rather than sacrificing one demand for another or trying to resolve tensions, which seems unlikely due to their persistence. Hahn et al. (2018) distinguish between descriptive, instrumental, and normative aspects of corporate sustainability as a paradox: While descriptive aspects portray and explain how actors deal with paradoxical tensions around sustainability issues, instrumental aspects refer to consequences of paradoxical tensions, and normative ones invite alternative normative positions on the organizational objective: the intrinsic value of multiple sustainability. This represents a potentially more powerful managerial framework that accrues benefits while largely avoiding the need for trade-offs or compromises (Schad et al., 2016; Waldman, Putnam, Miron-Spektor, & Siegel, 2019). Therefore, in my thesis, I apply a paradoxical framework for cooptation for sustainability. I represent it in the context of cooptation for sustainability in Section 2.3.

2.1.3. Cooptation for Sustainability

The literature on cooptation and sustainability has been extensive over the past few decades, and scholars have examined both cooptation and sustainability in various contexts, but in isolation. There has been limited discussion on cooptation and sustainability when they are brought together.

Generally, prior studies concerning both coopetition and sustainability domains can be divided into three groups (Fig. 1 and Table 1):

1) One group of studies refers to the corporate sustainability literature, where the main focus of the research is sustainability issues, and competitors are considered as one group of stakeholders among others who are responsible for sustainability (Hahn & Pinkse, 2014; Hahn et al., 2015; Pelozo & Falkenberg, 2009). In this context, coopetition is mentioned as a form of inter-firm collaboration, along with inter-organizational forms such as public-private partnerships, cross-sector partnerships, and industrial educational clusters, which might be used for resolving environmental and social issues.

2) The coopetition-based literature, where the main focus of the research is the coopetition phenomenon and sustainability is considered as one of the many aspects influenced by coopetition (Meehan & Bryde, 2015; Rusko, 2011). Unlike the first group, in this context, studies concentrate on different aspects of coopetition but mention sustainability as a means or an indirect outcome of collaboration with competitors.

3) Literature which focuses explicitly on both coopetition and sustainability aspects, where researchers examine coopetition directly with the intent to support sustainability. This is the rarest group, represented by only a few studies to date (e.g., Christ et al., 2017; Limoubpratum et al., 2015; Planko et al., 2019; Volschenk et al., 2016).

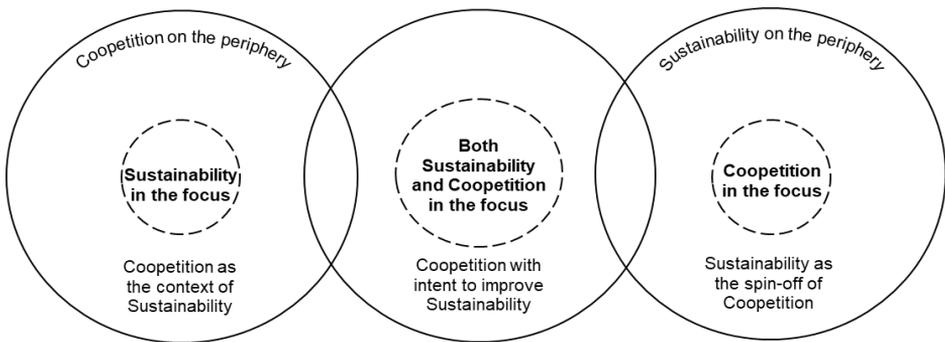


Figure 1. The literature body framework

Table 1. Coopetition for sustainability studies: short summary

Group	Authors	Type of research	The core idea in terms of the contribution to the coopetition for sustainability field
1) Sustainability in the focus and coopetition on the periphery	Peloza and Falkenberg (2009)	Conceptual	Collaboration among competitors is recognized as an opportunity to improve corporate social responsibility, but this strategy is not appropriate for all firms and highly risky.
	Hahn and Pinkse (2014)	Conceptual	Competitive forces need to be aligned with the collective benefits of partnerships to advance their effectiveness.
	Hahn et al. (2015)	Conceptual	Competitors can leverage collaboration to cope with tensions in sustainability (Renault Nissan Alliance is used as an illustrative example).
	Sotirov, Blum, Storch, Selter, and Schraml (2017)	Qualitative	Actors cooperate with competitors to better attain their own policy goals and to gain power in the sustainability policy process.
	Bowen et al. (2018)	Qualitative	Collaborative efforts of competitors are more effective for smaller-scale issues than for larger-scale ones.
2) Coopetition in the focus and sustainability on the periphery	Meehan and Bryde (2015)	Quantitative	Coopetition can motivate partners' commitment to sustainability due to pressure from competitors in cooperative alliances.
	Rusko (2011)	Quantitative	Coopetition can also (among other opportunities) contribute to long-term sustainability by reusing waste as raw material.
	Cygler, Sroka, Solesvik, and Dębkowska (2018)	Quantitative	Coopetition is more beneficial (in terms of corporate sustainability) if it is organized on a longer-term basis, but it is more associated with failures in short-term interactions.
	Sellitto, Pereira, Marques, and Lacerda (2018)	Qualitative	Knowledge-sharing among competitors allows the reuse of materials and promotion of industrial symbiosis and facilitates increases in eco-efficiency.
3) Both coopetition and sustainability in the focus	Christ et al. (2017)	Qualitative	Coopetition has the potential to improve corporate sustainability, but firms are likely to apply coopetition only if it provides economic benefits.
	Limoubratum et al. (2015)	Quantitative	Managers perceive coopetition as an opportunity to strengthen economic, social, and environmental outcomes simultaneously.
	Planko et al. (2019)	Qualitative	Trust, common vision, goal alignment, neutral entity in charge of coordination, etc. act as main enablers of coopetition for eco-innovation.
	Volschenk et al. (2016)	Qualitative	Coopetition can generate socio-environmental value, which, however, is impossible for competitors to appropriate.
	Stadtler (2017)	Qualitative	Managers integrate coopetition to leverage competitive dynamics toward enhancing corporate social commitment in cross-sectoral partnerships.

The few studies that have focused on coopetition for sustainability have come to different, rather contradictory, conclusions. While some scholars have confirmed a positive role of coopetition in sustainability-oriented activities

(Christ et al., 2017; Limoubpratum et al., 2015; Meehan & Bryde, 2015), the others have called into question the benefits of cooperative relationships for sustainability (Hahn & Pinkse, 2014; Pelozo & Falkenberg, 2009).

Christ et al. (2017), for example, explored a cooperative agreement in the Australian wine industry that managed to reduce usage of fossil fuels and refrigeration by jointly outsourcing bottling and packaging. However, the authors revealed the rather instrumental logic employed by competitors in their collaboration for sustainability: Cooperation was supported only if the environmental benefits aligned with economic earnings. Their single-case study showed that collaboration between competitors was ceased as soon as it led to economic losses. Thus, the authors highlighted the need to explore the dynamics of cooperation for sustainability. In another example, Planko et al. (2019) examined cooperation for sustainability in the Dutch smart grids sector when competitors collaborated to develop innovative technologies that supported sustainable development. The authors identified main enablers of cooperation for sustainability at the network level, such as trust development, common vision and goals, goal alignment, a neutral entity in charge of coordination, and fair collaboration between big and small firms. The research argued that to make cooperation for sustainability more predictable, actors tend to prevent the risks of cooperation from the start rather than dealing with them in the process of their collaboration.

Volschenk et al. (2016), in their case study of environmental cooperation in the South African wine industry, took an interest in value creation outcomes. They argued that although socio-environmental value, unlike economic value, cannot be captured by competitors and accrues to society, “it can act as a catalyst to creating value for the competing firms” (Volschenk et al., 2016, p. 116). According to Limoubpratum et al. (2015), cooperative strategies may support sustainable logistics. In their quantitative study of the Thai publishing sector, the authors confirmed that cooperation would have a significant, positive effect on the economic, social, and environmental outcomes of logistic distribution.

In general, the studies of cooperation for sustainability seem to suggest that cooperation between competitors can leverage the limited technological, financial, and human resources available to each participating firm and use such resources in a more efficient and sustainable way. Based on these findings, successful cooperation for sustainability seems to have been confirmed in previous literature. A cooperative relationship may allow firms to use different resources more efficiently and thereby create more value than would have been possible on their own.

In contrast, some other researchers (Hahn & Pinkse, 2014; Pelozo & Falkenberg, 2009) have questioned the benefits of cooptation for sustainability. The main argument is that, since cooptation entails more than one firm, it seems inevitable that competition between them would hamper the achievement of environmental objectives due to tensions, conflicts, and opportunistic behavior (Hahn & Pinkse, 2014). While the literature on conventional cooptation acknowledges such drawbacks, it shows that cooptation can work regardless (e.g., Bengtsson & Kock, 2000; Gnyawali & Park, 2011), and no specific reasons are mentioned why the same should not hold for cooptation for sustainability. Nonetheless, as Hahn and Pinkse (2014) pointed out, one cannot naïvely assume that opportunistic behavior simply disappears just because there is a potential to improve sustainability.

To sum up, prior research has described some examples of cooptation for sustainability, highlighting its potential benefits and risks and uncovering positive and negative consequences. Extant literature on cooptation for sustainability is rather fragmented, however, and the phenomenon needs more systematical exploration (Manzhynski & Figge, 2020). To represent the phenomenon of cooptation for sustainability more comprehensively, I draw on the input–process–outcome framework (Steiner, 1972), which is well known in organization and business studies and also relates to the purpose of my dissertation, which focuses specifically on the process and outcomes of cooptation for sustainability. As inputs in this framework, as some other scholars have already suggested (e.g., Bengtsson & Raza-Ullah, 2016), I scrutinize drivers, i.e., factors and conditions that motivate or force firms to engage in cooptation for sustainability. Therefore, below I introduce the literature framework on the drivers, process, and outcomes of cooptation for sustainability.

2.2. Drivers of Cooptation for Sustainability

Drivers of cooptation can be divided into several, partly overlapping, groups. For example, according to Gnyawali and Park (2009), cooptation has internal, external, and relation-specific drivers. Internal drivers characterize a “firm’s internal environment to form and maintain co-opetitive alliances” (Raza-Ullah, 2017, p. 15). Some firms can be inclined toward co-opetitive interactions because of a positive past experience, a cooptation mindset (Gnyawali & Park, 2011), or a good reputation associated with cooptation (Ahuja, 2000). External factors derive from aspects that are beyond the boundaries of a specific firm, for

example, industry/country characteristics, needs for certain technologies, or stakeholders' pressure. In some industries, usually with higher degrees of concentration, resource scarcity, uncertainty, and interconnections, cooperation relationships are likely to be arranged more often (Dowling, Roering, Carlin, & Wisniewski, 1996; Ritala, 2012). Literature indicates that cooperative interactions are more common for those innovations that are associated with higher R&D risks and costs (Gnyawali & Park, 2009), technological complexities (Bouncken & Kraus, 2013), or a shorter product life cycle (Quintana-Garcia & Benavides-Velasco, 2004). Cooperation can be demanded and forced by powerful stakeholders such as governments (Barretta, 2008; Manzhynski, Bengtsson, & Stål, 2018), local municipalities (Manzhynski, Bengtsson, & Stål, 2020; Mariani, 2007), or big customers (Dubois & Fredriksson, 2008). Finally, relation-specific drivers of cooperation refer to partner and relationship characteristics that might or might not stimulate cooperation. For example, if partners have distinct but complementary resources, i.e., these resources can be shared via collaboration, such partners are more often considered as cooperators (Luo, Shenkar, & Gurnani, 2008; Raza-Ullah, 2017). Network features such as centrality (Gnyawali, He, & Madhavan, 2006), interconnectedness (Bengtsson & Kock, 2000), density (Gnyawali & Madhavan, 2001), and social characteristics (e.g., trust) and cultural traditions (Tortoriello, Perrone, & McEvily, 2011) facilitate cooperation among competitors.

Since cooperation for sustainability is still cooperation, some drivers associated with the "typical" cooperation (when the main motive is economic) might correspond to cooperation for sustainability as well. For example, technological complexity, which acts as a driver for R&D collaboration in "typical" cooperation (Bouncken & Kraus, 2013), can be a driver for cooperation for sustainability as well because sustainability-friendly solutions are usually also complex (Juntunen, Halme, Korsunova, & Rajala, 2019). At the same time, due to more involved contradictory demands and thus higher complexity, cooperation for sustainability could be more associated with tensions and risks of failures, and thus, actors could be reluctant to initiate such activities.

The sustainability literature suggests classifying the drivers of sustainability into several categories or groups as well. For example, there are internal, external, and connecting drivers (Lozano, 2015). Analogously to drivers of cooperation, internal drivers of sustainability lie within the firm's boundaries, while external ones reflect environmental conditions at the industrial, national, and international levels. Ethical leadership, when senior managers initiate and support corporate changes towards sustainability (DeSimone & Popoff, 2000; Doppelt, 2003; Gill, 2002); economic perspectives, when sustainability is considered as an instrument to achieve better economic/financial performance

(the instrumental view) (Carroll, 1999; Elkington, 1994; Lantos, 2001); and risk management, when via sustainability activities, firms strive to reach more stable relationships with stakeholders in the long run (Ditlev-Simonsen & Midttun, 2011; Laszlo, 2003; Vitols & Kluge, 2011), serve as examples of internal drivers of sustainability. External drivers of sustainability refer to aspects which are beyond the firm's boundaries (Baumgartner, 2009). Global, national, and regional sustainability policies (Dovers, 1996; Gilman, 2003; Quazi, 2001), stakeholder pressure (Wijethilake & Lama, 2019; Wolf, 2014), social legitimacy (Brønn & Vidaver-Cohen, 2009; Czinkota, Kaufmann, & Basile, 2014), and market expectations (Porter & Van der Linde, 1995) are examples of external factors of sustainability. DeSimone and Popoff (2000) argued that external drivers of sustainability mainly result in reactive strategies when firms tend to respond to challenges of sustainability, while internal factors are more related to proactive sustainability activities. According to Lozano (2015), connecting drivers link internal firm characteristics to elements of the environment and can be interpreted as both internal and external. For example, corporate brand and reputation, on the one hand, distinguish a specific firm. On the other hand, they largely depend on environmental features, i.e., on who and how to estimate them: For instance, at different times and in different societies, the same firm behavior can result in a completely different reputation – what was previously considered acceptable can be considered inappropriate later on. Since cooperation implies both individual (internal) and group (external) motives, which are essential to reconcile (connect), the overviewed taxonomy of sustainability drivers (internal, external, and connecting groups) seems to apply to cooperation for sustainability as well. For example, competitors can be motivated to collaborate on sustainability matters because collectively (acting as a powerful group), they can respond to stakeholder pressure more effectively.

Prior literature lacks knowledge about drivers for cooperation of sustainability. In the few exceptions, scholars have specified the role of firms' environmental networks (Stadtler & Lin, 2017), special communication capabilities (Peloza & Falkenberg, 2009), trust (Della Corte & Aria, 2016), and management appreciation of environmental concerns (Christ et al., 2017) as essential factors to initiate transformative sustainability-oriented alliances. Bowen et al. (2018) analyzed the scales of sustainability issues scrutinized in cooperation for sustainability as a driver of a collaborative process. Based on the case of Canada's oil sands, they showed that competitors' collective actions are more effective for smaller-scale issues than for larger-scale ones. This confirms that the scale of sustainability issues can be a driver of cooperation for sustainability. In another study, Planko et al. (2019) focused on enablers of cooperation for sustainability at the network level. Employing the example of the Dutch smart grid industry, the authors emphasized such factors as trust, goal

alignment, clearness of boundaries in relationships (knowledge-sharing, joint development), and careful composition of partners. They can be interpreted as drivers that facilitate coepetition for sustainability.

2.3. *Process of Coepetition for Sustainability. Paradox perspective*

As shown above, coepetition for sustainability is a complex phenomenon with contradictory demands: competition, cooperation, economic, environmental, and social interests. The existence of such contradictory demands raises numerous tensions within the phenomenon, and hence, the process of dealing with these tensions seems crucial for actors. As these tensions have a paradoxical nature (Lewis, 2000), I therefore employ paradox theory as a lens to examine the processual aspects of coepetition for sustainability.

Since literature suggests that the process of dealing with paradoxical tensions can be seen as consisting of demarcated activities (Gaim, 2017), I link these activities in a recursive model, which I use as a crude way to depict this process. In this section, I also represent coepetition for sustainability from the paradoxical perspective and more specifically as a knotted paradox.

2.3.1. Paradoxes in organization studies

Following Smith and Lewis (2011, p. 382), I define a paradox as “contradictory yet interrelated elements that exist simultaneously and persist over time,” manifested through the interaction between different elements or activities within and across organizational boundaries. According to Schad et al. (2016), any paradox has three necessary characteristics: (1) *contradiction*, which emerges “as oppositional elements foster a tug-of-war experience” (Schad et al., 2016, p. 10); (2) *interdependence*, which highlights the interplay between opposing elements; and (3) *persistence*, which implies that paradoxical demands persist over time and cannot be solved completely: “Rather interdependent contradictions incite a cyclical relationship between opposing forces” (Schad et al., 2016, p. 12). Dealing with a paradox implies both/and logic rather than either/or (Cuganesan, 2017; Lewis, 2000), as both contradictory demands are supposed to be met simultaneously. At the same time, since paradoxes cannot be resolved fully, actors need to accept and live with paradoxical tensions and respond to them on a permanent basis rather than just once.

To further clarify the meanings of “paradox” and “tension,” I posit that a paradox is defined by activities, interactions, or processes that bring the contradicting elements together. Tensions develop as a result of the contradictions that these activities and interactions are causing. Hence, tensions are inherent features of paradoxes. Paradoxes are embedded in organizational life, but they can be latent without being fully perceived and recognized by organizational members (Smith & Lewis, 2011). Internal and/or external triggers activate latent paradoxes (Gaim, 2017), and they become salient as organizational members perceive, feel, or enact them (Knight & Paroutis, 2017). Salient paradoxes tug organizational members in opposite directions (Gaim, 2017; Van der Byl & Slawinski, 2015), creating cognitive and emotional ambivalence within individuals (Raza-Ullah, 2017). Put differently, once organizational actors recognize and frame paradoxes, they “appreciate the relationship between alternate poles as both contradictory as well as interrelated” (Knight & Paroutis, 2017, p. 405) and need to adequately respond to raised paradoxical tensions. I discuss this managerial process more thoroughly below. At the same time, I acknowledge that there is another ontological position on paradoxes—the constitutive view—according to which paradoxes are socially constructed by organizational actors, and thus, latent paradoxes do not exist (Putnam, Fairhurst, & Banghart, 2016; Smith & Tushman, 2005).

2.3.2. Dealing with paradox: rendering–framing–responding

Once a paradox is triggered, the actors first recognize and construct/frame it, and then respond to experienced paradoxical tensions (Gaim, 2017; Lüscher & Lewis, 2008). The process is illustrated in Fig. 2.

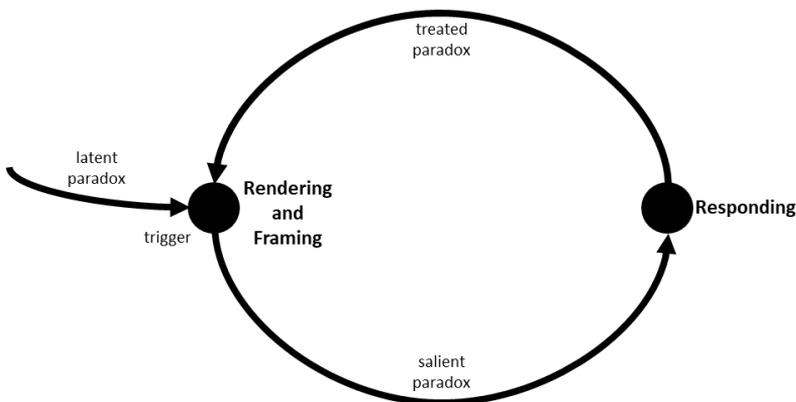


Figure 2. Managing a paradox

This model is somewhat simplistic because the described elements can happen at the same time: For example, rendering and framing can be done by actors simultaneously. Some scholars have even argued that rendering and framing tensions are not really separated from responses to tensions as paradoxes occur in practice (Jarzabkowski, Bednarek, & Lê, 2018). Therefore, I use the model as a theorized, ideal type, but not as a model of reality.

To make paradoxes sensible, actors need to recognize them (which involves rendering latent paradoxes salient (Smith & Lewis, 2011)) and emotionally and cognitively construct or frame them (Gaim, 2017). *Rendering latent paradoxes salient* is the initial element in the process of how paradoxes are treated. This is an essential element because only salience opens up an opportunity to cope with paradoxes consciously (Hahn & Knight, 2019). According to Smith and Lewis (2011), paradoxes become salient when (1) environmental factors, such as plurality, scarcity, and change, affect organizations and (2) organizational actors apply paradoxical cognition. Environmental factors act as an external complex reality that engenders paradoxical tensions, whereas paradoxical cognition is used by actors to subjectively recognize paradoxes. Managers can tie together environmental factors and paradoxical cognition by, for example, using rhetorical (Jarzabkowski, Lê, & Van de Ven, 2013) and discursive interactions (Abdallah, Denis, & Langley, 2011) or interpretive contexts (Knight & Paroutis, 2017). It seems easier to bring a paradoxical tension to saliency and then manage it if actors “think paradoxically” (Gino, Argote, Miron-Spektor, & Todorova, 2010; Smith & Besharov, 2019), adopt a “paradox mindset” (Jarzabkowski, Lewis, & Smith, 2017; Miron-Spektor, Ingram, Keller, Smith, & Lewis, 2018), and then construct a tension in a way that contains all competing poles simultaneously (Hahn et al., 2014; Sharma & Jaiswal, 2018). The latter refers to *framing paradoxes*, which is a way of constructing and understanding paradoxes that implies that cognitive/emotional processing of paradoxes gives rise to a behavior or action in relation to them (Gaim, 2017). While rendering makes paradoxes real, framing shapes salient paradoxes emotionally and cognitively. This is important because the managerial response to a paradox directly depends on how it is framed (Hahn et al., 2014). The emotional part of sensemaking characterizes the organizational actor’s reaction to the paradox. Such reaction can vary from negative (anxiety, fear) through neutral (calmness) to positive (exhilaration, excitement). The cognitive part describes the process which the organizational member undertakes “to denote the abstract representation of tensions” (Gaim, 2017, p. 22). That might be verbal abstractions as a result of discursive interactions (Abdallah et al., 2011) or leaders’ interpretations (Knight & Paroutis, 2017) or even graphic images (Manzhynski, Stål, & Bengtsson, 2020; Sheep et al., 2017). In the following, these frames of paradoxes can act as mental templates for organizational actors to both make decisions on how to handle paradoxes and

construct paradoxes in other similar situations in the future (Gaim & Wåhlin, 2016; Hahn et al., 2014; Smith & Tushman, 2005).

It is worth noting that while paradox theory suggests various approaches to framing paradoxes, it is still difficult (Ofori-Dankwa & Julian, 2004). Mainly, the difficulty comes from the need to consider the integrative structure and dynamical nature of paradoxes. The former implies that competing demands are interrelated in the paradox as parts of a whole. The latter supposes that a paradox is not static and the interrelations between contradictory demands can change over time. Moreover, the more complex a paradoxical phenomenon is, the more difficult it is to frame. For example, one organizational process usually involves several paradoxes simultaneously. This implies that paradoxical tensions can intertwine, affecting each other and increasing the complexity dramatically.

Responding to paradoxes is the part of the managerial process of dealing with paradoxes when recognized paradoxes are treated by managerial responses. In the extant literature, there are several approaches by which organizations respond to paradoxes. Lewis (2000) and Jarzabkowski et al. (2013) described that responses can be either *defensive* or *active*. Defensive responses aim to get around paradoxes and temporarily surmount them but “do not provide a new way to work within or understand paradox” (Jarzabkowski et al., 2013, p. 248). Defensive responses encompass alternatives which either *avoid* demands that generate tensions (e.g., *splitting* or *repression*) or imply *opting for* one demand over the other (e.g., *projection*, *reaction formation*) or find *compromise* (e.g., *ambivalence*). These responses can only provide short-term relief, as the persistent nature of paradoxes by definition means that suppressed demands reemerge (Jarzabkowski & Lê, 2017). In contrast, active responses deal with paradoxes based on acknowledgement of paradox as a natural condition, active involvement of competing parties in mutual adjustment, and a longer-term orientation (Jarzabkowski et al., 2013). Proactive responses contain such alternatives as *acceptance*, which implies seeing contradiction and tension as natural and inevitable conditions; *confrontation*, involving adversarial questioning of demands; and *transcendence*, employing the reframing of competing demands and the finding of new solutions (both/and thinking) where the poles of the paradox complement each other rather than competing (Jarzabkowski et al., 2013; Lewis, 2000; Poole & Van de Ven, 1989). That can be applied through rhetorical (Jarzabkowski et al., 2013) and discursive interactions (Abdallah et al., 2011), interpretive contexts (Knight & Paroutis, 2017), or even humor (Jarzabkowski & Lê, 2017).

In another example, Tidström (2014) focused on tensions as situations of conflict occurring in cooperative relationships and uncovered different styles of

conflict management (Thomas, 1974), such as collaboration, competition, compromise, avoidance, and accommodation, as responses to paradoxical tensions. Raza-Ullah (2020) highlighted emotional and balancing capabilities as organizational-level mechanisms that help managers to respond to paradoxical tensions and manage their negative consequences. Bednarek, Paroutis, and Sillince (2017) developed four specific transcendence practices, namely, ordering, aspiring, signifying, and embodying, which make it possible to balance such paradoxical features as focus (paradoxical content/context), time (stability/change), and distance (maintaining/reducing).

2.3.3. Coopetition for Sustainability as a knotted paradox

It is rather rare when organizations are affected by one single paradox. More commonly, organizational members face numerous paradoxical tensions that are interwoven and interact with each other. In existing literature such interwoven tensions are often called *nested* and *knotted* (Smith, Erez, Jarvenpaa, Lewis, & Tracey, 2017). Although scholars seem not to have reached a consensus regarding the distinction between nested and knotted tensions (for example, Sheep et al. (2017) used the concept *knotted* when they discussed how different tensions related to the innovation paradox are linked to each other, while Andriopoulos and Lewis (2009) referred to this as *nested* tension), *nested* usually refers to tensions that span “*across [different] levels of analysis,*” while *knotted* refers to interwoven tensions “*across type of tension*” (Smith et al., 2017, p. 306). In other words, in nested paradoxes, scholars focus on how tensions at different levels affect each other, creating a so-called nest: For example, paradoxical tensions at the individual level can be nested with tensions at the organizational level (Bednarek et al., 2017). At the same time, scholars refer to knotted paradoxes if the core of analysis is how two or more different organizational paradoxes affect each other and evolve as a whole (akin to a knot) when they are brought together in one process (Manzhynski et al., 2018).

Coopetition for sustainability serves as an example of a knotted paradox where both coopetition and sustainability are bound in one processual context, creating multiple interwoven tensions. This paradox is knotted because, in coopetition for sustainability, tensions stem from different types of paradoxes: those of coopetition and sustainability. The fact that coopetition and sustainability themselves are paradoxes is widely recognized in prior literature (see, e.g., Bengtsson & Raza-Ullah, 2017; Hahn et al., 2018). When it comes to coopetition for sustainability, a knotted paradox seemingly appears as numerous tensions from the single paradoxes of coopetition and sustainability are

interwoven in a complex knot of competing demands. For example, when two firms that compete in the market initiate collaboration, which implies mutual development of a new product that is supposed to be simultaneously profitable and environmentally friendly, the co-competition for sustainability paradox seems to emerge. In this paradox, competing and cooperating demands are interrelated with environmental and economic interests. Prior research has studied tensions in sustainability and co-competition paradoxes extensively, but in isolation (see, e.g., Bengtsson & Kock, 2015; Hahn et al., 2015; Tidström, 2014; Van der Byl & Slawinski, 2015); thus, the interrelations between these paradoxes still have not been systematically addressed.

More particularly, I highlight two key gaps. The first one relates to how the tensions of co-competition and sustainability are knotted together and framed by actors. By knotting, I here understand how co-competition and sustainability tensions affect each other when they are simultaneously presented in one process (co-competition for sustainability). In principle, by knotting, different poles of the tensions from the two paradoxes can interact differently (Manzhynski et al., 2018). They can strengthen each other so that the push-pull force experienced by organizational actors becomes exacerbated: For instance, competitors can collaborate to develop eco-innovation but simultaneously compete for private economic gains. In this case, private goals (a pole of the co-competition paradox) and economic value (a pole of the sustainability paradox) can reinforce each other on the one hand, and common goals (a pole of the co-competition paradox) and environmental value (a pole of the sustainability paradox) reinforce each other on the other hand. This can lead to stronger manifestation of tensions within the co-competition for sustainability paradox. However, it is also possible that private goals can be consistent with the environmental value (for example, if new regulations or very strong customer demands force firms to prioritize investments in eco-innovation, even if the economic value is limited). In this case, private goals (a pole of co-competition paradox) and the environmental value (a pole of sustainability paradox) are knotted together while the common goals (a pole of co-competition paradox) and economic value (a pole of sustainability paradox) might be totally unrelated and remain unknotted. The two described theoretical examples are only tentative patterns of how paradoxes can be knotted together. There is a lack of knowledge about how co-competition and sustainability are knotted in one paradox in real contextual settings, and thus, more explorative research is needed.

The second gap relates to how actors respond to the knotted co-competition for sustainability paradox. Despite extant research's richness in exploring, explaining, and systematizing responses to paradoxes, knowledge of how to deal with paradoxes is seriously hampered by the fact that an overwhelming majority

of studies scrutinize responses to a single paradox (e.g., exploration-exploitation) that manifests itself in a single organization. In reality, actors more often face settings where several paradoxes are knotted and where it is almost impossible practically to respond to only one paradox. Even though a few exceptional studies (Andriopoulos & Lewis, 2009; Jarzabkowski et al., 2013; Sheep et al., 2017) have explored how to deal with knotted paradoxes, these analyses were done at the organizational level. In such studies, paradoxes are held by a single organization, which can control the process fully. However, when it comes to the interorganizational level, paradoxes are “hosted” by different organizations simultaneously. In these settings, it is uncertain whether prior findings which have been applied at the organizational level can apply at the inter-organizational level, where numerous, often diverse or even opposite, organizational demands are in play and a collective response to tensions needs to be elaborated (Schad & Bansal, 2018). Collective responses imply that actors elaborate them together via social interactions, such as communication and consensus decision-making (Bednarek et al., 2017; Keller, Wong, & Liou, 2020; Sheep et al., 2017). For example, in the case of cooptation for sustainability, the need of collective responses to tensions seems to be essential but difficult to implement. It is difficult to apply because competitors usually have strong private interests, and thus, it might be difficult for them to come to consensus decisions. At the same time, collective responses in cooptation for sustainability are important because cooptation as an inter-firm relationship implies inter-firm decisions, which, in turn, usually require involvement or at least agreement by each partner. Moreover, sustainability issues lie beyond the boundaries of separate firms and thus also imply inter-firm or collective decisions. Despite the importance and relevance, there is a lack of knowledge regarding how managers make their choices in collectively responding to the knotted cooptation for sustainability paradox and how these responses help to address multiple competing demands.

By employing the paradoxical perspective in studying the process of cooptation for sustainability and focusing on framing and responding to paradoxical tensions in cooptation for sustainability, I aim not only to carefully examine the processual nuances of this paradoxical phenomenon but also to leverage paradox theory, which seems a powerful managerial framework that allows us to accumulate benefits from addressing all competing demands (competition and cooperation, as well as economic, environmental, and social values) without sacrificing one demand for others. Such responses to paradoxes potentially open up an opportunity for better outcomes. However, it is important to understand what the outcomes of cooptation for sustainability are and how they can be evaluated.

2.4. Outcomes of Coopetition for Sustainability

Collaboration among competitors for sustainability leads to certain outcomes. Existing research states that coopetition can be beneficial and can bring both positive private (micro) and collective (macro) gains. At the same time, researchers are aware of the challenges of accomplishing positive outcomes. Coopetition research has examined the positive effects of coopetition on innovation and financial performance (Gnyawali & Park, 2011; Mantena & Saha, 2012), knowledge-sharing (Bouncken & Kraus, 2013), competitiveness (Bouncken & Fredrich, 2012), growth and efficiency (Peng, Pike, Yang, & Roos, 2012), leveraging economies of scale, and the ability to manage uncertainty and risk (Bengtsson & Kock, 2000). However, the research shows that the relationship can have a dark side as well. Coopetition can not only support innovation and knowledge-sharing but also be an obstacle to innovation and give rise to detrimental knowledge leakage (Liu, Luo, Yang, & Maksimov, 2014). Furthermore, there is a risk of free-riding and imitation (Ritala & Hurmelinna-Laukkanen, 2009) and opportunistic hazards (Pellegrin-Boucher, Le Roy, & Gurău, 2013). The managerial complexity involved can also increase the costs of coordination and the costs to control tensions and resolve conflicts (Bouncken, Gast, Kraus, & Bogers, 2015), which can for example reduce the gains from increased economies of scale. Hence, coopetition is a double-edged sword, bringing both positive and negative outcomes. This points to the need to carefully balance the positive and negative outcomes of coopetition. As sustainability encompasses not only economic but also environmental and social goals, as well as micro- and macro-level concerns, the need to balance outcomes is even more prominent.

Most prior studies examine private outcomes of coopetition and especially outcomes for the focal firm. This neglects, however, that outcomes for coopetition partners and for the entire alliance can differ. Some previous research (Kim & Parkhe, 2009; Park & Ungson, 2001; Parkhe, 1993) has explored collective outcomes, i.e., those outcomes that incur to all partners involved in coopetition. These studies have mainly concentrated not on outcomes as such but rather on reasons leading to positive or negative collective outcomes. For instance, Park and Ungson (2001) argued that coopetition is likely to fail because of a risk of opportunistic behavior, managerial complexity, and additional transaction costs within the alliance. Moreover, these studies still only analyze common outcomes primarily from the perspective of a focal firm. For example, Kim and Parkhe (2009) used items for the outcome variable such as “This alliance has contributed to our [a focal firm’s] core competencies and competitive advantage,” “Our [a focal firm’s] strategic needs in this alliance have been fulfilled,” and “If the

opportunity arises, we [a focal firm] would definitely consider further alliances with this partner” (p. 373) to reflect alliance performance. The focal firm perspective is only one possible perspective, and current research frequently overlooks the existence of other perspectives. Different perspectives on outcomes imply that cooptation might be recognized as beneficial even though outcomes from the focal perspective are negative. Focusing only on the focal firm is especially doubtful in the case of cooptation for sustainability, where success and benefits lie beyond the firm’s boundaries. Furthermore, it is worth noting that prior studies focusing on either private or collective outcomes have paid little attention to the link between the private outcomes of different participants as well as between private and collective outcomes. In other words, in the existing cooptation literature, there is a lack of studies that combine perspectives on both private and collective outcomes. Only recently some scholars have started exploring private and collective outcomes together (Gnyawali & Ryan Charleton, 2018; Rai, 2016). For example, Rai (2016) examined both common and private benefits of cooptation in a process of value creation in inter-firm alliances and even added a further dimension with “private competition benefit.” To conclude, previous inquiries into the outcomes of conventional cooptation focused mainly on the private benefits for the focal firm and concentrated on one specific type of outcome, mainly one which ultimately linked to economic profitability. When it comes to cooptation for sustainability, any discussion of outcomes must also consider concerns for the environment and/or social issues, as well as the firm (micro) and alliance (macro) levels.

Those studies that take an explicit interest in cooptation for sustainability (Christ et al., 2017; Limoubpratum et al., 2015; Meehan & Bryde, 2015; Peloza & Falkenberg, 2009; Stadtler, 2017; Volschenk et al., 2016) have discussed the phenomenon rather generally and have not addressed the outcomes of cooptation for sustainability. Furthermore, the few studies that, to some extent, have looked at the sustainability outcomes of cooptation have presented somewhat fragmented findings. Rather than attempting to systematically conceptualize what sustainability outcomes could mean, these studies show that cooptation can be favorable for some specific aspects that relate to sustainability like logistics (Limoubpratum et al., 2015), procurement (Meehan & Bryde, 2015), or recycling (Volschenk et al., 2016). Hence, there is a lack of a systematic unpacking of what these possible outcomes of cooptation for sustainability may actually be. Particularly, the relationship between cooptation and sustainability has been overly trivialized in prior research. There are two main reasons for this:

First, existing empirical research on cooptation has mainly observed outcomes from the perspective of a focal firm. Applying a focal firm’s perspective neglects the other participants in the relationship or simply assumes that the

other firms in the alliance will enjoy the same benefits. Additionally, as sustainability is a societal concept, the outcomes must be assessed from a societal perspective. In practice, *private outcomes* can differ between the partners involved, as one firm may benefit from the alliance while others do not, and a positive outcome from the perspective of the focal firm does not guarantee a positive contribution to the macro-level. Macro-level outcomes are complicated to assess, which may explain why most researchers have focused on the benefits for a focal firm, with only a few studies examining collective outcomes (Raza-Ullah, 2017).

Second, studies exploring the outcome of cooptation most often focus on one specific outcome, like how cooptation can improve a firm's innovation and technology development (e.g., Park, Srivastava, & Gnyawali, 2014b). This fails to acknowledge that cooptation can impact different objectives at the same time. Cooptation can, for example, support innovation while still harming that firm's financial performance. This problem becomes even more accentuated when studying the outcome of cooptation for sustainability that encompasses, among other things, the efficient use of economic and environmental resources. Previous research on sustainability calls attention to the potential conflict between economic outcomes and social and/or environmental goals and outcomes (Hahn et al., 2018). Cooptation could be positive for one type of outcome but at the same time be negative for another. To better understand if cooptation is a beneficial relationship, it is thus important to further analyze the outcome of cooptation by distinguishing between the different outcomes.

To address these gaps, I aim to develop a new conceptualization of outcomes of cooptation for sustainability which embraces not only the perspective of the focal firm but also the resource and more general societal perspectives. I focus on this approach in Paper 3 and also discuss relevant findings in Chapter 5.

There is a lack of empirical evidence about whether cooptation for sustainability can lead to better outcomes and what the relationship is between certain characteristics of cooptation for sustainability, which might be regulated by managers, and outcomes (Christ et al., 2017; Manzhynski & Figge, 2020). It is important to answer the question from both theoretical and empirical perspectives. Theoretically, it can increase our understanding of the nature and dynamics of cooptation for sustainability. Empirically, it can help managers to analyze the outcomes of cooptation for sustainability and to affect them.

Scholars, for example, highlight intensity and balance as important characteristics of paradoxes which affect outcomes and the previous studies show

that these characteristics can be moderated (at least partly) (Bengtsson & Raza-Ullah, 2017; Gnyawali & Park, 2011; Park et al., 2014b). Employing the features of intensity and balance, a paradox can be expressed on two different continua that range from being (1) highly intense or lowly intense and (2) balanced (balanced-strong) and unbalanced (balanced-weak). For instance Bengtsson and Raza-Ullah (2017) suggested four types of coepetition depending on how cooperation and competition contrast in terms of intensity and balance (Fig. 3): lowly intense balanced coepetition (weak competition & weak cooperation), highly intense balanced coepetition (strong competition & strong cooperation), competition-dominated unbalanced coepetition (strong competition & weak cooperation), and cooperation-dominated unbalanced coepetition (weak competition & strong cooperation).

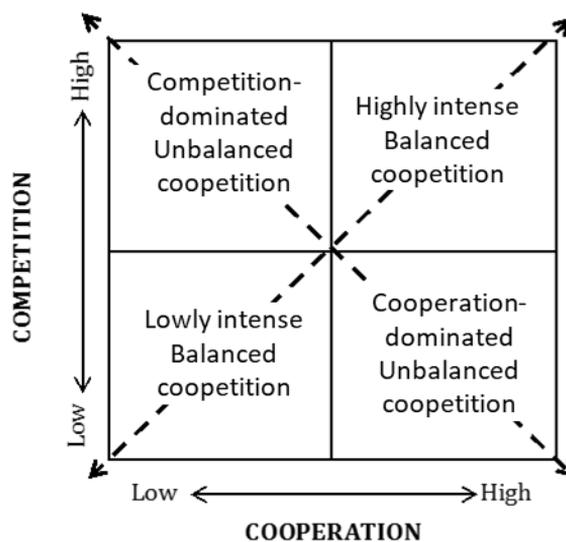


Figure 3. Types of coepetition
(based on Bengtsson & Raza-Ullah, 2017)

More generally, viewing the contradicting elements on these two continua makes it possible to distinguish between one pole-dominated, balanced-strong, and balanced-weak paradoxes (Raza-Ullah et al., 2014). Scholars have shown that these different types of paradoxes lead to different outcomes (see, e.g., Park, Srivastava, & Gnyawali, 2014a). In other words, how a paradox is intensified and balanced is crucial to the outcome. For example, as actors can moderate intensity

and balance at least partly (Park et al., 2014b), they can affect paradoxical outcomes as well.

While scholars have started unpacking the relationships between intensity, balance, and outcome in the cooperation paradox (Park et al., 2014a, 2014b; Raza-Ullah, 2017), there has been very little discussion about how this applies to cooperation for sustainability. For example, it is not clear how the intensity of cooperative interactions for sustainability influences not only economic but also environmental and social outcomes and whether more balanced competing and cooperating efforts lead to higher or more balanced sustainability outcomes. Filling this gap is important not only from the theoretical perspective (because this enriches our knowledge about the nature of cooperation for sustainability) but also practically: If the relationship between intensity, balance, and outcome in cooperation for sustainability is significant and intensity and balance can be adjusted/moderated as scholars have found in cooperation, then analyzing the interplay between intensity, balance, and outcome in cooperation for sustainability will help us better understand how this phenomenon can be regulated to reach more desirable outcomes.

2.5. Theoretical concept of the study and research questions

As it stands in the purpose of the study, I approach two core realms of cooperation for sustainability in this thesis: process and outcome. The conceptual frame of the study is presented in Fig. 4.

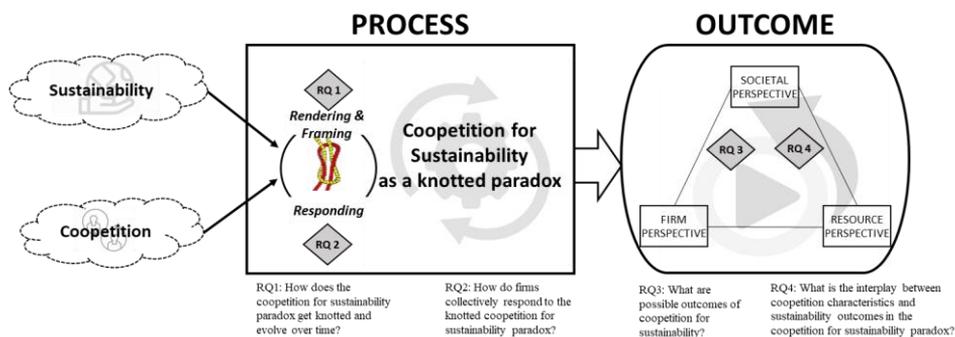


Figure 4. The conceptual frame of the study

In my thesis, I approach framing and responding as key aspects to examine the processual nuances of cocompetition for sustainability, and based on that, I design my first and second research questions. Below, I provide my reasoning for this.

Paradox theory has extensively explored how single paradoxes, for example, innovation (Andriopoulos & Lewis, 2010) or governance (Sundaramurthy & Lewis, 2003), are framed. However, there is a lack of knowledge about how multiple paradoxes are framed when they emerge in one processual setting and how they influence each other, which has been referred to as how paradoxes are knotted together (Sheep et al., 2017). Cocompetition for sustainability is one example of such a knotted paradox. When firms engage in cocompetition for sustainability, cocompetition and sustainability are knotted together, creating something akin to a knot of contradictions or a knotted paradox. With few exceptions (Jarzabkowski et al., 2013; Sheep et al., 2017), attempts to examine how knotted paradoxes get knotted are still scarce. Moreover, there is a lack of knowledge about how knotted paradoxes evolve over time, i.e., what dynamics knotted paradoxes have. Particularly, we lack knowledge about how cocompetition and sustainability are framed as a knotted paradox and how they interact and evolve over time. To fill this gap, I postulate my first research question as

RQ1 How does the cocompetition for sustainability paradox get knotted and evolve over time?

It is very important not only to explore how the cocompetition and sustainability paradoxes are knotted but also to understand how to respond to them. Although paradox research has extensively examined managerial responses to single paradoxes, we still have limited knowledge about how and why managers make their choices in responding to knotted paradoxes. For example, in cocompetition for sustainability projects, competing firms should jointly respond to the knotted paradox, and that makes the process more complex. First, it seems difficult for actors, and especially for competitors, to agree to jointly move to acceptance or resolution in accordance with extant paradox theory, considering their strong private competing interests. Second, the knottedness of cocompetition for sustainability seems to make the process of elaborating collective responses even more complicated because actors need to address not only cocompetition demands but also often contradictory sustainability goals. Despite the extreme complexity, there are empirical examples of actors successfully

responding to tensions in cooperation for sustainability (Christ et al., 2017; Planko et al., 2019). However, while prior literature has stated that successful responses to cooperation for sustainability can occur, it does not disclose how the process of responding is carried out. Therefore, to fill this research gap, I formulate my second research question as

RQ2 How do firms collectively respond to the knotted cooperation for sustainability paradox?

The second core realm of the study is the outcome of cooperation for sustainability. Paradoxical cooperative relationships with the intent to improve sustainability will naturally impact involved participants. It is important to be able to evaluate the outcomes of such relationships. Existing studies that have explored cooperation outcomes have focused mainly on individual benefits to the focal firm and concentrated on economic perspectives. However, when it comes to cooperation for sustainability, it is worth considering that sustainability is more than just economic performance (environmental sustainability also implies an environmental dimension and social sustainability—a social dimension) and more than just a firm's private benefits (sustainability assumes common or societal benefits), as the triple bottom line argues (Elkington, 1997). Prior research does not provide an answer on what the possible outcome variables are regarding cooperation for sustainability. There is a lack of knowledge on how to assess cooperation outcomes in the context of economic, social, and environmental performance in particular and sustainability in general. To do this, outcomes of cooperation for sustainability need to be assessed from different perspectives: the firm perspective (outcomes for the focal firm), the resource perspective (outcomes which cover the separate use of the economic, social, and environmental resources of the cooperation alliance as a whole), and the societal perspective (joint (environmental and economic) results for all companies involved in cooperation). I aim to explore how these different perspectives are interrelated and influence overall outcome variables. Therefore, I formulate my third research question as

RQ3 What are possible outcomes of cooperation for sustainability?

It is essential not only to systemize the outcomes of cooperation for sustainability but also to examine the conditions under which cooperation for sustainability is likely to result in positive outcomes. Above, I showed that

coopetition and sustainability seem to interrelate and create a paradoxical knot where both coopetition and sustainability can manifest themselves differently. For example, competition and cooperation can be intensified differently, and economic, environmental, and social outcomes can differ substantially. Furthermore, both coopetition and sustainability demands can differ in terms of how they are balanced in the knotted paradox. In this thesis, I aim to test whether such characteristics as intensity and balance between different competing demands in coopetition for sustainability have an impact on outcomes. Therefore, the fourth research question of my thesis is formulated as

RQ4 What is the interplay between coopetition characteristics and sustainability outcomes in the coopetition for sustainability paradox?

The research questions and the purpose of the study are uncovered in six connected research papers.

3. Research methodology

In this chapter, I introduce my ontological and epistemological standpoints for the study. I then present the research strategy and settings of my thesis. More particularly, I explain why, given my philosophical assumptions, I use a mixed-methods approach in this thesis and why I employ three different contextual settings. I further discuss the methodological nuances used to select empirical samples as well as to collect and analyze data in my qualitative and quantitative studies.

3.1 Ontological and Epistemological Foundations

In this section, I present and discuss on my ontological and epistemological assumptions in this thesis. As coopetition for sustainability is a phenomenon that encompasses aspects of both the natural world (e.g., environmental sustainability) and social processes (e.g., cooperative interactions), I believe that critical realism (CR) represents a valid philosophical basis for my thesis. CR is a recognized philosophical position (Bhaskar, 1979) that accommodates and aims to fit two somehow opposite ontological traditions—positivism and interpretivism—in one (Archer, Bhaskar, Collier, Lawson, & Norrie, 2013; Syed, Mingers, & Murray, 2010). On the one hand, CR employs a realist ontology, acknowledging the existence of the real world with its causal mechanisms, events, and occurrences. However, unlike naïve positivism and empiricism, CR implies that the real world contains not only observable parts but also elements which cannot be directly observed (e.g., social structures, ideas) or are not observed within a specific context, for example, due to the lack of triggers that make a phenomenon observable (Sayer, 2004). On the other hand, like interpretivism, CR also accepts the social and historical relativity of our knowledge, raising the importance of considering how actors interpret and socially construct phenomena. However, as CR argues, social constructions and interpretations are always limited to reflecting reality: They can merely partly cover the real world, and there is always the intransitive domain of the objects (Danermark, Ekström, & Karlsson, 2019). The latter means that a being itself cannot be limited to our knowledge of that being, as interpretivists and postmodernists claim. In other words, CR represents a model of ontology with three basic domains—the empirical, the actual, and the real—which are interconnected: The empirical is a part of the actual, and the actual is a part of the real (Archer et al., 2013). While the empirical represents a part of reality that can be observed or experienced, the

actual includes occurring events that might or might not be observed, and the real additionally contains entities that “make a difference” (Fleetwood, 2005, p. 199), i.e., mechanisms and casual powers which explain why events (do not) happen.

I adhere to this philosophical position in my thesis. I believe that there are material elements of coepetition for sustainability, i.e., environmental conditions, as well as the social and economic issues which coepetition for sustainability aims to address: climate change, emissions, poverty, famine, resource use. At the same time, I see coepetition for sustainability as a process of social construction by which actors practice their non-material aspects, such as ideas, understandings, and meanings, and this plays a crucial role in organizing and managing coepetition for sustainability.

CR also rhymes well with my philosophical standpoints in relation to the organizational paradox—the main lens through which I consider coepetition for sustainability in this thesis. Below, I try to give reasons for that. In general, there are three different views on the ontology of the organizational paradox (Hahn & Knight, 2019). The first view (constitutive) presents paradoxes as socially constructed. According to the constitutive view, paradoxes do not exist until actors recognize or experience them (Putnam et al., 2016; Smith & Tushman, 2005), and thus, researchers consider paradoxes as “representing” phenomena. The second view (inherent) argues that paradoxes are inherent in organizations and exist “beyond the will or power of management” (Clegg, da Cunha, & e Cunha, 2002, p. 484). In line with the inherent view, scholars explore paradoxes as “materializing” phenomena (Cameron & Quinn, 1988; Schad & Bansal, 2018). The third (integrative) view (Hahn & Knight, 2019; Smith & Lewis, 2011) embraces the two abovementioned approaches. For example, Hahn and Knight (2019) introduced a quantum approach, according to which paradoxical tensions are co-constituted by inherent material factors and socially constructed meaning. In another example, Smith and Lewis (2011) integrated the constitutive and inherent views by distinguishing between latent and salient paradoxes. They argued that paradoxes are inherent in organizations because of organizational complexity and adaptation, but actors might not perceive them. In this state, paradoxes are latent. Once organizational actors recognize paradoxes, they become salient.

I tend to agree with the integrative view of paradoxes, and I believe that CR standpoints provide good reasoning for that. I see organizational paradoxes in general and coepetition for sustainability in particular as embedded in the underlying activities of organizational systems, and actors might or might not recognize (observe/experience) them. If the paradox is recognized, it is salient (part of the empirical). But if it is not recognized, it does not mean that, according

to CR, it does not exist. The paradox can be latent for specific actors but recognized (salient) in other contextual settings (part of the actual). Moreover, because of causal efficacy, there are some mechanisms, as a part of the real, which explain how paradoxes “work” in social life: For example, these mechanisms describe what renders latent paradoxes salient (Fig. 5). Prior literature argues that whether actors are aware of paradoxes depends on environmental factors (a situational context) under which the paradox takes place, actors’ cognitive abilities (Smith & Lewis, 2011), and other factors such as emotions (Raza-Ullah, 2017), discursive interactions (Abdallah et al., 2011), or the availability of information about the context that can be adequately perceived by actors (Manzhynski, Figge, & Thorpe, 2020). According to Manzhynski et al. (2020), if the situation, information, and cognition do not match, actors are unable to recognize a paradox even if it is real and affects organizational life. Therefore, since cognitive abilities as a part of the epistemological realm of paradox are different for different actors, it is also possible that some actors recognize paradoxes but other do not: “What appears paradoxical to one, therefore, may not be paradoxical to another” (Ford & Backoff, 1988, p. 88).

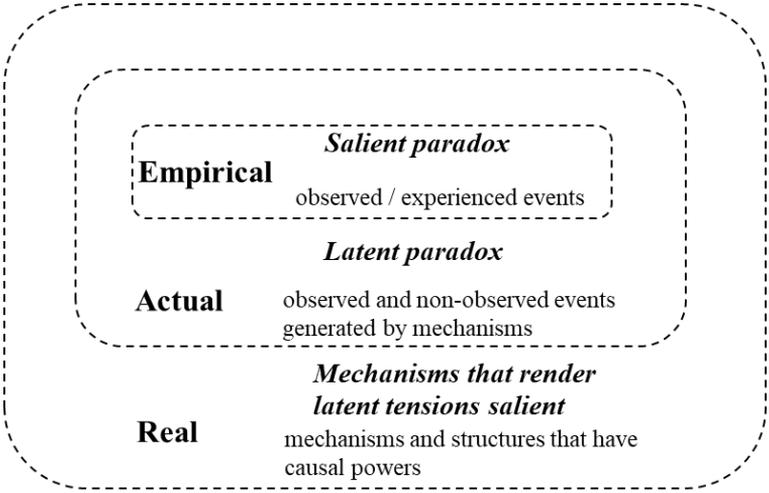


Figure 5. Latent and salient paradoxes grounded in critical realism

From my point of view, cooperation for sustainability is a knotted paradox which is inherent in collaborative interactions between competitors for sustainability matters. The extra complexity due to knottedness makes rendering

and framing this paradox more difficult for actors and researchers, often leaving it in the actual. Nevertheless, the paradox affects involved actors regardless of whether it is experienced (salient) by them or not (latent). For example, sustainability aspects of the paradox are often materialized in our physical world: We can observe the consequences of the dominance of economic interests over social and environmental ones in business interactions, which are expressed in environmental degradation, pollution, emissions, and poverty. At the same time, the paradox is also socially constructed, and its frame depends on certain contextual settings and the way of interpretation. By observing how actors involved in collaboration with competitors for sustainability work together and communicate, and by analyzing their understandings of various aspects of the project expressed during interviews, my co-authors and I socially “build” the paradox of cooperation for sustainability, providing our interpretation of it.

3.2 Research strategy and empirical setting

3.2.1. Research strategy

According to CR, observing the social construction of phenomena (including paradoxes) is crucial for understanding their nature, but this by default can provide only limited knowledge of reality—the knowledge that covers just a part or a version of (paradoxical) reality (Danermark et al., 2019). That is why, for comprehensive understanding, CR suggests applying methodological pluralism and contextual diversity (Syed et al., 2010). That determined my methodological and contextual choices. First, applying methodological pluralism, I approach social interaction processes when actors deal with paradoxes collectively in my qualitative studies (Papers 1 and 2), and I use a quantitative cross-firm research to analyze the outcomes of cooperation for sustainability and factors that affect them (Papers 5 and 6). While a qualitative approach provides depth and the contextual embedding of data, a quantitative approach allows for a broader perspective in generalizing data (Bisman, 2010). Moreover, I employ some theoretical frameworks (the sustainable value approach and modern portfolio theory) to theorize cooperation for sustainability in my conceptual papers (Papers 3 and 4). Second, applying contextual diversity, I study cooperation for sustainability in contextual settings of three different countries (Sweden, Poland, and Belarus), albeit in the same industry. In other words, a *mixed-methods approach* is applied in this dissertation (Tashakkori & Teddlie, 1998).

To examine the process of cooptation for sustainability and to catch its numerous nuances, I use a qualitative approach. Papers 1 and 2 are positioned within the qualitative research tradition and are built on a single, in-depth case study (Silverman, 2013). Qualitative research uses description to explore social phenomena, suggests applying interpretations of individuals' constructions to understand social objects, and exploits an inductive logic to create new theoretical concepts (Bryman & Bell, 2015). From the CR perspective, qualitative research allows us to develop/describe the social structures within specific contextual settings (objects of the empirical and the actual). These structures are not universal themselves, but they inform the causal mechanisms of the real (Yeung, 1997). The case study method makes it possible to conduct a comprehensive exploration of a particular social process by examining its specific processual features and to obtain context-sensitive knowledge (Flyvbjerg, 2004). The qualitative studies in my thesis have an explorative character and help to form a better understanding of cooptation for sustainability as an under-researched phenomenon. I use the obtained knowledge to develop new theoretical concepts concerning the process of cooptation for sustainability. Particularly, the qualitative approach allows me to peek inside the black box of the knotted cooptation for sustainability paradox, analyze how cooptation and sustainability interrelate when they are knotted together, and explore how actors respond to the knotted cooptation for sustainability paradox.

To study the outcomes of cooptation for sustainability, I use a quantitative approach. Papers 5 and 6 are conducted in line with the quantitative research tradition and examine two samples of construction and housing companies. Quantitative research exploits quantification in the data collection and analysis, applies techniques from natural sciences for studying social phenomena, and involves a deductive logic (Bryman & Bell, 2015). In line with CR, quantitative research determines empirical regularities between experienced objects. Such regularities can be used to describe actual events and discover underlying patterns, but they alone cannot evidence the causal mechanisms of the real (Zachariadis, Scott, & Barrett, 2013). The conducted statistical (regression and factor) analysis allows me to measure and analyze the outcomes of cooptation for sustainability in the observed samples by formalizing and checking several hypotheses about the cause–effect relationships between outcomes and other variables that characterize cooptation for sustainability. I employ this strategy to examine outcomes of cooptation for sustainability in an empirical context because the main case study (Tomtebostrand—described below), which is scrutinized in the qualitative research, is far from reaching any factual outcomes: To date, the project is still in the planning stage, and the real implementation (construction) is supposed to be completed in 9–10 years. Moreover, some sustainability outcomes, which are declared as desirable in Tomtebostrand—for

example, low use of cars in the district—imply their analysis for quite a long time at the stage of living after construction. Therefore, additionally to the reason of contextual diversity, I approach other empirical contexts (Polish and Belarusian housing—described below) which also represent relevant and interesting settings and to which I had access.

Furthermore, in Paper 3, I use the sustainable value approach (Figge, 2001; Figge & Hahn, 2004) as a methodological tool to systemize the possible outcomes of coepetition for sustainability. According to this method, sustainable value as a result of coepetition for sustainability is created when a resource user (e.g., a firm) uses a resource (e.g., economic or environmental resources) more efficiently. Sustainable value therefore equates to the excess return generated by a resource compared to a benchmark. The advantage of the approach is that it lets us treat the economic and environmental dimensions analogously as well as combine results in the overall performance indicator calculated in monetary units.

In Paper 4, I use implications and numerical examples from modern portfolio theory to study the outcomes of coepetition for sustainability. Covariance and correlation methods are used here to discuss the link between the individual and group outcomes of coepetition.

3.2.2. Empirical setting

In this dissertation, I scrutinize three empirical settings (Swedish, Polish, and Belarusian) that all revolve around the area of housing. The choice of the context is explained mainly by the essential role which coepetition for sustainability plays in the housing sector. On the one hand, housing is vital for sustainable development: According to the Universal Declaration of Human Rights (Article 25, Assembly, 1948), housing is a basic human right, and affordable housing that meets appropriate quality standards is vital for a healthy society (Crabtree & Hes, 2009). The location, structure, and maintenance of housing also have a crucial environmental impact: Buildings are responsible for 40% of energy consumption and 36% of CO₂ emissions in the EU (Directive, 2018). Moreover, during building and infrastructure construction, companies actively interfere with natural ecosystems. On the other hand, expectations for the housing sector have been growing in recent years (Heffernan, Heffernan, Reynolds, Lee, & Cooper, 2020), demanding effective external and internal communication between developers, builders, infrastructure and maintenance companies, and other actors (GRESB BV, 2015) to better address environmental,

social, and economic issues (Bhatti, 1993; Reid & Houston, 2013). The latter implies collaboration between, among others, competitors. As a result, cooptition for sustainability in housing seems to be an unextraordinary phenomenon, albeit a new one (Meehan & Bryde, 2015). A more detailed presentation of the empirical samples is given in the following.

3.3 Qualitative Study

3.3.1. Case selection

In my qualitative research, I approach a large-scale project aiming to develop a brand new residential area, namely Tomtebostrand (TS), in the Swedish city Umeå. TS is an excellent case where sustainability and cooptition are taking place together because the project is based on close sustainability-oriented collaboration between seven construction firms who are strong competitors in the national market. Furthermore, TS involves not only construction firms (competitors) but also several other collaborators—the local municipality and its infrastructure companies—which makes the project even more complex and involves other interorganizational aspects, such as a public-private partnership. Involvement of other stakeholders in cooptition is quite frequent for sustainability-oriented projects because of the complexity and importance of sustainability issues (Stål, Bengtsson, & Manzhynski, 2021). This aspect affects cooptition between firms and provides an additional argument for why cooptition for sustainability is different from pure “business case” cooptition, where usually only competitors cooperate. Nevertheless, the existence in the case of seven companies, which cooperate and compete (both inside and outside the case) simultaneously, makes cooptition one of the core features of the project.

Furthermore, the actors of the project have explicitly declared their sustainability intents in cooperation. For example, TS entails four areas of collaboration with a pronounced focus on sustainability: (1) an inclusive district with daily life in focus, (2) sustainable green and water areas, (3) sustainable mobility with humans at the center, and (4) sustainable and smart environmental solutions. The vision of the project reads as follows: “Tomtebostrand will be a social, economic and ecological example where residents feel participation, pride and want to stay their whole lives. The district develops in unique collaboration and will become an international model for sustainable urban development and

conscious lifestyle” (from the official site of the project: <https://tomtebostrand.se/english/vision/>). TS involves multi-stage planning and construction of a new district in Umeå to be fully finished in 2030. Around 3,000 apartments and many business premises are planned to be built in TS, making it by far the largest project during recent years in the city. When finished, TS will accommodate nearly 10,000 people living and working in the area.

The case fits the study because of its ambition and complexity, exemplifying multiple dimensions related to both sustainability and cooperation in one project. The main contradictory sustainability concerns—social, environmental, and economic—are present in the project. The social dimension of sustainability in the project requires integration of different ages and nationalities, day care and schools with a sustainable pedagogy, and safety and openness in the district. Environmental interests are supposed to be addressed through energy use, transportation, and green areas. Additionally, construction and maintenance of housing have been planned in a way to limit environmental impact. Finally, the economic concerns of sustainability are expressed in firms’ efforts to make apartments attractive to future residents in terms of price, and to keep down building costs.

The seven collaborating construction firms are strong competitors in the market. Furthermore, within the project they also compete with each other for land plots, which the Umeå Municipality will allocate after a lengthy planning process. There is also a kind of indirect competition within the project because competitors might favor those solutions that fit their own roadmap or strategies. At the same time, the project requires close collaboration among competitors. To date the collaborative processes in the project have involved the mutual planning of the area. In the planning process the construction companies have contributed by sharing knowledge, mutual learning, experimentation, and group decision-making processes. For example, knowledge-sharing is fulfilled by bringing forth best practices from their R&D and other projects, creating a joint pool of common knowledge. Moreover, the complexity of developing new city districts requires solving numerous interconnected tasks over time, and new roads, energy infrastructure, parks, sewage systems, etc. need to be built. Hence, collaboration in the case is characterized by long-term, systematic, and repeated interactions rather than one-time mutual co-actions.

To sum up, I find the core case study—TS—suitable for achieving the purpose of my thesis. The case contains all needed components of the studied phenomenon—collaboration, competition, and sustainability. Furthermore, following the case led me to the conclusion that the tensions observed within the project in the process of cooperation between competitors for sustainability

matters have paradoxical characteristics: contradiction, interdependence, and persistence.

3.3.2. Data collection

My supervisors and I have investigated TS as a part of our research project “New Technology, Coopetition and Business Model for Eco-innovation,” financed by the Kamprad Family Foundation for Entrepreneurship, Research and Charity (ref. no. 20160063). We have collected rich data from the planning phase of the project. To study the empirical case, we have conducted 55 interviews. I personally conducted most of the interviews and participated in around 10 observations.

All individuals who were directly involved in the project from the construction and infrastructure companies, and most involved actors from the municipality, were interviewed at least once during the data collection process from 2018 to 2021 (while none of these individuals have been replaced, a few, from the municipality-side, joined later). The involved actors mostly occupied managerial positions (CEOs, heads of departments) in their organizations. We also made numerous observations of project meetings and collected multiple relevant secondary documents (we have had access to all written documentation freely shared among participants via Microsoft SharePoint) (see Tables 2 and 3).

Table 2. Characteristics of data collection

Type of data collection	Number	Hours
Interviews	55	61
Observations of group meetings and negotiations between partners	30	63
Documents collected and analyzed	52	

Table 3. Firms and interviewed respondents

Organization	Project role	Respondent	No. interviews
Construction company A	Builder, condominiums	Project Manager	2
Construction company B	Builder, condominiums	Project Manager; Regional Manager	2
Construction company C	Builder, condominiums	Regional Manager	2

Organization	Project role	Respondent	No. interviews
Construction company D	Builder, condominiums	Project Manager	3
Construction company E	Builder, condominiums	Project Manager; Market Manager	3
Construction company F	Builder, rental apartments	Property developer; Project Manager	3
Construction company G	Builder, rental apartments	Vice CEO	2
Infrastructure company H	Infrastructure (Energy)	Business developer; Product Specialist	2
Infrastructure company I	Infrastructure (Parking)	Business Developer	3
Infrastructure company J	Infrastructure (Water/waste)	Business Developer	3
Consulting company	Coordinator for construction companies	CEO	3
Municipality	Project owner, planners, politicians	Project Manager; Communication manager; Head of planning department; Head of land development department; City architect; Environmental manager; Infrastructure manager; IT specialist; Manager of planning; Chairman of the building committee;	27

3.3.3. Data analysis

The data collected during investigation of the case “Tomtebostrand” are analyzed in Papers 1 and 2. The qualitative data derived from different sources were first systemized and analyzed using NVivo 12.

In Paper 2, grounded theory–inspired inductive coding (Strauss & Corbin, 1994) was employed to develop open codes and first- and second-order categories to aggregate themes and construct tentative categories. I comprehensively coded all initial data sources first. Then, my supervisors and I reviewed and reconciled the initial codes together and further critically evaluated higher-order categories via several rounds of discussions. As a result, the mutual vision of the coding structure was developed (Fig. 6).

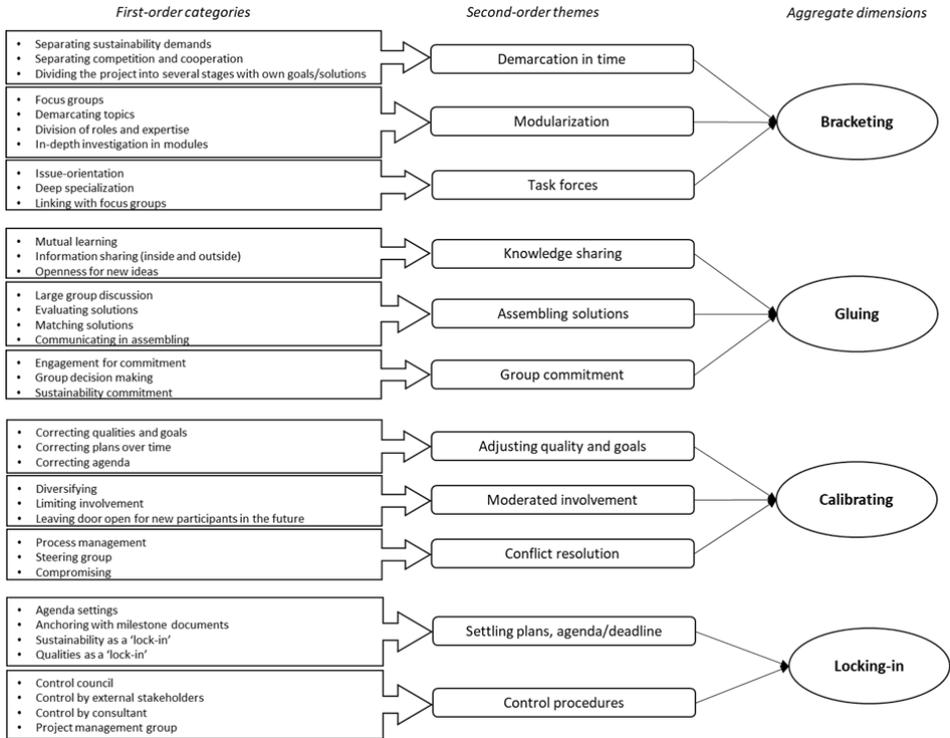


Figure 6. The coding structure of the data in Paper 2

The categories and themes were derived mainly from the identified patterns in the data, but they also derived partly from the theoretical insights in the existing literature on organization studies and management. Put differently, the codes, themes, and aggregated dimensions were produced during an interactive interpretative process (Alvesson & Kärreman, 2007) where all three elements (primary and secondary data obtained from the project, prior theoretical foundations, and interactions with the co-authors) played important roles. The codes, themes, and aggregated categories were validated with the actors of the project (interviewees) during a special workshop where the study was presented and discussed. The event was organized in three stages. First, the main idea of the project and meanings of the categories as well as the model of the process were presented to participants. Second, actors, who were divided into three groups—public servants, private businesses, and managers—discussed the study in the frames of a special task. In this task, we asked actors to share their

feedback about the material, to provide specific examples from their practice for each aggregated category (if they evaluated the categories as relevant), to reflect upon interactions between the categories, and to suggest any relevant points that the model could have missed. Each group was run by one co-author of Paper 2. Finally, summaries from each group and individual opinions were considered in the whole group. The workshop was recorded and then discussed in detail by the co-authors, after which we made some corrections in the categories and model.

In Paper 1, I use inductive coding to develop themes and categories, which are then analyzed via the system dynamics (SD) approach (Forrester, 1961). The SD approach is widely used with complex systems characterized by interdependence, mutual impact, and circular causality (Hjorth & Bagheri, 2006). The approach has been applied by scholars to develop practical and theoretical contributions, applying such principles as *systems thinking* (a way to study a phenomenon as a system, i.e., considering the integrity and interaction of its components) and *dynamics accounting* (considering changes in the system over time by discovering feedback processes) (Sterman, 2002). The SD approach uses *causal-loop modeling* to explore recursive processes in complex nonlinear systems. The combination of inductive coding and the SD approach “allows researchers to generate and communicate substantive theories intimately tied to the data which can be evaluated against the criteria of: verifiable data, explicit inferences and disconfirmable predictions” (Burchill & Fine, 1997, p. 469).

I apply the SD approach to identify and analyze the knotted coepetition for sustainability paradox in the case by assuming that

A paradoxical tension arises if there are at least one negative and one positive loop with a shared node(s) (which is described by a causal-loop model) that generates paradoxical demands upon organizational members.

The SD approach is suited for studying paradoxes because it acknowledges and represents their three main features: (1) *contradiction*—in causal-loop models, the demands of a tension create opposite (positive and negative) loops; (2) *interdependence*—in causal-loop models, contradictory cause–effect interactions exist simultaneously as parts of one system and affect each other (opposite loops are interrelated); and (3) *persistence*—causal loops are represented as closed recursive cycles. The SD approach helped me understand how the knotted coepetition for sustainability paradox can be framed as a system of negative and positive causality loops. By doing so, I was able to examine how coepetition and sustainability interact with each other and evolve over time in the knotted paradox.

Analogously to Paper 2, to validate the findings in Paper 1, a thematical workshop with all participants was organized. In the workshop, the SD approach and causal-loop models for TS were presented first. Then, actors were divided into three groups, where they critically evaluated the presented models and shared their ideas for corrections and improvements. Each group was run by one co-author. Finally, conclusions from each group and individual feedback were discussed in the whole group. All notes and comments from the workshop were documented and discussed in detail by the co-authors, and the models were adjusted according to the obtained feedback.

3.4 Quantitative Study

3.4.1. Data and sample

For my quantitative studies, I scrutinized two samples of housing companies. The first one comes from Poland (Paper 5), while the second is from Belarus (Paper 6). Under housing companies, I considered organizations that develop, rent, manage, and sell dwellings and provide an extensive package of housing products and services (Smeets & Dogge, 2007). Companies that manufacture construction materials and develop residential and commercial properties, real estate agencies, and public service and other organizations which facilitate the real estate market (e.g., market research and real estate valuation firms) were considered in the analysis.

These countries were chosen for several reasons. First, although Belarus and Poland had similar economic development as members of the Socialist camp, more than 30 years ago, the countries parted ways. Nowadays, Poland is a country with a market economy strongly integrated in the European Union. It has typical features and trends in housing compared to the rest of the developed world and the EU. Thus, it is reasonable to assume that the findings of the Polish sample will be relevant for most developed countries. Meanwhile, Belarus is a developing economy which faces additional challenges on the way towards sustainable housing; actors in such emerging economies often perceive sustainability goals as merely burdens rather than opportunities, and many sustainability initiatives (including collaboration with competitors) are unlikely to be supported. Thus, the findings of the Belarusian case may be relevant for other developing countries that have similar issues in housing. Therefore, together, the Polish and Belarusian cases can give more comprehensive knowledge about the interplay between

coopetition and sustainability in housing. Second, both countries are still reforming their housing sectors, seeking new opportunities to enhance sustainability. In this sense, coopetition can be considered by real estate actors as an additional way to support sustainability and become more competitive in global markets. Third, my preliminary investigation (express interviews with practitioners and experts, reviewing secondary data) showed that coopetition for sustainability had been adopted in both countries, even though such practices have been perceived ambiguously (Manzhynski et al., 2018). For example, in one Belarusian project, some construction companies worked together in refurbishing buildings for the purpose of reducing heat losses. They modernized the buildings and made them more energy-efficient. During this mutual work, competitors shared labor, materials, and specific knowledge. In the other identified example in Poland, real estate companies collaborated on developing decarbonizing energy systems to meet the growing demand for smart buildings (Kalinowska-Soltys, 2020). All this confirmed my assumption that cooperation between competing companies in the Polish and Belarusian housing sectors has not been rare, although with unclear effectiveness that needs to be investigated.

In both samples, the data were collected among relevant employees (CEOs, managers and specialists who work at the inter-organizational level) with a structured, paper-based survey questionnaire. To improve validity (Robinson, Simons, Lee, & Kern, 2016), the digital survey was accompanied by reference information where we presented basic concepts (e.g., coopetition, sustainability) and explained the main aspects of the study (motivation, examples of coopetitive relationships for sustainability in housing with potential sustainability outcomes). In doing so, I aimed to ensure that the variables and scales were correctly understood and their meaning did not deviate from what has been established in these studies. The questionnaire was also pre-tested with the involvement of several academic colleagues with business administration backgrounds. A forward-backward procedure was used in the translation between Polish and English (in the Polish sample) and Russian and English (in the Belarusian sample).

In Poland, the digital survey was designed and distributed to 520 respondents via email in 2019. The respondents were asked to complete the questionnaire within 2 weeks. The questionnaire was resent to companies that failed to respond. The possibility of clarifying details of the study by email or telephone was also provided, and, in sum, 14 respondents used this communication channel. Overall, 149 respondents completed the questionnaire (28.6% response rate). In Belarus, the survey was distributed on paper to the 248 potential respondents in the frames of the student trainee program run by the Belarusian State Technological University in 2019. One hundred seventy-four responses were obtained (70.2% response rate). Four questionnaires with

substantial degrees of missing data were excluding, and thus, 170 responses were used in the statistical analysis.

3.4.2. Measures and data analysis

The core constructs of the model were operationalized with multiple-item, 5-point Likert-type perceptual measurement scales. I used the constructs to capture the collaboration, competition, and sustainability features of interactions among the scrutinized competing firms. More particularly, I investigated respondents' perceptions regarding their firms' collaboration and coopetition characteristics as well as economic, environmental, and social outcomes caused by collaboration with competitors. By doing so, I captured the phenomenon of coopetition for sustainability because the elaborated questionnaire implied that competition and collaboration took place simultaneously and corresponding questions asked about sustainability outcomes that are associated with cooperative interactions.

The constructs for competition and cooperation in both quantitative studies were partly based on the findings of Yim Yiu and Xu (2012) and Suhartanto (2017), who operationalized competition based on its width and depth. I employed the measures of *width* and *depth* both for competition and cooperation. In addition, for cooperation, I introduced and used a *frequency* measure that accounts for the repeatability of cooperative relationships. Cooperation was expressed as the average of cooperation width, cooperation depth, and cooperation frequency, while competition was measured as the average of competition width and competition depth. The construct for sustainability outcomes in both quantitative studies was measured as an average of three items (the main sustainability dimensions): economic, environmental, and social (Elkington, 1998).

The coopetition construct used in Paper 5 (the Polish sample) was measured as the average of the variables of cooperation and competition. In Paper 6 (the Belarusian sample), the "coopetition" construct was expressed as a function of three variables: cooperation intensity, competition intensity, and the balance between them. The balance of coopetition was mathematically expressed as the absolute value of the difference between competition intensity and cooperation intensity, while the balance of sustainability was measured as the absolute value of the difference between economic, social, and environmental outcomes.

The principal components factor and varimax rotation analysis were used to investigate the dimensionality of the used scales. They confirmed that the tested constructs described distinct constructs in both samples. All standardized

factor loadings were greater than 0.5 and significant at $p < 0.001$. Cronbach's alpha ranged from 0.60 to 0.87, which indicated that all constructs were characterized by good internal consistency (George & Mallery, 2003). Linear regression analysis in STATA was applied to test the research hypotheses.

4. Overview and extended abstracts of the individual papers

In this chapter, I show how the different papers of this thesis fit together and create a coherent whole. To do this, I illustrate and discuss how all six papers of the thesis relate to the research questions and bind together. I then present extended abstracts of the papers.

This dissertation comprises a collection of six papers that altogether aim to reach the purpose of the thesis: to increase our understanding of the process and outcomes of cooperation for sustainability. Fig. 7 illustrates how the papers are positioned in the theoretical model (either the process or outcomes), what key points of the thesis they deal with, and to which research question they are linked. As shown, the papers can be conditionally divided into three groups: (1) Conceptual (Papers 3 and 4), (2) Qualitative (Papers 1 and 2), and (3) Quantitative (Papers 5 and 6). In the following, I present extended abstracts of the papers.

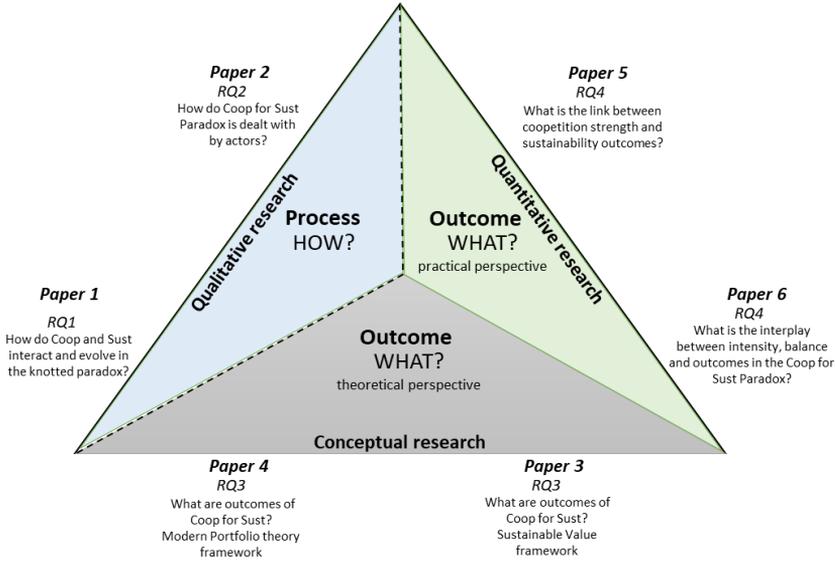


Figure 7. Positioning of the papers in the theoretical model, their key points and links to the research questions

4.1. Extended abstract of Paper 1

Manzhynski, S., Stål, H., & Bengtsson, M. Dealing with knotted paradoxes: A system dynamics approach to competition for sustainability

In this qualitative paper based on a single, in-depth case study and applying the system dynamics approach, I examine how two paradoxes (coopetition and sustainability) knot together at the inter-organizational level: how they exacerbate and mitigate each other's tensions and "take turns" in dominating different processes. The findings of the paper help us better understand how coopetition and sustainability interact and evolve over time in the knotted paradox, answering RQ1. Indirectly, the paper also addresses RQ2 because the external interventions discussed in the paper can be also used as regulating measures to respond to paradoxical tensions.

In this paper, my co-authors and I argue that organizational members face numerous paradoxes in organizational life. However, despite increasing attention to organizational paradoxes, there is little theoretical and empirical work on knotted paradoxes. Moreover, in order to conceptualize how paradoxes are knotted together and influence each other, paradox research needs to better account for dynamics and integrative aspects. In this paper, a new conceptualization of the knotted paradox is presented. It is based on the system dynamics approach adapted for identifying and analyzing paradoxical tensions. Employing the SD perspectives, a paradox can be studied as a complex dynamic system of contradictory cause-effect interactions that creates interrelated negative (balancing) and positive (reinforcing) causality loops. The combination of opposite negative and positive loops forms an inner dynamic structure of a knotted paradox that describes its behavior. The suggested conceptualization permits us to consider not only how interrelated paradoxical tensions affect each other but also how they develop as a unified system, exemplifying a systemic view on paradoxes. Moreover, it accounts for dynamics and thus allows for the investigation of how knotted paradoxes evolve over time.

The system dynamics approach has been applied to competition for sustainability. The findings show how tensions involved in coopetition for sustainability can be mapped, how coopetition and sustainability are interrelated with each other, and how changes in one paradox affect another paradox in the system (knot). Furthermore, exploring the dynamics of knotted paradoxes via the SD approach, my co-authors and I revealed that vicious (dysfunctional) and virtuous (balanced) trajectories could alternate due to complexity under which the paradoxes are easily to leave equilibrium).

4.2. Extended abstract of Paper 2

Bengtsson, M., Manzhynski, S., Stål, H., & Raza-Ullah, T. Out of the ashes and into the fire? Organizing mechanisms navigating multiple paradoxes in cross-sectoral collaboration for sustainability

This is a qualitative paper where a longitudinal processual study of a cross-sectoral collaboration for sustainability is undertaken to explore how actors respond to multiple, intertwined, and fluid paradoxes in complex sustainability projects. Four interacting organizing mechanisms as a collective response to the knotted coopetition, sustainability, planning, and institutional paradoxes are presented and discussed in the paper. Therefore, this paper addresses RQ2 of the thesis.

This paper focuses on a central concern of paradox theory, i.e., how to effectively respond to paradoxes. The existing paradox literature mainly focuses on responses to a single paradox which takes place in and is controlled by one organization, while knowledge about how actors deal with intertwined paradoxes that are simultaneously in play at the inter-organizational level is scarce. Sustainability projects serve as examples of settings where multiple paradoxes are simultaneously in play. These projects are increasingly common as governments, NGOs, and firms join forces to address large-scale and multidimensional sustainability problems that are beyond the capacity of single actors. In such projects, intertwined paradoxes create complex systems that need to be managed, but prior research lacks knowledge for that. To fill this research gap, my co-authors and I conduct a single, in-depth case study of the large-scale public-private sustainability project aiming to create a brand new residential area (TS) in a Swedish city. We show that four paradoxes—the sustainability paradox, coopetition paradox, institutional private-public paradox, and planning paradox—emerge and knot together in the project. The paper develops a process model of iterative, continuous organizing mechanisms to address the multiple intertwined paradoxes. The model goes beyond the focus on within-organization dynamics and highlights collective responses to dynamic and shifting paradoxes that emerge in complex, interconnected inter-organizational systems. It shows how organizations can grapple with other paradoxes such as coopetition and the institutional public-private paradox while they are working through a sustainability paradox.

Furthermore, four interacting organizing mechanisms—bracketing, gluing, calibrating, and locking-in—that drive organizing processes as a collective response are presented and discussed in the paper. *Bracketing* orients collaborative actors to focus on specific issues by demarcating certain problem

areas and subgoals while temporarily ignoring other aspects beyond the demarcation borders. It enables actors to reduce complexity and decompound the complex project into some parts (solutions, elements). *Gluing* orients actors to integrate problem solutions developed within different modules and task forces via common discussions, evaluations, and decision-making. Actors are “zooming out” from the specifics that have been dealt with within different modules and task forces. That enables them to evaluate and match different solutions which they worked on in the demarcated groups. *Calibrating* orients actors to be flexible in determining the means and ends of the project by adjusting ongoing activities, goals, and solutions to new insights developed over time. It enables actors to correct former decisions and solutions and thus to adapt the project to possible changes. *Locking-in* orients actors to stick to certain frameworks in their project activities by establishing and controlling execution of specific tasks, milestones, and deadlines. It enables actors to carry out their activities within the project with certain external and internal frameworks.

The paper also shows how organizing mechanisms interact with each other and how this helps actors to deal with the intertwined paradoxical tensions inherent in the project. The suggested mechanisms affect the capacity to adjust to contradicting and continuously changing demands and move the project forward, thereby preventing the inherent tensions that might tear the project apart. Furthermore, the paper illustrates how the mechanisms can create virtuous or vicious organizing cycles in the collaboration project.

4.3. Extended abstract of Paper 3

Manzhynski, S., & Figge, F. (2020). Coopetition for sustainability: Between organizational benefit and societal good. *Business strategy and the environment*, 29(3), 827–837.

This is a conceptual paper where I systemize possible outcomes of coopetition for sustainability by analyzing the simple case of two competing firms and an economic and an environmental dimension. Using the sustainable value approach as a methodological (analytical) tool, I distinguish and discuss three groups of outcomes from the perspective of (1) the firm, (2) the resource, and (3) society. The paper contributes to RQ3.

This paper begins by arguing that resources need to be used more efficiently for society to become sustainable. Using resources more circularly is a promising way of improving the efficiency of resource use. This requires that

resource users cooperate, and often these resource users are competitors in the marketplace. That (simultaneous cooperation and competition) is referred to as cooptation. This paper looks at cooptation for sustainability from an outcome perspective, which is under-researched to date. In the article, possible outcomes of cooptation for sustainability are systematically explored by examining the model of two coopting firms using economic and environmental resources. Based on the findings, cooptation for sustainability can be assessed from three different perspectives: *a firm* (outcomes for the separate firms), *a resource* (outcomes related to separate economic and environmental performance), and *a societal* (joint environmental and economic outcomes for all involved firms) perspective. Since sustainability requires meeting both economic and environmental concerns at the macro-level, different patterns that lead to positive outcomes from the societal perspective are identified and analyzed.

As shown, there are 51 different ways to achieve positive societal outcomes in the model, and only one of them reflects the win-win solution where outcomes from all perspectives are positive. The other 50 ways are under-studied in the existing literature, although they can make an even higher contribution to sustainability compared to the win-win case. At the same time, combinations with mixed positive and negative outcomes involve trade-offs on the way towards sustainability, which constitutes a challenge. There are four types of generic trade-offs that can arise: intra- and inter-firm, as well as intra- and inter-resource. Distinguishing different perspectives of outcomes and trade-offs helps us understand what motivates actors to coopte and why tensions occur between different stakeholders during cooptation. Thus, a shared but not necessarily identical understanding of outcomes and success must be the base of any endeavor for cooptation for sustainability, and thereby the findings of the paper apply to both research and practice. For academics, the findings provide insights through synthesis of two areas—cooptation and sustainability—which are under-researched. For practitioners, the study helps them fulfill a more comprehensive assessment of possible sustainability outcomes of cooptative relationships and thus make a more informed decision about the appropriateness of cooptation. Moreover, the presented approach allows outcomes to be shown in a quantitative, monetary way that gives an opportunity for comparative analysis of various alternatives.

4.4. *Extended abstract of Paper 4*

Figge, F., Thorpe, A. S., & Manzhynski, S. (2021). Between you and I: A portfolio theory of the circular economy. *Ecological Economics*, 190, 107190.

This paper is conceptual, though my co-authors and I present some exemplary applications based on an abstract numerical example. Here, we theorize collaboration for the circular economy as a way toward more sustainable resource use by employing modern portfolio theory. In doing so, the ways of circular (more sustainable) resource use and conditions under which individual resource users (firms) acting as a group contribute to the circular use of resources are identified and discussed. The paper helps address RQ3, i.e., to better understand what outcomes competitors can reach by collaborating for sustainability.

The example which is scrutinized in the paper implies that individual resource users (e.g., competitors) collaborate with each other by creating at least partial (imperfect) resource circles, within which resources flow back and forth between firms. By using resources more circularly, the collaborating group contributes to a more eco-efficient resource use and thus enhances sustainability: Firms either need fewer resources for a given return or have a possibility to maximize the return for a given amount of natural resources. Therefore, the symbiotic relationship between individual firms (via collaboration for circularity) enables a reduction in resource use. However, the benefit of the collaboration occurs (and can be detected) at the group (network) level, while firms continue to estimate their outcomes (resource efficiency) at the individual level. To study the link between the circular use of resources at the individual and group levels, we employ modern portfolio theory from finance, in which an analogous relation exists. Particularly, in finance, desirable investment return is linked to undesirable investment risk, and via the generation of efficient portfolios, individual risks are at least partially diversified away. By associating risks in portfolio theory with the use of natural resources in imperfectly circular systems (the group of collaborating companies), we show that, similar to the effect of diversification in finance, there is a resource-reducing effect of collaboration: While risks can be reduced in finance by building a portfolio of assets, the use of natural resources can be reduced by building a group of collaborating partners (competitors are often users of the same natural resources). Modern portfolio theory allows us to identify what outcomes (eco-efficiency and resource use) at the group level can be achieved by different combinations of resource use across collaborators with different individual outcomes (eco-efficiencies) and degrees of circularity.

Drawing on portfolio theory, three variables are identified which affect the group outcome of collaboration between resource users for circularity. First, higher eco-efficiency at the organizational level leads to higher eco-efficiency at the portfolio level. Second, a higher coefficient of circularity between resource users results in a higher degree of circularity on the portfolio level. Third, the allocation of resources to individual users within the portfolio impacts the efficiency of resource use. In other words, within every “portfolio,” i.e., group, there is an optimal combination of resource users—in terms of its impact on eco-efficiency of resource use at the portfolio (group) level. When resource use is not linear, minimum resource use as well as maximum efficiency (which do not necessarily coincide) are obtained through an optimal combination of micro-level resource uses, and it is only with the “right” combination of resource uses that the circularity materializes. The latter emphasizes that collaboration between resource users is crucial to reach more circular (sustainable) positions: If firms want to use pre-used resources but cannot do so because no others are willing to provide such resources, then they cannot contribute to circularity—despite their willingness to do so. Similarly, firms that make their used resources available can only contribute to systems of circularity if there are others willing and able to receive such resources.

In the paper, it is also argued that portfolio theory generates insights into the governance of natural resources. For example, by applying the concept of systematic and unsystematic risks and rewards to linear and circular systems of resource use, we show that reducing resource use might be advantageous for individual users but disadvantageous for their collaborators, decreasing rather than increasing eco-efficiency at the group level.

4.5. Extended abstract of Paper 5

Manzhynski, S., Zrobek, S., & Radecka-Romaniuk, K. Does coopetition enhance corporate sustainability in housing? Evidence from Poland

This is a quantitative paper where I investigate the relationship between coopetition strength and sustainability outcomes, examining whether coopetition leads to positive sustainability outcomes in the Polish housing sector. The conducted regression analysis confirms that coopetition and employees’ awareness of it positively affect sustainability outcomes, and the relationship between coopetition strength and sustainability outcomes is positively moderated by the elements of sustainability policy. This paper enhances our knowledge

about the outcomes of cooptition for sustainability and their links with cooptitive interactions. Thus, the paper helps answer RQ4.

Employees of Polish housing sector companies were surveyed, and the collected data were used to examine the relationship between cooptition and corporate sustainability outcomes in an empirical study. The research results show that the strength of cooptition has significant positive effects on sustainability outcomes in companies that enter into cooptitive relationships. The efforts undertaken in collaboration with competitors improve the businesses' environmental, social, and economic performance. Several interpretations were offered in this paper to explain why cooptition can facilitate sustainability. Cooptition promotes effective resource use through economies of scale and collaborative innovation. It can also increase a company's social legitimacy in relations with other stakeholders and improve the effectiveness of measures undertaken in joint efforts. Cooptitive practices provide managers with an opportunity to advance their skills by dealing with complex corporate sustainability problems. The study also confirms that sustainability policy positively moderates the relationship between cooptition strength and sustainability outcomes, and that the perceived importance of cooptition is positively correlated with sustainability outcomes. Therefore, tensions and potential conflicts can be prevented or mitigated both within and between the collaborating organizations by implementing sustainability policy and increasing employees' awareness of the advantages stemming from cooptition. These measures will ultimately enhance sustainability outcomes. The present findings encourage scholars and managers to consider cooptition as a potential strategy for supporting corporate sustainability.

4.6. Extended abstract of Paper 6

Manzhynski S. Sailing close to the wind: Interplay between intensity, balance, and outcome in the knotted cooptition for sustainability paradox

This is a quantitative paper where I examine the interplay between intensity, balance, and outcome in the cooptition for sustainability paradox. The fulfilled regression analysis of the Belarusian housing companies shows that cooptition intensity has a substantial albeit complex effect on sustainability outcomes. This paper helps us understand how intensity and balance as characteristics of the knotted cooptition for sustainability paradox are related to its outcomes. The paper facilitates answering RQ4.

In this paper, I introduce intensity, balance, and outcome as properties of organizational paradoxes. I distinguish between intensity of a separate paradoxical demand and intensity of a paradox. While the former is characterized by the perceived extent to which the actor experiences a certain paradoxical demand, the latter is determined by the intensities of all demands included in the paradox as well as by the degree of similarity between these intensities (balance). So, in this paper, I refer to balance as an attribute of paradox rather than a type of response to paradoxical tensions. Paradox outcome reflects consequences of the paradoxical dynamics. Intensity, balance, and outcome are therefore distinguishing features of a paradoxical phenomenon that allow it to be described quantitatively. I investigate the interplay between intensity, balance, and outcome in the knotted cooperation for sustainability paradox: the process where actors simultaneously cooperate and compete in activities which aim to achieve environmental, economic, and social benefits. In the theoretical model of the paper, cooperation, which acts as a means and determines the paradox intensity, is knotted with sustainability, which acts as an end that characterizes the paradox outcomes. In the knot, cooperation and sustainability have their own balances that I interpret as follows: the extent to which cooperation and competition intensities (for cooperation) and economic, environmental, and social outcomes (for sustainability) are similar to each other.

In this paper, based on the regression analysis, I test the interplay between intensity, balance, and outcome in the knotted cooperation for sustainability paradox. The results of the analysis show that cooperation intensity has a significant inverted U-shaped relationship with cooperation-based sustainability outcomes in unbalanced (competition-dominated and cooperation dominated) cooperative interactions, while in balanced cooperation, the relationship can be either linearly positive (in lowly intense cooperation) or linearly negative (in highly intense cooperation). The results also show that there is no significant link between cooperation balance and sustainability balance in the knotted paradox. Overall, the findings suggest that the knotted cooperation for sustainability paradox can lead to high sustainability outcomes if the intensity and balance of the knotted paradox are carefully managed.

5. Research Findings and Discussion

In this chapter, I introduce and discuss the research findings of the thesis. In doing so, I first link the results from the different papers and show how I addressed the postulated research questions. I second reflect on theoretical contributions of the thesis, which are followed by managerial implications. Finally, I present the limitations of the thesis, avenues for future research, as well as concluding remarks.

The principal model of the study is presented in Fig. 8.

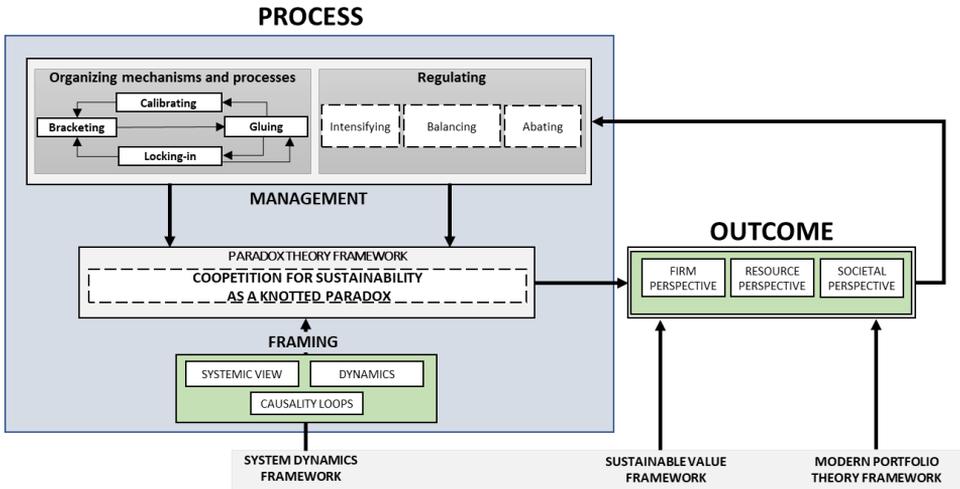


Figure 8. The principal model of the study

5.1. Addressing the Research Questions

The purpose of this thesis has been to advance the understanding of the process and outcome of cooperation for sustainability. This was achieved by studying four linked research questions and investigating three empirical settings from the housing sector in Sweden, Poland, and Belarus.

Coopetition for sustainability implies interactions between competitors for sustainability matters. I argue that such interactions have a paradoxical nature, i.e., they involve contradictory yet interdependent demands that persist over time. Coopetition and sustainability create a knotted paradox in which sustainability and coopetition demands are interrelated. Therefore, I employed paradox theory as a lens to examine coopetition for sustainability as a complex, contradictory phenomenon.

I started my study with the question of *how the coopetition for sustainability paradox gets knotted and evolves over time* (RQ 1). The findings show that coopetition and sustainability are knotted through interactions among different actors involved in the mutual project when they are working with numerous project issues, to which coopetition and sustainability tensions inherent.

The process of mutual work is organized such that all actors are allowed to express their own interests and concerns with regard to any issue. That lets the competing demands of coopetition and sustainability manifest themselves in various aspects. These competing demands are not separate: They are interrelated by the solutions and activities which actors develop to address the project's issues. For example, the same solution can have an impact on both competition and economic interests. In the dynamics, each solution and activity has causes and effects which the actors try to estimate. Furthermore, these causes and effects create causal loops that are either positive or negative for one of the contradicting demands. Therefore, by estimating the causes and effects of different solutions and activities elaborated in collaboration, actors provide the possibility of catching how coopetition and sustainability demands are knotted in one paradoxical phenomenon. To do this, I draw on system dynamics and use this approach as an analytical tool for unpacking how competing sustainability and coopetition demands are knotted together, affect each other, and evolve over time. Particularly, I show that in the knotted coopetition for sustainability paradox, coopetition and sustainability create interrelated coopetition–sustainability tensions. In some knotted tensions, coopetition acts as a dominating element while sustainability moderates it, while in others, coopetition and sustainability switch roles: Sustainability interests dominate while coopetition moderates them. In other words, in one process, coopetition influences but also is affected by sustainability. My findings show that in the knotted coopetition for sustainability paradox, it seems to be impossible to affect only one part (coopetition or sustainability) without affecting the other: Any changes in one element bring about changes in the whole system. This has important implications for responding to the tensions of coopetition for

sustainability: As cooptation and sustainability cannot be separated in the knotted paradox, they must be handled together.

Therefore, it is not surprising that, after *exploring how managers respond to knotted paradoxical tensions in cooptation for sustainability* (RQ2), I came to the conclusion that actors aim to embrace both cooptation and sustainability demands by concentrating on project issues rather than meeting separate competing demands. However, in order to do it, actors organize the process of collaboration in a specific way. Analyzing the collected qualitative data, I found that to respond to the knotted cooptation for sustainability paradox, actors use iterative, continuous organizing mechanisms: (1) bracketing when actors focus on specific issues by demarcating certain problem areas and subgoals while temporarily ignoring other aspects beyond the demarcation borders; (2) gluing when actors integrate problem solutions developed within “bracketing” via common discussions, evaluations, and decision-making; (3) calibrating when actors correct the means and ends of the project by adjusting ongoing activities, goals, and solutions to new insights developed over time; and (4) locking-in when actors try to stick to certain frameworks in their activities by establishing and controlling execution of specific tasks, milestones, and deadlines. These mechanisms are oriented to deal with certain project issues rather than paradoxical demands, but nevertheless, they facilitate actors’ handling of the cooptation for sustainability paradox in conditions of extra complexity (the inter-organizational level of occurrence, continuous changes, and a high degree of interconnections between competing demands) and time limits for making decisions.

The described mechanisms interrelate with each other. For example, separate solutions which are elaborated in different groups in bracketing are discussed by the large group in gluing to evaluate them and assess how different solutions match together in the whole project. If a solution is not agreed upon by the large process group in gluing, calibration is initiated, the solution or the project’s qualities and goals are adjusted, and the tasks for focus groups and task forces are redefined. Redefined tasks are then redirected to bracketing. However, gluing and bracketing are affected by locking-in because actors are restricted by certain limits (e.g., time, agenda, resources) when they fulfill tasks within bracketing and gluing. In other words, the organizing mechanisms create recursiveness, where bracketing, gluing, and calibrating serve as chain links, while locking-in exerts the cycle “bracketing–gluing–calibrating–bracketing” to limit actors’ being within the loop.

The process of cooptation for sustainability leads to certain outcomes, and it is vital to examine them. In investigating RQ3 (*What are the possible outcomes*

of cooperation for sustainability?), I systematically explored the possible outcomes of cooperation for sustainability, drawing on two theoretical frameworks: sustainable value and modern portfolio theory. Both approaches complement each other, extending the knowledge about outcomes of cooperation for sustainability.

To conceptualize the outcomes of cooperation for sustainability, I developed and examined the model of two cooperating firms using economic and environmental resources (Table 4).

Table 4. Conceptualization of outcomes of cooperation for sustainability

Resource	Micro-level		Macro-level
	Focal firm	Coopting firm	Aggregated outcome
Economic resource	Focal firm economic contribution	Coopting firm economic contribution	Economic contribution
Environmental resource	Focal firm environmental contribution	Coopting firm environmental contribution	Environmental contribution
Aggregated outcome	Focal firm overall contribution	Coopting firm overall contribution	Positive sustainability outcome

In this model, I propose that sustainability requires meeting both economic and environmental concerns at the macro-level, and thus, different patterns can lead to positive outcomes from the societal perspective. I theoretically analyze them and show that there are 51 different ways to achieve positive societal outcomes in the model, and only one of them reflects the win-win solution where outcomes are positive from all perspectives. The other 50 ways are under-studied in the existing literature, although they can make an even higher contribution to sustainability compared to the win-win case. According to the presented model, outcomes of cooperation for sustainability can be assessed from three different perspectives: a firm (outcomes for the separate firms), a resource (outcomes related to separate economic and environmental performance), and a societal (joint environmental and economic outcomes for all involved firms) perspective. Combinations with mixed positive and negative outcomes involve trade-offs on the way towards sustainability, which constitutes a challenge. There are four types of generic trade-offs that can arise: (1) intra-firm (when outcomes for economic and environmental resources within a firm are

opposite), (2) inter-firm (when aggregated firm outcomes are opposite), (3) intra-resource (when a specific resource (economic or environmental) is characterized by a positive outcome in one firm and a negative outcome in the other firm), and (4) inter-resource (when the aggregated economic resource outcome is opposite to the aggregated environmental resource outcome).

The similar taxonomy of cocompetition for sustainability outcomes is obtained based on applying modern portfolio theory in relation to cocompetition for sustainability. In financial markets, by selecting compatible assets for their portfolios, investors can eliminate or substantially diversify their risks at the portfolio level. In this thesis, I suggest that it is possible to transfer this insight to cocompetition for sustainability by associating risks in portfolio theory with the use of natural resources in cocompetition for sustainability, more particularly when competitors collaborate to use resources more circularly. When competitors collaborate in creating at least imperfectly circular resource systems, there are three outcomes of such a relationship. First is the individual or firm-specific outcome, which defines resource use efficiency at the firm level. Second is the group or network-specific outcome, which determines resource use efficiency at the group level. Third is the societal outcome, which embraces both the individual and group outcomes. Furthermore, the use of implications from modern portfolio theory makes it possible to identify two other ways the group and societal outcomes can be raised in addition to increasing competitors' individual outcomes: (1) by increasing competitors' compatibility (the degree to which the focal firm's resources can potentially be reused by the competing firm and vice versa) or (2) by optimally allocating resources to competitors within the group. This is an important finding because, while individual outcomes contribute to better outcomes (more sustainable use of resources) at the group and societal levels, their maximization is not the only and not necessarily the optimal way to reach the best outcomes at the higher levels. Optimal allocation of resources and optimal selection of partners can be used to better reach the group and societal outcomes compared to maximizing individual outcomes of cocompetition for sustainability.

In my dissertation, I have gone beyond theorizing and systemizing possible outcomes of cocompetition for sustainability and investigated the outcomes also from empirical perspectives. To answer RQ4 (*What is the interplay between cocompetition characteristics and sustainability outcomes in the cocompetition for sustainability paradox?*), I examined the relationship between intensity, balance, and outcomes in cocompetition for sustainability in two empirical samples: the Belarusian and Polish housing sectors. The conducted quantitative studies (based on regression analysis) allowed me to argue that cocompetition intensity has a substantial albeit complex effect on sustainability outcomes in the knotted

coopetition for sustainability paradox: While in the Polish sample, coopetition intensity has a significant positive linear relationship with sustainability outcomes, in the Belarusian sample, the analogous relationship is observed only for coopetition where both competition and cooperation demands manifested weakly. For balanced strong coopetition, the relationship is significantly negative; for unbalanced coopetition (either weak competition but strong cooperation or strong competition but weak cooperation), the impact has an inverted U-shaped curve. In other words, these findings show how coopetition and sustainability influence each other in the knotted paradox from the outcome perspective. The results, on the one hand, confirm that coopetition can be applied to improve corporate sustainability, but, on the other hand, they warn that often (for already highly intense relationships), coopetition can bring about conflicts and failures.

5.2. Theoretical contributions

The thesis contributes to three bodies of literature: coopetition, sustainability, and paradox theory. Below, I present my theoretical contributions and show how they extend prior studies in these fields.

My dissertation provides new insights for coopetition research in several ways. First, this study attempts to explore coopetition for sustainability systematically by focusing on both processual nuances and outcomes. My findings show that coopetition for sustainability—an inter-firm phenomenon when actors from the same industry simultaneously cooperate and compete with the intent to achieve environmental, economic, and social benefits—is a unique kind of coopetition which is characterized by its extra complexity due to the need to meet not only economic but also environmental and social demands. This extra complexity affects both the process, i.e., interactions between competitors, and the outcomes by which actors evaluate the cooperative relationship. My case study indicates that additional sustainability demands raise additional tensions in the cooperative relationship, increase partners' economic risks, and require more time to find mutually beneficial or at least acceptable decisions. That all makes the process of coopetition more difficult to manage, which jeopardizes the relationship. However, by employing special organizing mechanisms (bracketing, gluing, calibrating, and locking-in), actors can leverage their mutual activities and address both coopetition and sustainability interests. In other words, my thesis indicates that a more difficult task in coopetition for sustainability demands special organization of the process but also has a potential for additional benefits.

That is in line with prior studies which highlight an opportunity to leverage cooptition for sustainability goals (Christ et al., 2017; Planko et al., 2019; Stadtler, 2017). To sum up, my study confirms that cooptition can be a viable business approach in the context of sustainability, despite considerable pitfalls (multiple tensions, time consuming, higher economic risks).

Second, my thesis contributes to cooptition research by systemizing the possible outcomes of cooptition for sustainability. Prior cooptition literature has approached mainly economic performance from the perspective of a focal firm as the outcome of cooptition (Bouncken & Kraus, 2013; Mention, 2011). I complement this by adding other important aspects into consideration, elaborating a more comprehensive taxonomy of the outcomes of cooptition for sustainability. My taxonomy contains three distinguishing perspectives of outcomes—a firm, a resource and a societal one—and allows me to assess cooptition for sustainability more thoroughly. In doing so, I go beyond a trivialized approach where cooptition outcomes are estimated only based on economic performance from the perspective of the focal firm. Furthermore, drawing on the sustainable value approach and modern portfolio theory, I show how outcomes of cooptition for sustainability can be assessed practically, i.e., I provide cooptition research with a methodological tool for outcomes assessment.

The thesis contributes to sustainability research by approaching cooptition as a potentially effective, albeit complex, way to a more sustainable world. The potential of cooptition for sustainability has been already specified by scholars; however, this thesis is one of the first attempts to investigate the phenomenon comprehensively, covering both processual nuances and outcomes and employing conceptual, quantitative, and qualitative approaches. Conceptually, by applying modern portfolio theory to cooptition for sustainability, I show that competitors can advance sustainability (in the sense of increasing eco-efficiency) not only by improving their individual performances (eco-efficiencies) but also by organizing effective collaboration whereby they can optimize allocation and use of resources within the cooptitive group. Moreover, as my theoretical findings show, the contribution of collaboration to sustainability at the group or societal level can significantly exceed possible contributions via improving individual eco-efficiencies. This provides an additional argument for cooptition as an important way to advance sustainable development. However, to leverage cooptition for sustainability, competitors need to shift their main focus in collaboration for sustainability from the individual to the group level. The need for such a shift (transition from the individual to the group level) to address sustainability challenges effectively and efficiently is emphasized in the sustainability literature (Ehrenfeld & Gertler,

1997; Figge, Hahn, & Barkemeyer, 2014; Jennings & Zandbergen, 1995). Resonating with this research stream, my thesis provides additional arguments for the shift from the cooptation perspective.

My thesis also provides new insights into sustainability research by giving qualitative and quantitative empirical evidence on the potential of cooptation for sustainability. In my in-depth case study, I show how actors synergize from collaboration and address numerous sustainability issues by employing special organizing mechanisms and regulation. These mechanisms focus on certain sustainability issues rather than competing demands, and such way of organizing the process of collaboration is in line with pragmatic approaches developed in prior studies, for example, robust action (Ferraro, Etzion, & Gehman, 2015). However, my thesis extends this knowledge by providing insights into the process of cooptative interactions which aim to advance sustainability. My quantitative research gives new evidence on sustainability outcomes caused by cooptative relationships. More particularly, by quantitatively examining the interplay between cooptation and sustainability in two empirical settings, I conclude that sustainability outcomes are affected by cooptation intensity, although its impact can be different. Generally, for lowly intense (weak) cooptative interactions, an increase of cooptation intensity is associated with higher sustainability outcomes, but this is only observed up to a certain point, after which the further growth of cooptation intensity, on the contrary, leads to a decrease of sustainability outcomes. The effect depends also on a balance between competition and cooperation demands in the cooptative relationship: A more balanced relationship has higher outcomes. Therefore, my findings justify the need to moderate cooptative relationships for better sustainability outcomes because, as my results show, actors who are able to regulate the intensity and balance of their interactions have better outcomes.

My thesis also contributes to the literature on paradox theory in several ways. First, drawing on the SD approach, I suggest a new conceptualization of knotted paradoxes, according to which any paradoxical phenomenon can be presented as a dynamic system of contradictory causalities that create interrelated negative and positive loops. This conceptualization is based on considering causality mental models and causality perceptions that seem to prevail among organizational actors and better represent how they perceive reality (Hilton, 1996; Jones, Ross, Lynam, Perez, & Leitch, 2011; Rips, 2008), but which have been under-studied in the prior paradox literature (though some elements of system dynamics are presented in prior paradox literature (Slawinski & Bansal, 2012; Smith, Lewis, & Jarzabkowski, 2017; Sundaramurthy & Lewis, 2003)). Furthermore, the SD approach, which is employed to conceptualize knotted paradoxes, allows me to describe and analyze paradoxes given the

systems perspective, i.e., to consider not only how interrelated paradoxical tensions affect each other but also how they develop as a unified system, exemplifying a systemic view on paradoxes which has been called for in the paradox literature (Schad et al., 2016). Here I contribute to the understanding of the “knottedness” of paradoxes—the phenomenon suggested by Sheep et al. (2017). I argue that in knotted paradoxes, it is impossible to affect the tensions in only one paradox without affecting tensions in another: Any changes in one part bring about changes in the whole system. Furthermore, my conceptualization also accounts for dynamics and thus allows for the investigation of how knotted paradoxes evolve over time. Employing the case of cooptation for sustainability, I demonstrate how the conceptualization applies to a specific knotted paradox, i.e., how actors make sense of (render and frame) cooptation for sustainability as a knotted paradox.

Second, by exploring cooptation for sustainability, I contribute to the paradox research by providing a process model that describes how managers respond to knotted paradoxical tensions. The model contains four interrelated organizing mechanisms, namely bracketing, gluing, calibrating, and locking-in, which actors use in a recursive manner to address numerous paradoxical demands. My approach differs from ways of responding to paradoxes from prior paradox research (e.g., Jarzabkowski & Lê, 2017; Jarzabkowski et al., 2013) because it shifts the focus from “organizational responses” as such, where (even in a knotted paradox) all paradoxes are collapsed into one contradiction with two distinct opposing poles, to “organizing mechanisms,” where actors collectively work on the issues they face during the project rather than trying to group or separate paradoxes, which are indeed unlikely to be separable. The focus on interactions around issues is essential, as it is through these interactions that individuals construct the paradoxical tensions; the solutions to these problems are micro-responses to many intertwined paradoxes, so it is fruitful to analyze them together. Therefore, the developed model and organizing mechanisms contribute to paradox theory by unpacking the organizing mechanisms employed to respond to knotted paradoxes at the inter-organizational level in conditions of permanent changes and time limits for making decisions.

Third, the thesis extends our knowledge about the interplay between paradoxes’ characteristics, such as intensity, balance, and outcome. Particularly, I show that cooptation intensity and balance between competition and cooperation demands have a substantial, albeit complex, effect on sustainability outcomes in the knotted cooptation for sustainability paradox. Hence, my study helps us better understand the nature of knotted paradoxes, where different interrelated demands can manifest themselves differently in terms of their intensities and balances.

5.3. Managerial implications

The thesis has practical value for actors involved in co-competition for sustainability. First, the organizing mechanisms elaborated in the thesis—bracketing, gluing, calibrating, and locking-in—can be used by managers to navigate the knotted co-competition for sustainability paradox, providing, on the one hand, flexibility to adjust and adapt different solutions and, on the other hand, momentum to drive the co-competitive relationship forward. For example, due to the reduction of complexity via bracketing, managers can temporarily mitigate some contradictions between competing demands in the knotted co-competition for sustainability paradox and move the mutual activities forward, acknowledging, however, that solutions and decisions which are elaborated within separate domains in bracketing are rather suboptimal and will be critically analyzed through gluing. Calibrating helps managers maintain the adaptivity of the mutual interactions with competitors for changes in terms of goals, participants, activities, etc., while locking-in facilitates competitors not getting stuck in their interactions and makes it possible to set some elements and move on to others. Altogether, the organizing mechanisms provide managers an effective way of handling the numerous paradoxical tensions of co-competition for sustainability.

Second, by examining the cause–effect relationship between the intensity, balance, and outcomes in the knotted co-competition for sustainability paradox, I provide important practical implications for managers who are involved in and responsible for co-competitive relationships. For example, the findings show that managers can affect the knotted paradox by regulating its intensity and balance between competing demands (see Fig. 8). However, to make correct decisions, managers should properly identify how the paradox has been intensified and balanced so far. For relatively weak co-competitive interactions, managers are encouraged to intensify the relationship, while for relatively strong co-competition, managers instead need to keep the status quo and not get involved in more and/or deeper interactions or even abate some interactions.

Third, the thesis suggests a practically applicable approach for systematically assessing the outcomes of co-competition for sustainability based on the methodological principles of the sustainable value approach and modern portfolio theory. My approach allows me to present information about outcomes in a traditional business way, i.e., in numerical monetary units, which is not easy when it comes to environmental and social dimensions. This allows stakeholders to compare gains and losses for each firm and resource as well as at the group level, supporting decision-making processes. For example, partners can conclude

the overall feasibility of cooptation. They can also justify practical mechanisms of compensation of losses. The other possible practical application of the presented approach for assessing the outcomes of cooptation for sustainability lies in corporate governance and governmental regulations. It can be used by corporate boards, governments, and other stakeholders to support firms' sustainability-oriented practices. For example, many nations are now pushing their domestic industries to reduce CO₂ emissions to fulfill the Paris Agreement, and in these trajectories, collaboration between industry competitors is often called for (e.g., Fossil Free Sweden Initiative & Cementa Heidelberg Corp, 2018). The presented approach can help clarify when and where cooptation works as a strategy to make the best use of shrinking industrial carbon budgets.

5.4. Limitations and future research

Several limitations of this thesis need to be acknowledged. First, in this thesis, I explored the processual nuances of cooptation for sustainability by scrutinizing one empirical setting (the Swedish single case), while for the outcomes of cooptation for sustainability, I approached other empirical settings, though in the same sector (Belarusian and Polish housing). That made it impossible for me to investigate the interplay between the process and outcomes of cooptation for sustainability, which seems very important for understanding the phenomenon comprehensively. In my personal case, due to the time restrictions of my PhD program, it was impossible to wait for actual outcomes in the Swedish case (which is likely to take an additional 8–9 years). However, I encourage scholars to pay attention to the link between processual aspects of cooptative interactions for sustainability matters and their outcomes and to determine whether specific processual practices, even though they make the process more flexible, really lead to better outcomes. For example, I plan to continue following the project of the Swedish sample to analyze the interplay between the process and outcomes of cooptation for sustainability.

Second, there are the boundary conditions of the study caused by the context settings. In this thesis, I approached empirical samples from a specific sector—housing. Moreover, the qualitative study was based only on a single case. That implies that studies conducted on other cases and in other sectors might produce different findings. Therefore, further research covering other industries is needed to support the formulation of more robust conclusions.

Third, subjective bias could be at play in this thesis. For example, quantitative studies employ variables measured as the self-reported subjective perceptions of the surveyed respondents. The survey responses might be affected by personality traits and distort the actual state of affairs. Hence, I recommend that scholars elaborate and use measures of coepetition for sustainability which are more independent from personality traits. For instance, firm and sectoral sustainability reports can be approached to estimate sustainability outcomes caused by coepetitive relationships.

5.5. Concluding remarks

To conclude, this dissertation explores coepetition for sustainability—an inter-firm phenomenon where actors from the same industry simultaneously cooperate and compete with the intent to achieve environmental, economic, and social benefits. In this thesis, I show that this phenomenon has a paradoxical nature and coepetition for sustainability can be presented and examined as a knotted paradox, where coepetition and sustainability create multiple interrelated tensions. To explore the process of coepetitive interactions for sustainability matters, I conducted a single in-depth case study of a large-scale sustainability project aiming to create a brand new residential area in a Swedish city. The study allowed me to provide new insights into how actors make sense of (render and frame) coepetition for sustainability and how they respond to numerous knotted tensions.

To explore the outcomes of coepetition for sustainability, I applied the frameworks of the sustainable value approach and modern portfolio theory. In doing so, I systematized the possible outcome of coepetition for sustainability from a firm, a resource, and a societal perspective and justified three principal ways these outcomes can be raised. To investigate the factual outcomes of coepetition for sustainability, I conducted two quantitative studies examining the interplay between coepetition intensity and the balance between competition and cooperation demands and sustainability outcomes in two empirical samples—Belarusian and Polish housing. The findings confirm that coepetition intensity and balance significantly affect sustainability outcomes in the knotted coepetition for sustainability paradox, making it important to moderate these relationships.

The thesis provides several theoretical and practical implications that can help scholars to better understand the process and outcome of coepetition for sustainability, and managers to navigate this paradoxical phenomenon.

References

- Abdallah, C., Denis, J.-L., & Langley, A. (2011). Having your cake and eating it too: Discourses of transcendence and their role in organizational change dynamics. *Journal of Organizational Change Management*, 24(3), 333-348.
- Ahuja, G. (2000). Collaboration networks, structural holes, and innovation: A longitudinal study. *Administrative science quarterly*, 45(3), 425-455.
- Alvesson, M., & Kärreman, D. (2007). Constructing mystery: Empirical matters in theory development. *Academy of management Review*, 32(4), 1265-1281.
- Andriopoulos, C., & Lewis, M. W. (2009). Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. *Organization Science*, 20(4), 696-717.
- Andriopoulos, C., & Lewis, M. W. (2010). Managing Innovation Paradoxes: Ambidexterity Lessons from Leading Product Design Companies. *Long Range Planning*, 43(1), 104-122.
- Archer, M., Bhaskar, R., Collier, A., Lawson, T., & Norrie, A. (2013). *Critical realism: Essential readings*: Routledge.
- Assembly, U. G. (1948). Universal declaration of human rights. *UN General Assembly*.
- Azapagic, A. (2003). Systems approach to corporate sustainability: a general management framework. *Process Safety and Environmental Protection*, 81(5), 303-316.
- Bansal, P. (2002). The corporate challenges of sustainable development. *Academy of Management Perspectives*, 16(2), 122-131.
- Bansal, P., Kim, A., & Wood, M. O. (2018). Hidden in plain sight: The importance of scale in organizations' attention to issues. *Academy of management Review*, 43(2), 217-241.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Barretta, A. (2008). The functioning of co-opetition in the health-care sector: An explorative analysis. *Scandinavian Journal of Management*, 24(3), 209-220.
- Baumgartner, R. J. (2009). Organizational culture and leadership: Preconditions for the development of a sustainable corporation. *Sustainable development*, 17(2), 102-113.
- Bednarek, R., Paroutis, S., & Sillince, J. (2017). Transcendence through rhetorical practices: Responding to paradox in the science sector. *Organization Studies*, 38(1), 77-101.
- Bengtsson, M., & Johansson, M. (2014). Managing co-opetition to create opportunities for small firms. *International Small Business Journal-Researching Entrepreneurship*, 32(4), 401-427.

- Bengtsson, M., & Kock, S. (2000). "Coopetition" in business Networks—to cooperate and compete simultaneously. *Industrial Marketing Management*, 29(5), 411-426.
- Bengtsson, M., & Kock, S. (2015). Tension in Co-opetition. In *Creating and delivering value in marketing* (pp. 38-42): Springer.
- Bengtsson, M., Kock, S., Lundgren-Henriksson, E.-L., & Näsholm, M. H. (2016). Coopetition research in theory and practice: Growing new theoretical, empirical, and methodological domains. *Industrial Marketing Management*, 57, 4-11.
- Bengtsson, M., & Raza-Ullah, T. (2016). A systematic review of research on coopetition: Toward a multilevel understanding. *Industrial Marketing Management*, 57, 23-39.
- Bengtsson, M., & Raza-Ullah, T. (2017). Paradox at an Inter-Firm Level: A Coopetition Lens. In W. Smith, M. Lewis, P. Jarzabkowski, & A. Langley (Eds.), *The Oxford handbook of organizational paradox* (pp. 296–314). Oxford, UK: Oxford University Press.
- Bengtsson, M., Raza-Ullah, T., & Vanyushyn, V. (2016). The coopetition paradox and tension: The moderating role of coopetition capability. *Industrial Marketing Management*, 53, 19-30.
- Berkowitz, H. (2018). Meta-organizing firms' capabilities for sustainable innovation: A conceptual framework. *Journal of Cleaner Production*, 175, 420-430.
- Bhaskar, R. (1979). The possibility of naturalism. *Brighton: Harvester*.
- Bhatti, M. (1993). From consumers to prosumers: housing for a sustainable future. *Housing Studies*, 8(2), 98-108.
- Bisman, J. (2010). Postpositivism and accounting research: A (personal) primer on critical realism. *Australasian Accounting, Business and Finance Journal*, 4(4), 3-25.
- Bonnedahl, K. J., & Eriksson, J. (2011). The role of discourse in the quest for low-carbon economic practices: A case of standard development in the food sector. *European Management Journal*, 29(3), 165-180.
- Boons, F., & Lüdeke-Freund, F. (2013). Business models for sustainable innovation: state-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, 45, 9-19.
- Boulding, K. E. (1966). The economics of the coming spaceship earth. *New York*.
- Bouncken, R. B., & Fredrich, V. (2012). Coopetition: performance implications and management antecedents. *International Journal of Innovation Management*, 16(05), 1250028.
- Bouncken, R. B., Gast, J., Kraus, S., & Bogers, M. (2015). Coopetition: a systematic review, synthesis, and future research directions. *Review of Managerial Science*, 9(3), 577-601.
- Bouncken, R. B., & Kraus, S. (2013). Innovation in knowledge-intensive industries: The double-edged sword of coopetition. *Journal of Business Research*, 66(10), 2060-2070.

- Bowen, F. E., Bansal, P., & Slawinski, N. (2018). Scale matters: The scale of environmental issues in corporate collective actions. *Strategic Management Journal*, 39(5), 1411-1436.
- Bresser, R. K., & Harl, J. E. (1986). Collective strategy: vice or virtue? *Academy of management Review*, 11(2), 408-427.
- Brønn, P. S., & Vidaver-Cohen, D. (2009). Corporate motives for social initiative: Legitimacy, sustainability, or the bottom line? *Journal of Business Ethics*, 87(1), 91-109.
- Bryman, A., & Bell, E. (2015). *Business research methods*: Oxford University Press, USA.
- Burchill, G., & Fine, C. H. (1997). Time versus market orientation in product concept development: Empirically-based theory generation. *Management science*, 43(4), 465-478.
- Cameron, K. S., & Quinn, R. E. (1988). Organizational paradox and transformation.
- Carollo, L., & Guerci, M. (2017). ‘Activists in a Suit’: Paradoxes and Metaphors in Sustainability Managers’ Identity Work. *Journal of Business Ethics*, 1-20.
- Carrillo-Hermosilla, J., del González, P. R., & Könnölä, T. (2009). What is eco-innovation? In *Eco-Innovation* (pp. 6-27): Springer.
- Carroll, A. B. (1999). Corporate social responsibility: Evolution of a definitional construct. *Business & Society*, 38(3), 268-295.
- Chen, L., Zhao, X., Tang, O., Price, L., Zhang, S., & Zhu, W. (2017). Supply chain collaboration for sustainability: A literature review and future research agenda. *International Journal of Production Economics*, 194, 73-87.
- Chen, M.-J. (1996). Competitor analysis and interfirm rivalry: Toward a theoretical integration. *Academy of management Review*, 21(1), 100-134.
- Child, J., Faulkner, D., & Tallman, S. B. (2005). *Cooperative strategy*: Oxford University Press, USA.
- Chin, K.-S., Chan, B. L., & Lam, P.-K. (2008). Identifying and prioritizing critical success factors for coopetition strategy. *Industrial Management & Data Systems*, 108(4), 437-454.
- Christ, K. L., Burritt, R. L., & Varsei, M. (2017). Coopetition as a Potential Strategy for Corporate Sustainability. *Business strategy and the environment*, 26(7), 1029-1040.
- Clegg, S. R., da Cunha, J. V., & e Cunha, M. P. (2002). Management paradoxes: A relational view. *Human relations*, 55(5), 483-503.
- Cohen, B., & Winn, M. I. (2007). Market imperfections, opportunity and sustainable entrepreneurship. *Journal of Business Venturing*, 22(1), 29-49.
- Cortese, A. D. (2003). The critical role of higher education in creating a sustainable future. *Planning for higher education*, 31(3), 15-22.

- Corvellec, H., Campos, M. J. Z., & Zapata, P. (2013). Infrastructures, lock-in, and sustainable urban development: the case of waste incineration in the Göteborg Metropolitan Area. *Journal of Cleaner Production*, 50, 32-39.
- Crabtree, L., & Hes, D. (2009). Sustainability uptake in housing in metropolitan Australia: An institutional problem, not a technological one. *Housing Studies*, 24(2), 203-224.
- Crick, J. M., Crick, D., & Chaudhry, S. (2020). The dark-side of coopetition: it's not what you say, but the way that you do it. *Journal of Strategic Marketing*, 1-23.
- Cuganesan, S. (2017). Identity paradoxes: How senior managers and employees negotiate similarity and distinctiveness tensions over time. *Organization Studies*, 38(3-4), 489-511.
- Cygler, J., Sroka, W., Solesvik, M., & Dębkowska, K. (2018). Benefits and drawbacks of coopetition: The roles of scope and durability in coopetitive relationships. *Sustainability*, 10(8), 2688.
- Czinkota, M., Kaufmann, H. R., & Basile, G. (2014). The relationship between legitimacy, reputation, sustainability and branding for companies and their supply chains. *Industrial Marketing Management*, 43(1), 91-101.
- Dagnino, G. B., & Padula, G. (2002). *Coopetition strategy: a new kind of interfirm dynamics for value creation*. Paper presented at the Innovative research in management, European Academy of Management (EURAM), second annual conference, Stockholm, May.
- Daly, H. E., & Daly, H. E. (1973). *Toward a steady-state economy* (Vol. 2): WH Freeman San Francisco.
- Danermark, B., Ekström, M., & Karlsson, J. C. (2019). *Explaining society: Critical realism in the social sciences*: Routledge.
- Della Corte, V., & Aria, M. (2016). Coopetition and sustainable competitive advantage. The case of tourist destinations. *Tourism Management*, 54, 524-540.
- Dentchev, N. A. (2004). Corporate social performance as a business strategy. *Journal of Business Ethics*, 55(4), 395-410.
- DeSimone, L. D., & Popoff, F. (2000). *Eco-efficiency: the business link to sustainable development*: MIT press.
- Directive, E. (2018). 844 of the European parliament and of the council of 30 May 2018 amending directive 2010/31/EU on the energy performance of buildings and directive 2012/27. *EU: Brussels, Belgium*.
- Ditlev-Simonsen, C. D., & Midttun, A. (2011). What motivates managers to pursue corporate responsibility? A survey among key stakeholders. *Corporate Social Responsibility and Environmental Management*, 18(1), 25-38.
- Doppelt, B. (2003). Leading change toward sustainability: A change-management guide for business. *Government and Civil Society*, Greenleaf-Publishing, UK.

- Dovers, S. R. (1996). Sustainability: demands on policy. *Journal of Public Policy*, 303-318.
- Dowling, M. J., Roering, W. D., Carlin, B. A., & Wisnieski, J. (1996). Multifaceted relationships under cooptation: Description and theory. *Journal of Management Inquiry*, 5(2), 155-167.
- Dubois, A., & Fredriksson, P. (2008). Cooperating and competing in supply networks: Making sense of a triadic sourcing strategy. *Journal of Purchasing and Supply Management*, 14(3), 170-179.
- Dussauge, P., Garrette, B., & Mitchell, W. (2000). Learning from competing partners: outcomes and durations of scale and link alliances in Europe, North America and Asia. *Strategic Management Journal*, 99-126.
- Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review*, 23(4), 660-679.
- Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business strategy and the environment*, 11(2), 130-141.
- Ehrenfeld, J., & Gertler, N. (1997). Industrial ecology in practice: the evolution of interdependence at Kalundborg. *Journal of Industrial Ecology*, 1(1), 67-79.
- Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review*, 36(2), 90-100.
- Elkington, J. (1997). Cannibals with forks: the triple bottom line of twenty-first century business. Capstone. In: Oxford.
- Elkington, J. (1998). Partnerships from cannibals with forks: The triple bottom line of 21st-century business. *Environmental Quality Management*, 8(1), 37-51.
- Eriksson, P. E. (2008). Achieving suitable cooptation in Buyer-Supplier relationships: The case of AstraZeneca. *Journal of Business-to-Business Marketing*, 15(4), 425-454.
- Etzion, D. (2007). Research on organizations and the natural environment, 1992-present: A review. *Journal of Management*, 33(4), 637-664.
- Ferraro, F., Etzion, D., & Gehman, J. (2015). Tackling grand challenges pragmatically: Robust action revisited. *Organization Studies*, 36(3), 363-390.
- Figge, F. (2001). Environmental Value Added - Ein neues Maß zur Messung der Öko-Effizienz (Environmental Value Added - A New Approach to Measuring Eco-Efficiency). *Zeitschrift für angewandte Umweltforschung*, 14(1-4), 184-197.
- Figge, F., Givry, P., Canning, L., Johnson, E. F., & Thorpe, A. (2017). Eco-efficiency of Virgin Resources: A Measure at the Interface Between Micro and Macro Levels. *Ecological Economics*, 138, 12-21.

- Figge, F., & Hahn, T. (2004). Sustainable Value Added - Measuring Corporate Contributions to Sustainability Beyond Eco-Efficiency. *Ecological Economics*, 48(2), 173-187.
- Figge, F., Hahn, T., & Barkemeyer, R. (2014). The If, How and Where of assessing sustainable resource use. *Ecological Economics*, 105, 274-283.
- Figge, F., Thorpe, A. S., & Good, J. (2021). Us before me: A group level approach to the circular economy. *Ecological Economics*, 179, 106838.
- Fleetwood, S. (2005). Ontology in organization and management studies: A critical realist perspective. *Organization*, 12(2), 197-222.
- Flyvbjerg, B. (2004). Phronetic planning research: Theoretical and methodological reflections. *Planning Theory & Practice*, 5(3), 283-306.
- Ford, J. D., & Backoff, R. W. (1988). *Organizational change in and out of dualities and paradox*: Ballinger Publishing Co/Harper & Row Publishers.
- Forrester, J. (1961). *Industrial Dynamics* MIT Press. Cambridge, Massachusetts.
- Fossil Free Sweden Initiative & Cements Heidelberg Corp. (2018). Färdplan cement – för ett fossilfritt byggande [Road map for Cement – for a fossil free construction industry. Fossil Free Sweden Initiative]. Retrieved from <http://fossilfritt-sverige.se/verksamhet/fardplaner-for-fossilfri-konkurrenskraft/>
- Freeman, R. E. (2010). *Strategic management: A stakeholder approach*: Cambridge university press.
- Gaim, M. (2017). *Paradox As the New Normal: Essays on framing, managing and sustaining organizational tensions*. (Doctoral dissertation). Umeå universitet, Umeå.
- Gaim, M., & Wåhlin, N. (2016). In search of a creative space: A conceptual framework of synthesizing paradoxical tensions. *Scandinavian Journal of Management*, 32(1), 33-44.
- Gao, J., & Bansal, P. (2013). Instrumental and integrative logics in business sustainability. *Journal of Business Ethics*, 112(2), 241-255.
- George, D., & Mallery, P. (2003). Frequencies. *SPSS for Windows step by step: A simple guide and reference*, 11, 20-52.
- George, G., Howard-Grenville, J., Joshi, A., & Tihanyi, L. (2016). Understanding and tackling societal grand challenges through management research. *Academy of management journal*, 59(6), 1880-1895.
- Gill, R. (2002). Change management--or change leadership? *Journal of change management*, 3(4), 307-318.
- Gilman, S. (2003). Sustainability and national policy in UK port development. *Maritime Policy & Management*, 30(4), 275-291.
- Gino, F., Argote, L., Miron-Spektor, E., & Todorova, G. (2010). First, get your feet wet: The effects of learning from direct and indirect experience on team creativity. *Organizational Behavior and Human Decision Processes*, 111(2), 102-115.

- Gladwin, T. N., Kennelly, J. J., & Krause, T.-S. (1995). Shifting paradigms for sustainable development: Implications for management theory and research. *Academy of management Review*, 20(4), 874-907.
- Glavič, P., & Lukman, R. (2007). Review of sustainability terms and their definitions. *Journal of Cleaner Production*, 15(18), 1875-1885.
- Gnyawali, D. R., He, J., & Madhavan, R. (2006). Impact of co-opetition on firm competitive behavior: An empirical examination. *Journal of Management*, 32(4), 507-530.
- Gnyawali, D. R., & Madhavan, R. (2001). Cooperative networks and competitive dynamics: A structural embeddedness perspective. *Academy of management Review*, 26(3), 431-445.
- Gnyawali, D. R., Madhavan, R., He, J., & Bengtsson, M. (2016). The competition-cooperation paradox in inter-firm relationships: A conceptual framework. *Industrial Marketing Management*, 53, 7-18.
- Gnyawali, D. R., & Park, B.-J. (2011). Co-opetition between giants: Collaboration with competitors for technological innovation. *Research Policy*, 40(5), 650-663.
- Gnyawali, D. R., & Park, B. J. R. (2009). Co-opetition and technological innovation in small and medium-sized enterprises: A multilevel conceptual model. *Journal of small business management*, 47(3), 308-330.
- Gnyawali, D. R., & Ryan Charleton, T. (2018). Nuances in the Interplay of Competition and Cooperation: Towards a Theory of Coopetition. *Journal of Management*, 44(7), 2511-2534.
- Goudie, A. S. (2018). *Human impact on the natural environment*: John Wiley & Sons.
- GRESB BV. (2015). "2015 GRESB Survey",.
- Griesinger, D. W. (1990). The human side of economic organization. *Academy of management Review*, 15(3), 478-499.
- Hahn, T., Figge, F., Pinkse, J., & Preuss, L. (2010). Trade-offs in corporate sustainability: you can't have your cake and eat it. *Business strategy and the environment*, 19(4), 217-229.
- Hahn, T., Figge, F., Pinkse, J., & Preuss, L. (2018). A paradox perspective on corporate sustainability: Descriptive, instrumental, and normative aspects. *Journal of Business Ethics*, 148(2), 235-248.
- Hahn, T., & Knight, E. (2019). The Ontology of Organizational Paradox: A Quantum Approach. *Academy of management Review*, in press.
- Hahn, T., & Pinkse, J. (2014). Private environmental governance through cross-sector partnerships: Tensions between competition and effectiveness. *Organization & Environment*, 27(2), 140-160.
- Hahn, T., Pinkse, J., Preuss, L., & Figge, F. (2015). Tensions in corporate sustainability: Towards an integrative framework. *Journal of Business Ethics*, 127(2), 297-316.

- Hahn, T., Preuss, L., Pinkse, J., & Figge, F. (2014). Cognitive frames in corporate sustainability: Managerial sensemaking with paradoxical and business case frames. *Academy of management Review*, 39(4), 463-487.
- Håkansson, H., & Snehota, I. (2006). No business is an island: The network concept of business strategy. *Scandinavian Journal of Management*, 22(3), 256-270.
- Heffernan, T. W., Heffernan, E. E., Reynolds, N., Lee, W. J., & Cooper, P. (2020). Towards an environmentally sustainable rental housing sector. *Housing Studies*, 1-24.
- Helfen, M., & Sydow, J. (2013). Negotiating as institutional work: The case of labour standards and international framework agreements. *Organization Studies*, 34(8), 1073-1098.
- Hilton, D. J. (1996). Mental models and causal explanation: Judgements of probable cause and explanatory relevance. *Thinking & Reasoning*, 2(4), 273-308.
- Hjorth, P., & Bagheri, A. (2006). Navigating towards sustainable development: A system dynamics approach. *Futures*, 38(1), 74-92.
- Hoegh-Guldberg, O., Jacob, D., Bindi, M., Brown, S., Camilloni, I., Diedhiou, A., . . . Guiot, J. (2018). Impacts of 1.5 C global warming on natural and human systems. *Global warming of 1.5 C. An IPCC Special Report*.
- Hurmelinna-Laukkanen, P., & Ritala, P. (2010). Protection for profiting from collaborative service innovation. *Journal of Service Management*, 21(1), 6-24.
- Husted, B. W., & de Jesus Salazar, J. (2006). Taking Friedman seriously: Maximizing profits and social performance. *Journal of Management Studies*, 43(1), 75-91.
- Jarzabkowski, P., Bednarek, R., Chalkias, K., & Cacciatori, E. (2019). Exploring inter-organizational paradoxes: Methodological lessons from a study of a grand challenge. *Strategic Organization*, 17(1), 120-132.
- Jarzabkowski, P., Bednarek, R., & Lê, J. (2018). Studying paradox as process and practice. *Perspectives on process organization studies: Dualities, dialectics and paradoxes in organizational life*, 175-194.
- Jarzabkowski, P., & Lê, J. K. (2017). We have to do this and that? You must be joking: Constructing and responding to paradox through humor. *Organization Studies*, 38(3-4), 433-462.
- Jarzabkowski, P., Lê, J. K., & Van de Ven, A. H. (2013). Responding to competing strategic demands: How organizing, belonging, and performing paradoxes coevolve. *Strategic Organization*, 11(3), 245-280.
- Jarzabkowski, P., Lewis, M., & Smith, W. (2017). Practices for leveraging the paradoxes of engaged scholarship. In *Academic-Practitioner Relationships* (pp. 126-141): Routledge.
- Jennings, P. D., & Zandbergen, P. A. (1995). Ecologically sustainable organizations: An institutional approach. *Academy of management Review*, 20(4), 1015-1052.

- Jones, N. A., Ross, H., Lynam, T., Perez, P., & Leitch, A. (2011). Mental models: an interdisciplinary synthesis of theory and methods. *Ecology and Society*, 16(1).
- Juntunen, J. K., Halme, M., Korsunova, A., & Rajala, R. (2019). Strategies for integrating stakeholders into sustainability innovation: a configurational perspective. *Journal of Product Innovation Management*, 36(3), 331-355.
- Kalinowska-Sołtys, A. (2020). Zrównoważony , czyli jaki ? *Builder* 03/2020, 112.
- Keller, J., Wong, S.-S., & Liou, S. (2020). How social networks facilitate collective responses to organizational paradoxes. *Human relations*, 73(3), 401-428.
- Kim, J., & Parkhe, A. (2009). Competing and cooperating similarity in global strategic alliances: an exploratory examination. *British Journal of Management*, 20(3), 363-376.
- Kiron, D., Kruschwitz, N., Haanaes, K., & Reeves, M. (2015). Joining forces: Collaboration and leadership for sustainability. *MIT Sloan Management Review*, 56(3).
- Kleine, A., & Von Hauff, M. (2009). Sustainability-driven implementation of corporate social responsibility: Application of the integrative sustainability triangle. *Journal of Business Ethics*, 85(3), 517-533.
- Knight, E., & Paroutis, S. (2017). Becoming Salient: The TMT Leader's Role in Shaping the Interpretive Context of Paradoxical Tensions. *Organization Studies*, 38(3-4), 403-432.
- Koontz, T. M. (2006). Collaboration for sustainability? A framework for analyzing government impacts in collaborative-environmental management. *Sustainability: Science, Practice, & Policy*, 2(1).
- Lantos, G. P. (2001). The boundaries of strategic corporate social responsibility. *Journal of consumer marketing*.
- Laszlo, C. (2003). *The sustainable company: How to create lasting value through social and environmental performance*: Island Press.
- Lee, B. X., Kjaerulf, F., Turner, S., Cohen, L., Donnelly, P. D., Muggah, R., . . . MacGregor, L. S. (2016). Transforming our world: implementing the 2030 agenda through sustainable development goal indicators. *Journal of public health policy*, 37(1), 13-31.
- Lewis, M. W. (2000). Exploring paradox: Toward a more comprehensive guide. *Academy of Management Review*, 25(4), 760-776.
- Limoubratum, C., Shee, H., & Ahsan, K. (2015). Sustainable distribution through coeption strategy. *International Journal of Logistics Research and Applications*, 18(5), 424-441.
- Liu, Y., Luo, Y., Yang, P., & Maksimov, V. (2014). Typology and Effects of Co-competition in Buyer-Supplier Relationships: Evidence from the Chinese Home Appliance Industry. 供应链关系中竞合分类及其影响：来自中

- 国家电业的实证研究. *Management and Organization Review*, 10(3), 439-465.
- Lozano, R. (2007). Collaboration as a pathway for sustainability. *Sustainable development*, 15(6), 370-381.
- Lozano, R. (2015). A holistic perspective on corporate sustainability drivers. *Corporate Social Responsibility and Environmental Management*, 22(1), 32-44.
- Luo, X., Rindfleisch, A., & Tse, D. K. (2007). Working with rivals: The impact of competitor alliances on financial performance. *Journal of Marketing Research*, 44(1), 73-83.
- Luo, X., Slotegraaf, R. J., & Pan, X. (2006). Cross-functional “coopetition”: The simultaneous role of cooperation and competition within firms. *Journal of Marketing*, 70(2), 67-80.
- Luo, Y., Shenkar, O., & Gurnani, H. (2008). Control-cooperation interfaces in global strategic alliances: a situational typology and strategic responses. *Journal of International Business Studies*, 39(3), 428-453.
- Lüscher, L. S., & Lewis, M. W. (2008). Organizational Change and Managerial Sensemaking: Working Through Paradox. *Academy of Management Journal*, 51(2), 221-240.
- Mantena, R., & Saha, R. L. (2012). Co-opetition between differentiated platforms in two-sided markets. *Journal of Management Information Systems*, 29(2), 109-140.
- Manzhynski, S., Bengtsson, M., & Stål, H. I. (2018). *Knotted paradoxes in eco-innovation: a double trap or two needs with one deed?* Paper presented at the 34th EGOS Colloquium, Tallinn, July 5-7, 2018.
- Manzhynski, S., Bengtsson, M., & Stål, H. I. (2020). *Knowledge Sharing for Corporate Sustainability—A System Dynamics Approach*. Paper presented at the Academy of Management Proceedings.
- Manzhynski, S., & Figge, F. (2020). Coopetition for sustainability: Between organizational benefit and societal good. *Business strategy and the environment*, 29(3), 827-837.
- Manzhynski, S., Figge, F., & Thorpe, A. (2020). *Making Paradoxical Tensions Salient: Changing Information not People*. Paper presented at the Academy of Management Proceedings.
- Manzhynski, S., & Hassel, L. G. (2014). *Sustainability as a Business Model*. Paper presented at the Proceedings of the 20th Annual International Sustainable Development Research Conference.
- Manzhynski, S., Stål, H. I., & Bengtsson, M. (2020). *Dealing with knotted paradoxes: A system dynamics approach to coopetition for sustainability*. Paper presented at the 36th European Group for Organizational Studies (EGOS) Colloquium “Organizing for a Sustainable Future: Responsibility, Renewal & Resistance” that will be taking place at University of Hamburg, Germany, 30/06–04/07, 2020.

- Margolis, J. D., & Walsh, J. P. (2003). Misery loves companies: Rethinking social initiatives by business. *Administrative science quarterly*, 48(2), 268-305.
- Mariani, M. M. (2007). Coopetition as an emergent strategy: Empirical evidence from an Italian consortium of opera houses. *International Studies of Management & Organization*, 37(2), 97-126.
- McWilliams, A. (2000). Corporate social responsibility. *Wiley Encyclopedia of Management*.
- Meehan, J., & Bryde, D. J. (2015). A field-level examination of the adoption of sustainable procurement in the social housing sector. *International Journal of Operations & Production Management*, 35(7), 982-1004.
- Mention, A.-L. (2011). Co-operation and co-opetition as open innovation practices in the service sector: Which influence on innovation novelty? *Technovation*, 31(1), 44-53.
- Miron-Spektor, E., Ingram, A., Keller, J., Smith, W. K., & Lewis, M. W. (2018). Microfoundations of organizational paradox: The problem is how we think about the problem. *Academy of Management Journal*, 61(1), 26-45.
- Nalebuff, & Brandenburg. (1996). Co-operation Harper Collins Business. Philadelphia, PA.
- Nissan News. (2017, 2017-02-08). Renault-Nissan Alliance delivers significant growth in 2016, extends electric vehicle sales record. Retrieved from <http://nissannews.com/en-US/nissan/usa/releases/renault-nissan-alliance-delivers-significant-growth-in-2016-extends-electric-vehicle-sales-record>
- Ofori-Dankwa, J., & Julian, S. D. (2004). Conceptualizing social science paradoxes using the diversity and similarity curves model: Illustrations from the work/play and theory novelty/continuity paradoxes. *Human relations*, 57(11), 1449-1477.
- Park, B.-J., Srivastava, M. K., & Gnyawali, D. R. (2014a). Impact of coopetition in the alliance portfolio and coopetition experience on firm innovation. *Technology Analysis & Strategic Management*, 26(8), 893-907.
- Park, B.-J., Srivastava, M. K., & Gnyawali, D. R. (2014b). Walking the tight rope of coopetition: Impact of competition and cooperation intensities and balance on firm innovation performance. *Industrial Marketing Management*, 43(2), 210-221.
- Park, S. H., & Ungson, G. R. (2001). Interfirm rivalry and managerial complexity: A conceptual framework of alliance failure. *Organization Science*, 12(1), 37-53.
- Parkhe, A. (1993). Strategic alliance structuring: A game theoretic and transaction cost examination of interfirm cooperation. *Academy of management journal*, 36(4), 794-829.
- Pathak, S. D., Wu, Z., & Johnston, D. (2014). Toward a structural view of co-opetition in supply networks. *Journal of Operations Management*, 32(5), 254-267.

- Pedersen, E. R. G., Lüdeke-Freund, F., Henriques, I., & Seitanidi, M. M. (2021). Toward collaborative cross-sector business models for sustainability. In: SAGE Publications Sage CA: Los Angeles, CA.
- Pellegrin-Boucher, E., Le Roy, F., & Gurău, C. (2013). Coopetitive strategies in the ICT sector: typology and stability. *Technology Analysis & Strategic Management*, 25(1), 71-89.
- Peloza, J., & Falkenberg, L. (2009). The role of collaboration in achieving corporate social responsibility objectives. *California Management Review*, 51(3), 95-113.
- Peng, T. J. A., Pike, S., Yang, J. C. H., & Roos, G. (2012). Is cooperation with competitors a good idea? An example in practice. *British Journal of Management*, 23(4), 532-560.
- Planko, J., Chappin, M. M. H., Cramer, J., & Hekkert, M. P. (2019). Coping with cooptition-Facing dilemmas in cooperation for sustainable development: The case of the Dutch smart grid industry. *Business strategy and the environment*, 28(5), 665-674.
- Planko, J., Cramer, J. M., Chappin, M. M., & Hekkert, M. P. (2016). Strategic collective system building to commercialize sustainability innovations. *Journal of Cleaner Production*, 112, 2328-2341.
- Poole, M. S., & Van de Ven, A. H. (1989). Using paradox to build management and organization theories. *Academy of management Review*, 14(4), 562-578.
- Porter, M. E. (1980). Industry structure and competitive strategy: Keys to profitability. *Financial Analysts Journal*, 36(4), 30-41.
- Porter, M. E., & Van der Linde, C. (1995). Toward a new conception of the environment-competitiveness relationship. *Journal of Economic Perspectives*, 9(4), 97-118.
- Putnam, L. L., Fairhurst, G. T., & Banghart, S. (2016). Contradictions, dialectics, and paradoxes in organizations: A constitutive approach. *The Academy of Management Annals*, 10(1), 65-171.
- Qiu, J., Donaldson, L., & Luo, B. N. (2012). The benefits of persisting with paradigms in organizational research. In: Academy of Management Briarcliff Manor, NY.
- Quazi, H. A. (2001). Sustainable development: integrating environmental issues into strategic planning. *Industrial Management & Data Systems*.
- Quintana-Garcia, C., & Benavides-Velasco, C. A. (2004). Cooperation, competition, and innovative capability: a panel data of European dedicated biotechnology firms. *Technovation*, 24(12), 927-938.
- Rai, R. K. (2016). A co-opetition-based approach to value creation in interfirm alliances: Construction of a measure and examination of its psychometric properties. *Journal of Management*, 42(6), 1663-1699.
- Raza-Ullah, T. (2017). *A theory of experienced paradoxical tension in co-opetitive alliances*. Umeå University,

- Raza-Ullah, T. (2020). Experiencing the paradox of coopetition: A moderated mediation framework explaining the paradoxical tension–performance relationship. *Long Range Planning*, 53(1), 101863.
- Raza-Ullah, T., Bengtsson, M., & Kock, S. (2014). The coopetition paradox and tension in coopetition at multiple levels. *Industrial Marketing Management*, 43(2), 189-198.
- Reid, L. A., & Houston, D. (2013). Low carbon housing: a ‘Green’ wolf in sheep's clothing? *Housing Studies*, 28(1), 1-9.
- Reid, W. V., Chen, D., Goldfarb, L., Hackmann, H., Lee, Y.-T., Mokhele, K., . . . Schellnhuber, H. J. (2010). Earth system science for global sustainability: grand challenges. *Science*, 330(6006), 916-917.
- Rips, L. J. (2008). Causal thinking. *Reasoning: Studies of human inference and its foundation*, 597-631.
- Ritala, P. (2012). Coopetition strategy—when is it successful? Empirical evidence on innovation and market performance. *British Journal of Management*, 23(3), 307-324.
- Ritala, P., Golnam, A., & Wegmann, A. (2014). Coopetition-based business models: The case of Amazon. com. *Industrial Marketing Management*, 43(2), 236-249.
- Ritala, P., & Hurmelinna-Laukkanen, P. (2009). What's in it for me? Creating and appropriating value in innovation-related coopetition. *Technovation*, 29(12), 819-828.
- Robinson, S., Simons, R., Lee, E., & Kern, A. (2016). Demand for green buildings: Office tenants' stated willingness-to-pay for green features. *Journal of Real Estate Research*, 38(3), 423-452.
- Rusko, R. (2011). Exploring the concept of coopetition: A typology for the strategic moves of the Finnish forest industry. *Industrial Marketing Management*, 40(2), 311-320.
- Sarkis, J., Gonzalez-Torre, P., & Adenso-Diaz, B. (2010). Stakeholder pressure and the adoption of environmental practices: The mediating effect of training. *Journal of Operations Management*, 28(2), 163-176.
- Sayer, A. (2004). Why critical realism. *Critical realist applications in organisation and management studies*, 11(6).
- Schad, J., & Bansal, P. (2018). Seeing the forest and the trees: How a systems perspective informs paradox research. *Journal of Management Studies*, 55(8), 1490-1506.
- Schad, J., Lewis, M. W., Raisch, S., & Smith, W. K. (2016). Paradox research in management science: Looking back to move forward. *The Academy of Management Annals*, 10(1), 5-64.
- Scherer, A. G., Palazzo, G., & Seidl, D. (2013). Managing legitimacy in complex and heterogeneous environments: Sustainable development in a globalized world. *Journal of Management Studies*, 50(2), 259-284.
- Scoones, I., Stirling, A., Abrol, D., Atela, J., Charli-Joseph, L., Eakin, H., . . . Priya, R. (2020). Transformations to sustainability: combining structural,

- systemic and enabling approaches. *Current Opinion in Environmental Sustainability*, 42, 65-75.
- Sellitto, M. A., Pereira, G. S., Marques, R., & Lacerda, D. P. (2018). Systemic understanding of cooperative behaviour in a Latin American technological park. *Systemic Practice and Action Research*, 31(5), 479-494.
- Sharma, G., & Jaiswal, A. K. (2018). Unsustainability of sustainability: Cognitive frames and tensions in bottom of the pyramid projects. *Journal of Business Ethics*, 148(2), 291-307.
- Sheep, M. L., Fairhurst, G. T., & Khazanchi, S. (2017). Knots in the discourse of innovation: Investigating multiple tensions in a reacquired spin-off. *Organization Studies*, 38(3-4), 463-488.
- Silverman, D. (2013). *Doing qualitative research: A practical handbook*: SAGE publications limited.
- Slawinski, N., & Bansal, P. (2012). A matter of time: The temporal perspectives of organizational responses to climate change. *Organization Studies*, 33(11), 1537-1563.
- Smeets, J., & Dogge, P. (2007). Housing associations, competences and strategic sourcing: the case of Trudo Housing Association. *Housing, Theory and Society*, 24(1), 49-62.
- Smith, W. K., & Besharov, M. L. (2019). Bowing before dual gods: How structured flexibility sustains organizational hybridity. *Administrative science quarterly*, 64(1), 1-44.
- Smith, W. K., Erez, M., Jarvenpaa, S., Lewis, M. W., & Tracey, P. (2017). Adding Complexity to Theories of Paradox, Tensions, and Dualities of Innovation and Change: Introduction to Organization Studies Special Issue on Paradox, Tensions, and Dualities of Innovation and Change. *Organization Studies*, 38(3-4), 303-317.
- Smith, W. K., & Lewis, M. W. (2011). Toward a Theory of Paradox: A Dynamic Equilibrium Model of Organizing. *Academy of management Review*, 36(2), 381-403.
- Smith, W. K., Lewis, M. W., & Jarzabkowski, P. (2017). *The Oxford Handbook of Organizational Paradox*: Oxford University Press.
- Smith, W. K., & Tushman, M. L. (2005). Managing strategic contradictions: A top management model for managing innovation streams. *Organization Science*, 16(5), 522-536.
- Sotirov, M., Blum, M., Storch, S., Selter, A., & Schraml, U. (2017). Do forest policy actors learn through forward-thinking? Conflict and cooperation relating to the past, present and futures of sustainable forest management in Germany. *Forest Policy & Economics*, 85, 256-268.
- Stadler, L. (2017). Tightrope walking: Navigating competition in multi-company cross-sector social partnerships. *Journal of Business Ethics*, 1-17.

- Stadtler, L. (2018). Tightrope walking: Navigating competition in multi-company cross-sector social partnerships. *Journal of Business Ethics*, 148(2), 329-345.
- Stadtler, L., & Lin, H. (2017). Moving to the next strategy stage: examining firms' awareness, motivation and capability drivers in environmental alliances. *Business strategy and the environment*, 26(6), 709-730.
- Stål, H. I. (2015). Inertia and change related to sustainability—An institutional approach. *Journal of Cleaner Production*, 99, 354-365.
- Stål, H. I., Bengtsson, M., & Manzhynski, S. (2021). Cross-sectoral collaboration in business model innovation for sustainable development: Tensions and compromises. *Business strategy and the environment*, n/a(n/a).
- Steiner, I. D. (1972). *Group process and productivity*: Academic press.
- Sterman, J. (2002). *System Dynamics: systems thinking and modeling for a complex world*.
- Strauss, A., & Corbin, J. (1994). Grounded theory methodology. *Handbook of qualitative research*, 17, 273-285.
- Suhartanto, D. (2017). The role of store competition and attractiveness on the performance of tourism destination and its retail stores. *International Journal of Tourism Policy*, 7(2), 151-165.
- Sundaramurthy, C., & Lewis, M. (2003). Control and collaboration: Paradoxes of governance. *Academy of management Review*, 28(3), 397-415.
- Syed, J., Mingers, J., & Murray, P. A. (2010). Beyond rigour and relevance: A critical realist approach to business education. *Management Learning*, 41(1), 71-85.
- Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Vol. 46): Sage.
- Thomas, K. W. (1974). *Thomas-Kilmann conflict mode instrument*: Xicom Tuxedo, NY.
- Tidström, A. (2014). Managing tensions in coopetition. *Industrial Marketing Management*, 43(2), 261-271.
- Tortoriello, M., Perrone, V., & McEvily, B. (2011). Cooperation among competitors as status-seeking behavior: Network ties and status differentiation. *European Management Journal*, 29(5), 335-346.
- Tura, N., Keränen, J., & Patala, S. (2019). The darker side of sustainability: Tensions from sustainable business practices in business networks. *Industrial Marketing Management*, 77, 221-231.
- UN Environment. (2016). Empowering People to Protect the Planet. United Nations Environment Programme. *United Nations Environment Programme*, 20.
- Vachon, S., & Klassen, R. D. (2008). Environmental management and manufacturing performance: The role of collaboration in the supply chain. *International Journal of Production Economics*, 111(2), 299-315.

- Van der Byl, C. A., & Slawinski, N. (2015). Embracing tensions in corporate sustainability: A review of research from win-wins and trade-offs to paradoxes and beyond. *Organization & Environment*, 28(1), 54-79.
- van Hille, I., de Bakker, F. G., Ferguson, J. E., & Groenewegen, P. (2019). Navigating tensions in a cross-sector social partnership: How a convener drives change for sustainability. *Corporate Social Responsibility and Environmental Management*, 26(2), 317-329.
- Van Marrewijk, M. (2003). Concepts and definitions of CSR and corporate sustainability: Between agency and communion. *Journal of Business Ethics*, 44(2), 95-105.
- Vitols, S., & Kluge, N. (2011). *The Sustainable Company: a new approach to corporate governance* (Vol. 1): ETUI.
- Volschenk, J., Ungerer, M., & Smit, E. (2016). Creation and appropriation of socio-environmental value in cooptation. *Industrial Marketing Management*, 57, 109-118.
- Waldman, D. A., Putnam, L. L., Miron-Spektor, E., & Siegel, D. (2019). The role of paradox theory in decision making and management research. *Organizational behavior and human decision processes*, 155, 1-6.
- WCED, U. (1987). Our common future. *World Commission on Environment and Development* Oxford University Press.
- Wijethilake, C., & Lama, T. (2019). Sustainability core values and sustainability risk management: Moderating effects of top management commitment and stakeholder pressure. *Business strategy and the environment*, 28(1), 143-154.
- Williams, A., Whiteman, G., & Kennedy, S. (2021). Cross-scale systemic resilience: Implications for organization studies. *Business & Society*, 60(1), 95-124.
- Wolf, J. (2014). The relationship between sustainable supply chain management, stakeholder pressure and corporate sustainability performance. *Journal of Business Ethics*, 119(3), 317-328.
- Yeung, H. W.-c. (1997). Critical realism and realist research in human geography: a method or a philosophy in search of a method? *Progress in human geography*, 21(1), 51-74.
- Yim Yiu, C., & Xu, S. Y. (2012). A tenant-mix model for shopping malls. *European Journal of Marketing*, 46(3/4), 524-541.
- Zachariadis, M., Scott, S., & Barrett, M. (2013). Methodological implications of critical realism for mixed-methods research. *MIS quarterly*, 855-879.
- Zeng, M., & Chen, X.-P. (2003). Achieving cooperation in multiparty alliances: A social dilemma approach to partnership management. *Academy of management Review*, 28(4), 587-605.