WHY COMPANIES FAIL TO RESPOND TO CLIMATE CHANGE

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Tobias Finke, Stefanos Mouzas, Alan Gilchrist

Lancaster University Management School, Lancaster LA1 4YX, United Kingdom

(E-mail: t.finke@lancaster.ac.uk), Tel: +44 (0) 1524 510671

Abstract

No individual company alone has the necessary resources and capabilities to address the current unprecedented challenge of climate change. Companies thus need to engage in give-and-take exchange relationships with other companies to address climate change. Although the importance of climate change is now globally accepted, very limited academic research has been conducted on how companies interact with each other to respond to climate change. Questions remain about 1) *why* companies fail to respond to climate change and 2) *what* the barriers of these responses to climate change are. In an attempt to shed light on these interactions, we use the network approach as a theoretical perspective to account for the ever-increasing connectivity and interdependence in the business landscape. The empirical investigation is based upon a case study of a Climate Protection Network (CPN) in Germany. Findings indicate that companies fail to respond to climate change, because of the multiplicity of interests, weak actor bonds and human deficiencies. As such, the present study contributes to our understanding of responses to the ever evolving global conflicts surrounding climate change.

Key words: climate change, business interaction, barriers, business networks

INTRODUCTION

In today's business landscape companies find themselves embedded in networks of exchange relationships driven by processes of continuous interaction between individually significant and interdependent actors (Easton and Håkansson, 1996; Gnyawali and Madhawan, 2001; Håkansson and Ford, 2002; Håkansson and Waluszewski, 2002, 2007; Ritter, 2000). These exchange relationships are entered when actors perceive that value can be created and captured (Mouzas and Ford, 2009). Conflict in these exchange relationships is inevitable, particularly when actors' self-interests collide with collective interests of the organizations themselves, and of the wider societal groupings. The case of finding responses to climate change represents such a conflict. Self-interests, in this domain, are seen to motivate actors to free ride, where the best individual strategy may not result in a Pareto-optimal outcome (Nowak and Highfield, 2011). Common goods, such as a stable climate, are prone to contrary decision making between self-interest and the best interest of the group (Hardin, 1968). Olson's (1965) logic of collective action adds the issue of overrepresentation of minor

interests and the increasing likelihood of free-riding the larger the group gets. Consequently, even the most ambitious climate change treaties have achieved very little, and, perhaps even more worryingly, the CO_2 emissions of companies would need to be reduced substantially over the coming years to stop climate disruption (IPCC, 2001, 2014).

Scholars seem not to have adequately addressed some of the most pressing questions about the appropriate responses to mitigate or adapt to climate change. Existing research on climate change has tended to focus on the operation of markets for carbon trading (e.g. Veal and Mouzas, 2011) and companies' individual responses (e.g. Okereke, 2007). There is a deficiency of discussion about companies' failure to interact in response to climate change. The prevalence and significance of this gap becomes apparent when considering repeated calls for more in-depth research in this area. Brett and Kopelman (2004) for example, see the social dilemma of contributing to stop climate change as a topic where much is to be done studying, in particular the behavioral relevance of values, norms, beliefs, and institutions. Veal and Mouzas (2012) request studies on markets for environmental governance that examine how cognitive and behavioral biases affect political and economic behavior (Bazerman, 1984; Hardie and MacKenzie, 2007; Leiserowitz, 2006; Sunstein, 2006; Tversky and Kahneman, 1981, 1986). Notwithstanding the rich contribution of behavioral approaches to our understanding of systematic biases and human errors, questions remain about the inherent problems that business actors face today.

This space in our academic understanding raises the following intrinsically linked questions:

1. Why do companies fail to respond to climate change?
2. What are the specific barriers of companies' responses to climate change?

The first research question ensures that a holistic view of the interactions in response to climate change is developed. Subsequently, the second research question attempts to draw out an in-depth view of the barriers to respond to climate change. Taken individually, these research questions open up significant lines of enquiry, but taken as a holistic, interrelated and symbiotic mode of research, we argue that they constitute an evolution of transformative change within this emotional and complexity driven problem.

BUSINESS INTERACTIONS: PRACTICES AND CONTEXT

Introduction

At the most basic level, interaction can be described as a self-serving process that involves trade-offs between individually recognized and inter-dependent actors in order to address short and long term problems (Ford and Håkansson, 2005; Ford and Mouzas, 2013). Through teaching, learning, coercion and concession by all participants, the process of interaction allows companies to enable resources and to attain short and long term benefits (Ford and Mouzas, 2013). Although interactions appear elementary to business processes, its understanding remains limited (Ford and Håkansson, 2005). This section intends to outline the previous literature on business interaction in the light of *interdependence* and *time*. Hereby, a foundation is built for investigating barriers that impede the process of business interaction.

Interdependence and Time

The resources of any business are *interdependent* and therefore do not operate in isolation. Physical, financial, human and technological resources of one actor are related to the respective resources of other actors (Ford and Håkansson, 2005). Through interaction these

resources can be activated as counterparts to actors' own resources. Actors become more interdependent due to co-evolving resources enabled through the process of interaction. Hereby, strong relationships are built and can act as a multiplier of internal resources (ibid).

Time relates to the sequential and interrelated nature of interactions. The process of business interaction is bound to its historical context and to future expectations of all participants (Ford and Håkansson, 2005). Interactions at any one time are the outcome of previous interactions and thus, the evolution of interactions needs to be taken into account to fully understand business interactions. In business interactions over time, relationships among all participants are developed:

> The logic of business relationships is that they provide the essential means for participant actors to combine, adapt and develop their resources and activities directly with those of others, to indirectly access remote activities and respective and common issues and problems (Ford and Mouzas, 2013, p.436).

These relationships influence the business actor by defining its behavior, activating resources and activities, challenging conventional accounting practices, and by serving as prime asset (Ford and Mouzas, 2013). A set of barriers impede the development of relationships. Firstly, most relationships among businesses are solely maintained for economic reasons (Håkansson and Turnbull, 1982)[1]. Secondly, money, resources and time are required to develop beneficial relationships (Ritter and Gemünden, 2003). Hence, building relationships can be described as a process of investment over time (Mattsson, 1988; Plinke, 1989; Valla, 1986; Williamson, 1979). Moreover, regulation, cognitive deficiencies and values may act as barriers to consensus in business interactions.

Barriers to Consensus in Interactions

Previous research on barriers to consensus in interactions suggests that disagreement often occurs because of the scarcity of resources and the basic human belief of a fixed-resource pool (Veal and Mouzas, 2010; see also Bazerman *et al.*, 2000). It is recognized that climate change represents such a case, since actors are not able to enlarge the planet and its resources are limited (Hardin, 1968). In this tragedy of the commons, individuals benefit more from resource exploitation than from resource protection. This behavior will ultimately lead to an eradication of the resource (ibid). Therefore, it is argued that achieving agreements in interaction in response to climate change is fundamentally a human problem. Hence, one may conclude that a set of cognitive and behavioral deficiencies embedded in the human decision making process are the key barriers to companies' responses to climate change.

Consensus in environmental disputes relies upon the ability to overcome inherent cognitive barriers such as egoism, egocentrism, hyperbolic discounting, the undoing bias, and risk recognition. First, it is fundamental to acknowledge the self-serving nature of actors (egoism) and diverging understandings of what the common interest is (egocentrism) (Markovits, 2004; Epley *et al.*, 2006; Susskind and Weinstein, 1980). Furthermore, humans have a tendency to hyperbolically discount benefits expected in the future (Weber, 2006). Thus, climate change mitigation is a rather unattractive solution since immediate costs incur to create benefits that are discounted by the time they can be taken into account (Veal and Mouzas, 2010). This phenomenon, in turn, leads to inter-generational discounting where future generations are burdened with the problem (Bazerman and Hoffman, 1999). Additionally, cognitive deficiencies influence the risk recognition of humans, since they create a biased view of the world and often operate subconsciously (Bazerman and Hoffman,

[1] This barrier will be examined extensively in the analysis section. Hence, our focus here remains on the other barriers to consensus in climate change interaction.

1999). The problem here is that risk as feeling is the core driver of risk perception, but climate change rather triggers a significant problem with risk as thinking (Veal and Mouzas, 2010; see also Bazerman and Malhotra, 2006; Kahneman *et al.*, 1982; Loewenstein *et al.*, 2001; Weber, 2006). Therefore, people would only start to perceive climate change as a threat when examples of harm are visualized.

The behavioral decision theory sheds light into some of the barriers to resolution of environmental conflicts (e.g. framing and reference points), but will need to be extended by two interrelated contextual mechanisms as barriers to ideologically based disputes (Wade-Benzoni *et al.*, 2002). Framing and reference points refer to the effects of the way in which problems are presented upon the decision-maker (Tversky and Kahneman, 1986). A gain oriented presentation of a problem leads to risk-averse behavior; while a loss oriented presentation of a problem leads to risk-seeking behavior (Kahneman and Tversky, 1979). This has major implications for decisions guided by regulation. Once a decision is based on a regulation, this means a fundamental shift from a decision based upon absolute effectiveness to a decision based upon effectiveness relative to the regulation (Tenbrunsel *et al.*, 2000). Consequently, one may argue that regulation acts as a barrier to effective decision making. Furthermore, the traditional behavioral decision theory helps to explain the systematic ignorance of exchange opportunities (Bazerman, *et al.*, 2001). Here, it is argued that the incongruence in goals or values results in increased conflict, poorer communication, and reduced trust, less satisfaction and commitment, and negative views of other disputants (Gelfand *et al.*, 2006).

It appears that the traditional behavioral decision theory does not fully account for the sources of failures in ideologically based interaction. For example, value-driven and institutional contexts are identified as additional mechanisms that impede interactions in response to climate change (Wade-Benzoni *et al.*, 2002). Building on scholarly work on values (Bazerman *et al.*, 1999) and institution (Bazerman and Hoffman, 1999; Hoffman and Ventresca, 1999) to understand environmental disputes, more recent research considers the psychology of decision-making and the sociology of human action (Wade-Benzoni *et al.*, 2002). Hereby, recent research allows unveiling the influence of *individuals'* positions on interactions in response to climate change since:

> Individuals' positions in ideologically based interactions typically emerge from beliefs at the core of who they are – what they believe about the reality of the world, how the world behaves, and what fundamental rights people have; their notions of justice; and what they think is right and wrong (Wade-Benzoni *et al.*, 2002, p.43).

The influence of value biases as barrier to consensus in climate change interaction can only be fully understood when considering the social and institutional context in which they reside (Powell and DiMaggio, 1991; Scott, 1995). Particularly, in multi-lateral interactions a wide range of interests, objectives and values tend to complicate the conflict resolution (Wade-Benzoni *et al.*, 2002). The institutional rules, norms, and beliefs must be considered, because they provide "explanations on what is and what is not, what can be acted upon and what cannot" (ibid, p.47).

RESEARCH METHOD

An introduction to climate change

Firstly, it is important to consider some technical aspects of climate change in order to allow for a reliable investigation of interactions in response to climate change. The

Intergovernmental Panel on Climate Change (IPCC) summarizes the issue of climate change as following:

> The Earth's climate system has demonstrably changed since the pre-industrial era. Human activities have increased the atmospheric concentrations of greenhouse gases and aerosols. An increasing body of observations gives a collective picture of a warming world and other changes in the climate system (IPCC, 2001).

A broad consensus about climate change science, i.e. that it is real and man-made, exists in the research community (Veal and Mouzas, 2010). Furthermore, it is recognized that it is still feasible to stabilize CO_2 concentrations at acceptable levels (IPCC, 2014) and that the costs and risks resulting from contemporary inaction significantly exceed the costs of immediate climate change mitigation (Stern, 2006).

At the most basic level, responses to climate change can be either adaptation (responding) or mitigation (prevention). Both approaches are valid, since adaptation is necessary to handle changes that are already present and cannot be revoked, and mitigation is necessary to minimize long-term risks by stabilizing the atmospheric CO_2 levels (Stern, 2006). Additional considerations of climate change, as suggested by Veal and Mouzas (2010), are that 1) it requires collective actions in various areas embedded in the economy and everyday life of people, 2) national borders are irrelevant for atmospheric CO_2 levels and actors will have to take action although they are not fully responsible for the problem, 3) mounting a successful response is constrained to a timeframe of 20 to 50 years due to the long atmospheric life span and cumulative nature of CO_2, meaning that today's decisions can affect global climate changes for up to 50 years (IPCC, 2001), 4) it bears the risk of "losing" entire industries when taking a leadership role on combating climate change to other economic areas with no consideration of CO_2 emissions, and 5) the increasing prosperity and energy consumption of developing countries risks to render efforts of the developed world. Hereby, climate change interactions are bounded to some structural and physical constraints which are important contextual factors when investigating the barriers to consensus in climate change interactions. This study uses the complexity driven by the five areas uncovered by Veal and Mouzas (2010) as universe in which interactions are and have to be made. Particularly, we aim to cut through this complexity by understanding how players get together in the game, to work together, to negotiate, to understand, and to listen. In order to achieve this outcome we need to uncover and understand what drives these actors in this global situation. We seek to enable our understanding of the decision making within and across the network via the theoretical perspectives outlined.

The global nature and requirement of collective action to develop responses to climate change constructs a global network of stakeholders who are care about the issue. The actors in this global climate change network include governments, international governance bodies, companies, non-governmental organizations, and research institutions (GlobeScan, 2006). Although all actors have a similar ability to influence the network, it needs to be considered that:

> Governments and international governance bodies have a high level of internal interaction and influence between actors, whereas companies, non-governmental organizations, and research organizations experience within their actor groups and hence influence each other less (Veal and Mouzas, 2010, p.424).

Conflicts in these networks are inevitable and can occur at one or more levels in the network (Raiffa, 1982). In order to account for the interdependence of actors, we adopt a network view on the activities of actors, rather than seeing them as individual and unitary (Welch and

Wilkinson, 2004). It is this empirical lens that allows unveiling the barriers to consensus in climate change interactions.

Meta level perspective: Network Approach

The network approach is applied as a theoretical perspective to account for the ever increasing connectivity and interdependence in the business landscape. The network approach can be understood as the Meta level theory and ontological orientation of this study since it sees a special organizational form at the aggregate level above the individual companies. According to the network approach, this study emphasizes that business markets are not driven by individually insignificant actors, but that markets operate through complex exchange relationships amongst businesses (Easton and Araujo, 1994; Lazonick, 1991; Mouzas, 2006). These exchanges are often enabled through a process of interaction (Easton and Håkansson, 1996; Håkansson, 1982; Turnbull and Valla, 1986). Companies depend on the resources and capabilities of other actors to operate their business (Easton and Håkansson, 1996; Gnyawali and Madhavan, 2001; Håkansson and Ford, 2002). As a result markets are viewed as an interdependent array of companies involved in frequent and complex interactions with other market participants (Håkansson and Waluszewski, 2002, 2007; Ritter, 2000). We view the global climate change initiatives as being akin to this complex array of actors as depicted within the network theory literatures, but what we are interested in are the actual multi-lateral interactions which take part within this network. Here, we want to point out that the nature of this study and the design of research questions makes it inevitable to draw on insights of institutional theory (e.g. DiMaggio and Powell, 1983) and stakeholder theory (e.g. Freeman, 1984; Mitchell et al., 1997). Both theoretical perspectives have been adopted to develop this paper. However, in line with the IMP tradition this paper specifically aims to advance the network studies and therefore, we decided to keep the focus on network approach as meta level perspective.

Furthermore, this research is conducted from the perspective of a critical realist epistemology. The critical realist perspective is divided into three levels of ontological structure: the empirical, actual and real domain. Hence, the experiences and perceptions of people, all events and actions, and causal powers and mechanisms that may not be detected directly are considered (Bhaskar, 1978). Further, it sees the causality as potentially existing and emphasizes a greater awareness of the underlying causes (Easterby-Smith *et al.*, 2012). Therefore, this eclectic approach represents a comprise position between the stronger versions of positivism and constructionism.

Case study

According to Wade-Benzoni *et al.* (2002, p.53) state that "future research on institutional forces in ideologically based disputes is likely to be more fruitful if pursued in real-world conflicts". This is supported by Yin's (2003) argument that field research is the appropriate research method to investigate a phenomenon in its context. Investigating the behavior of actors in networks of exchange relationships to collectively address climate change can be most suitably achieved through the case study research method (George and Bennett, 2005; Halinen and Törnroos, 2005; Perry, 1998; Yin, 2003). Hence, we engaged with relevant actors in the global climate change network. More specifically, we attended a climate change panel discussion and conducted semi structured interviews with stakeholders who care about climate change. This included representatives of a municipality (Economic Development Council, Climate Change Protection Office, Climate Protection Agency, Urban Development and Planning) and representatives of two companies (Environmental Officer and Head of

Building and Property Management). Through this process of research engagement, we enabled the identification of processes and institutions that would have remained undiscovered in experiment based decision research.

Data collection process

The data was collected between January and April 2015 through an empirical investigation of a Climate Protection Network (CPN) in Germany which consists of three interconnected networks. Actors within these networks conduct climate change related activities and all actors collaborate within their individual networks (Figure 1 illustrates the actors' interconnectedness within the CPN). The empirical evidence was collected through a panel discussion (to provide a general overview of the interactions) and five semi-structured interviews with key actors (to unveil the reasons for actors' behavior) within each network have been conducted. Questions as part of the semi-structured interviews broadly included: 1) What are the climate protection activities conducted by your institution/company; 2) With whom do you interact and what is the context of these interactions?; 3) From your perspective, what are the interests and objectives of your counterparts?; 4) Do you remember any cases of disagreements during these interactions, if yes why and how did you overcome/solve them?. In line with the nature of semi-structured interviews, these questions aimed to cover some general areas of interests for the researchers and were slightly different in all interviews. The data sources have been logged in a research diary, and a library of case documents has been created to capture the relevant material (Veal and Mouzas, 2011). The data collected to date aims to present a brief view of what the reasons for the failure of interaction in response to climate change are. Hence, we intend to collect further data over the next year to support our findings with stronger empirical evidence. Here, we aim to move beyond the Energy Efficiency Network (EEN) and Climate Protection Network (CPN) within the metropolitan area that our study is currently based on. The future data collection will involve additional in-depth interviews with actors across different sectors to gain a holistic view of the barriers of business interactions in response to climate change.

Data analysis process

The analysis of the evidence involved a process of confrontation between empirical observations and theoretical concepts (Ragin and Becker, 1992; Yin, 2003). More specifically, the evidence has been examined, categorized, tabulated, tested, or otherwise recombined to draw robust empirical conclusions (Yin, 2003). In its early stages, the data analysis involved interplay between observations logged in the research diary and the conceptual framework, allowing iterative changes to the cases (Yin, 2003). To supplement the research diary, a case study database that enables the handling of multiple sources of evidence has been employed (Bennet and Elman, 2006; Numamgami, 1998). Moreover, Håkansson and Johanson's (1992) ARA Model is applied as a conceptual framework to unveil the process and outcomes of interaction. Furthermore, an analytical rather than statistical logic is applied to generalize the findings (Easton, 2010). This is in line with the aim to move beyond econometric analysis, in order to capture the interaction processes, since these interaction processes require description and explanation (Veal and Mouzas, 2012). It is this generalization at the level of mechanisms that allows the contribution of case study research to be applied to other situations where the same mechanisms may be operating (Easton, 2010).

THE CLIMATE PROTECTION NETWORK (CPN)

This case study is based on the interactions of two anonymized companies (Manufacturer Alpha and Manufacturer Beta) and a likewise anonymized municipality in Germany within the multiple layers of the CPN. We first describe Manufacturer Alpha and Beta as well as the Municipality to then outline their interconnectedness within the CPN.

A View of the Business Networks

Manufacturer Alpha is a high-tech manufacturing company, has their headquarters in France, has multiple manufacturing bases worldwide and markets globally. However, their specific industry sector is withheld for confidentiality reasons.

Manufacturer Beta is a US American manufacturing company that produces and serves markets globally. Further information on this company remains confidential.

The municipality is a German city located within a metropolitan area in the south of Germany which has a population of 2,400,000. A survey of approximately 540 companies in the municipality has shown that the awareness of the problems surrounding climate change is present. Only 22% of the companies have an environmental management system (EMS) or a strategic approach, like an environmental certification, in place. The municipality has set itself the goal of reducing CO_2 emissions by 40% by 2020 on the basis of 1990. The CPN is one measure to achieve this goal since it promotes a collective approach to respond to climate change. Although the municipality itself has not asked to be anonymized, an in-depth explanation would reveal the identities of Manufacturer Alpha and Manufacturer Beta. Hence, further details on the municipality are withheld.

Figure 1 below details the connectedness of the actors within the CPN. Next we describe each network within the CPN and outline the relationships within this network.

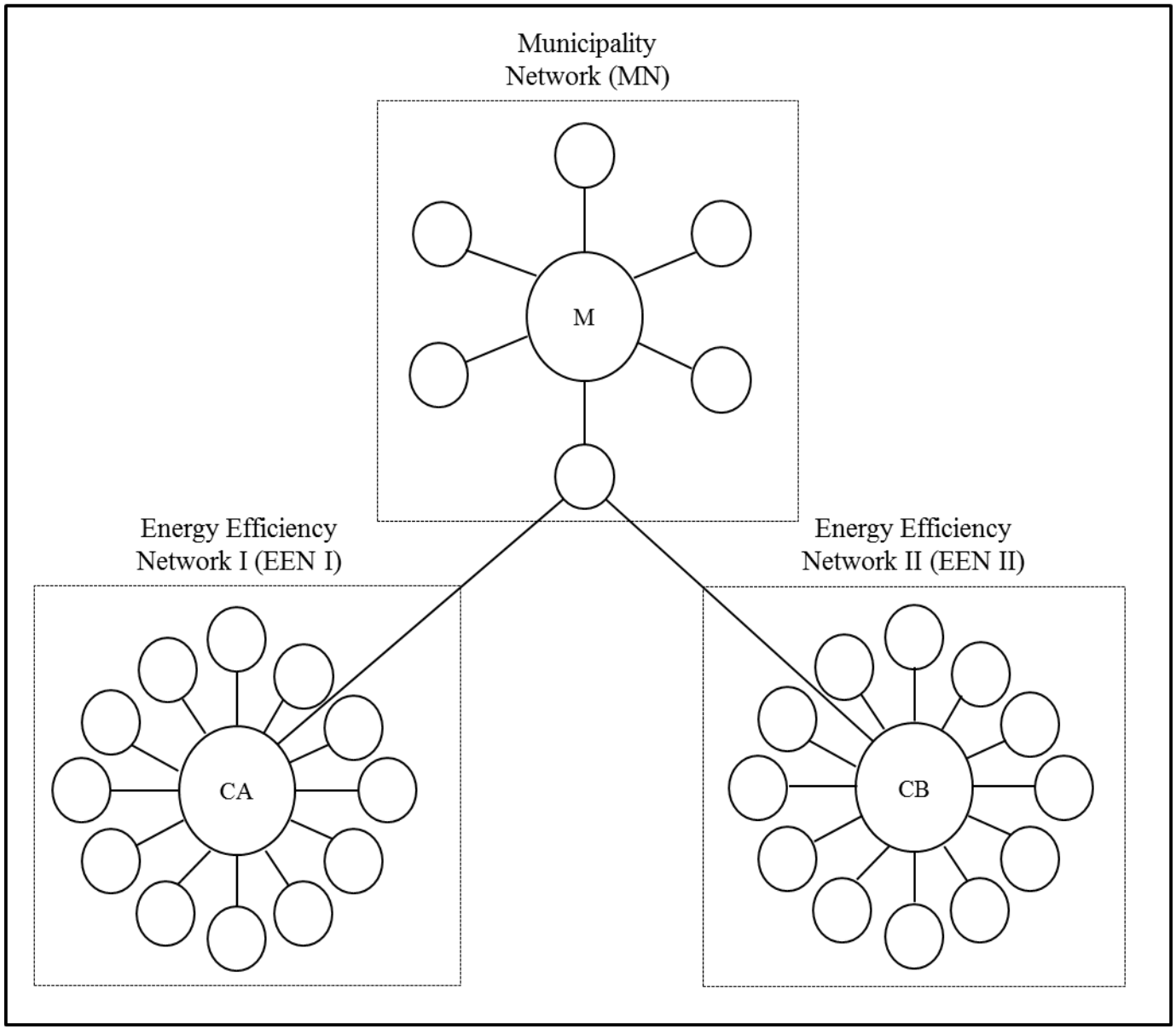

Figure 1: Climate Protection Network (CPN)

The Climate Protection Network (CPN) consists of the Municipality Network (MN), Energy Efficiency Network I (EEN I) and Energy Efficiency Network II (EEN II). Although EEN I and EEN II consist of different companies, similar relationships and dynamics are operating. Thus, we are not going to make a distinction between these two networks. They are to illustrate the increasing complexity in case further companies (and therefore business networks) are accepted to join the CPN.

The first key actors within the CPN are Manufacturer Alpha (CA) and Manufacturer Beta (CB). Both companies are embedded in networks that indirectly influence the CPN. EEN I and the EEN II are networks of companies established by the Environmental Competence Center in 2011 to enable knowledge exchange about energy efficiency measures, projects and best practices. In this network twelve companies are exchanging their experiences with climate protection measures, but then move on to develop individual energy efficiency activities and strategies. Here, all actors within the network possess the freedom to give input in the network and to conduct projects based on the resources they are willing to provide. All actors take their role within the network seriously and are open to share their experiences. The implementation of the measures is supported by an independent advisory bureau.

The second key actor within the CPN is the Municipality (M). Its interactions are executed by the mayor's office, the economic development council, the climate protection agency, the climate protection office, the urban development and planning office as well as an external advisor from another municipality which makes up the Municipality Network (MN). Actors of the MN interact in a mutual dialogue to develop the municipalities' climate protection strategy and measures. They are motivated by the joint goal of achieving the Municipalities' climate protection doctrine and CO_2 reduction scenario for 2020. Within the network all actors have different roles. The climate protection office is responsible for promoting climate protection projects and engages all actors within the municipality to jointly reduce CO_2 emissions. The urban development and planning office interacts with the mayor's office to develop an urban landscape that promotes energy efficient buildings and ensures an air stream through the city that enables an acceptable climate within the city. The external advisor from another municipality provides examples of alternative approaches that have been implemented by their municipality. The climate protection agency is a measure of the municipality to provide free and independent advice for citizens, the mayor's office, companies and all other actors within the municipality regarding climate protection. Lastly, the economic development council promotes the climate protection and outlines possibilities for governmental grants and support to move towards a low carbon municipality.

The actors of CPN do not operate in isolation. Each key actor is embedded in its own network that influences the behavior within the CPN and may even lead to network effects. The key actors within the network are obliged to collectively respond to climate change by not only talking about the topic, but also by demonstrably reducing CO_2 emissions and by conducting joint climate protection measures. All members of the CPN are bound to provide an annual CO_2 balance sheet to the municipality's climate protection office. This is manifested in a contract signed by the senior mayor and by general managers of both companies. All actors involved in the CPN engage in give-and-take exchange relationships with other actors in the network to enable a collective approach to respond to climate change. The CPN can be described as a measure to achieve the municipalities' climate protection doctrine and CO_2 reduction scenario for 2020 by building a network of partners that communicate and exchange ideas to jointly solve the problem. Here, the climate protection office is responsible for promoting climate protection projects within the network and to engage all actors within the CPN. Through knowledge exchange and utilization of synergies the network promotes

self-commitment of multi-national companies at the local level. Furthermore, a fair competition and mutual encouragement of climate protection measures is apparent between Manufacturer Alpha (CA) and Manufacturer Beta (CB).

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As we can see, the CPN is driven by a complex set of interactions due to the diverse, embedded, and interconnected groupings. Even at the individual level the EEN I, EEN II and MN as networks before connecting and working with the other networks are showing a high level of complexity.

ANALYSIS OF THE CASE

Introduction

We now analyze the case study based on the theoretical framework built in the literature review. The theoretical framework (Figure 2) consists of climate change science on the outer layer and contextual frame to analyze the data. The interaction theory and the logic of business relationships built the broader intellectual basis necessary to understand responses to climate change. Here, particularly Håkansson and Johanson's (1992) ARA Model is applied to unveil the process and outcomes of interaction. According to the ARA Model the outcomes of interactions can be described through actor bonds, activity links and resource ties between actors (Håkansson and Snehota, 1995). *Actor bonds* relate to interpersonal relationships between actors and the strength of actors bonds depends on 1) how actors see, know and feel close to each other; 2) how they trust, appreciate and influence each other and become mutually committed (Ford *et al.*, 2008; see also Wilson and Jantrania, 1994; Wilkinson and Young, 1994; Huemer, 1998). Depending on the levels of these attributes, bonds between the actors will be weak/strong and be unable/able to influence the decisions of their counterparts (Ford *et al.*, 2008). Moreover, actors appear to be an important factor when it comes to learning and teaching in relationships (Dahlquist, 1998; Håkansson and Johanson, 2001). *Activity links* relate to the integration and co-ordination of activities (e.g. production, logistics, administration, deliveries, information handling) between actors (Ford *et al.*, 2008). These more or less integrated and linked activities may lead to systematically similar and tightly linked behavior of companies (Richardson, 1972, Dubois, 1998, Torvatn, 1996). Depending on the strength, these links can have positive economic effects on the actors

involved (Ford *et al.*, 2008). *Resource ties* relate to "how the two actors' resources may become more or less adapted and more or less mutually tied together as their interaction develops. Specific mutual adaptations may concern tangible resources such as physical items of plant or equipment, but may also include intangible resources such as knowledge" (Ford *et al.*, 2008). These resource ties are developed over time when actors adapt their resources (Hallen *et al.*, 1991).

The final layer of the theoretical framework for analyzing the case relates to human deficiencies. This refers to the argument that achieving agreements in interaction in response to climate change is fundamentally a human problem. Hence, behavioral decision theory is applied to analyze a set of cognitive and behavioral deficiencies embedded in the human decision making process.

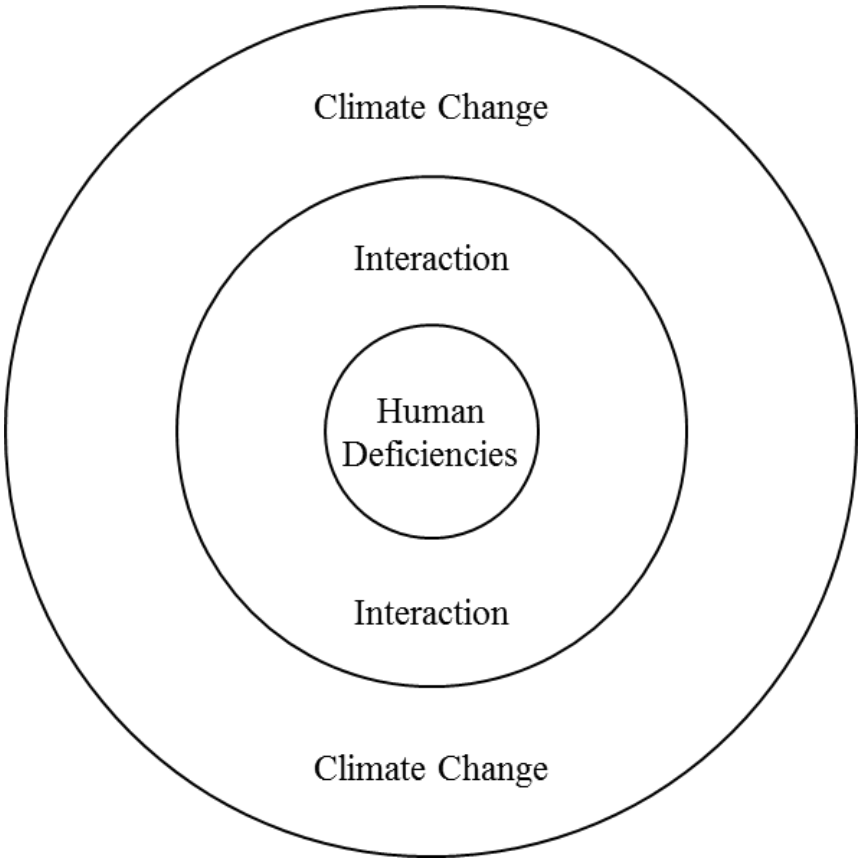

Figure 2: Theoretical Framework

Key Actors' Interest in Joining the CPN

We examine why companies fail to respond to climate change by investigating the barriers to collective climate protection measures. To achieve this aim it is important to review the key actor's interests in joining the CPN. We summarized the interests of all actors in Table 1 based on statements made by actors within the CPN.

Table 1: Key Actors' Interests in the CPN

Mayor's Office ▪ to exchange knowledge about climate change protection measures at the local level ▪ to visualise role models within the municipality to promote resource conservation amongst all actors ▪ to achieve the CO_2 reduction goals for 2020 ▪ to develop an image of a climate protective municipality ▪ to mobilise companies to get involved in climate protection and to sensitise companies for the climate protection goals of the municipality	*Economic Development Department* ▪ to promote the strategic approach and instruments available to protect the climate by illustrating the cost efficiency of most measures ▪ to create awareness about the climate protection office (state level entity) and the possibilities for grants ▪ to bring companies with diverging interests and backgrounds together to develop joint solutions for climate protection
Climate Protection Office ▪ to achieve the climate protection doctrine and CO_2 reduction scenario for 2020 ▪ to provide access to financial support through governmental funds that are only available to municipalities	*Climate Protection Agency* ▪ to build a network with partners that jointly find responses to climate change, to communicate and exchange ideas and to solve problem together ▪ to multiply the exchange opportunities since every actor already has a network which the others now get access to
Manufacturer Alpha ▪ to exchange about which climate protection measure provides the biggest cost savings in the shortest time ▪ to promote assistance measures offered by the municipality for the whole city and not only for a specific company ▪ to develop a positive image within the municipality ▪ to gain locational advantages due to close interaction with politics	*Manufacturer Beta* ▪ to use the CPN as a driver for economic success ▪ to increase efficiency of specific climate protection measures through interaction within the network ▪ to exchange knowledge about which climate protection measure provides the biggest cost savings in the shortest time ▪ to promote technology transfer with partner companies ▪ to develop a positive image within the municipality ▪ to gain locational advantages due to close interaction with politics

In the following section we make several references to the panel discussion and to the in-depth interviews to support our arguments. The case data includes the following actors (names are changed):

Amelia (Panel Discussion): Mayor at Municipality

Oliver (Panel Discussion): Environmental Officer at Manufacturer Beta

Olivia (Panel Discussion): Head of Economic Development Council at Municipality

Sophie (Interview I): Head of Climate Protection Agency at Municipality

Emily (Panel Discussion & Interview II): External Advisor at Municipality

Jessica (Interview III): Head of Climate Protection Office at Municipality

Harry (Interview IV): Head of Building and Property Management at Manufacturer Alpha

Jack (Interview V): Head of Urban Development and Planning Office at Municipality

The Multiplicity of Interests as Barrier to Climate Protection Measures

All actors within the CPN have joined the network based on diverging interests. As illustrated in Table 1, each actor is associated with a set of goals that can be similar or different to other actors. As the data below suggests, it is the uncertainty about appropriate responses to climate change and the self-serving nature of actors with regard to cost savings, image improvements or the protection of resources that drives the process of interaction within, and across the divergent actors within the network:

Amelia: "A recent survey of 540 companies within the municipality has shown that 90% of companies say that climate change is important. […] Yet, only 22% have specific measures in place." [Panel Discussion, p.2, lines 12-21]

Harry: "Since we are a producing company, we are always looking for the additional € to save. So, it is not just climate change that drives us, but also the topic of cost savings through energy efficiency." [Interview IV, p.1, lines 45-48]

Emily: "First and foremost, responses to climate change are motivated by cost savings and then by customer demands." [Interview II, p.1, lines 43-45]

Harry: "Image plays a role as well. That is for sure. You can see that on our website. We have a corporate culture in which sustainability and environmental protection has a central function." [Interview IV, p.2, lines 1-3]

Oliver: "In our case resource protection is certainly also driven by our interest in the long-term existence of farming since we sell products necessary for harvesting." [Panel Discussion, p.3, lines 51-53]

The key motivation of Manufacturer Alpha and Manufacturer Beta is to exchange knowledge about climate protection measures that promote economic success. Here, the focus lays in the development of climate protection measures with the biggest cost savings in the shortest time. Business interaction in response to climate change can be described as a self-serving process of individually recognized and independent actors in order to reduce costs, gain image advantages, be in line with consumer demands and comply with governmental regulations in the short term. Here, the key difference to definitions of business interactions by Ford and Håkansson (2005) or Ford and Mouzas (2013) is that actors in climate change interactions rather focus on short term benefits rather than solving long term problems. Interactions to

develop climate protection measures may fail, because of the immediate costs of most measures that contribute to solving the long term issue of climate change. Therefore, actors within the CPN tend to focus on low-hanging fruits with immediate cost savings rather than tackling the climate change challenge where it might be most beneficial for the environment.

Weak Actor Bonds as Barrier to Climate Protection Measures

The case data suggests that weak bonds among actors exist. Although the two manufacturers do not find themselves competing at the product level, they tend to compete in a mutually respectful manner about who is the most environmentally responsible company. The key motivation for measures remains at reducing costs and improving one's own image. Here, one may argue that this inconsistent behavior fosters distrust and thus, impedes mutual commitment to climate protection efforts.

> *Harry: "We do compete to win the price of the most environmentally friendly company within the region, but we do this in a fair manner. […] So, I would not say it is real competition, but rather mutual encouragement." [Interview IV, p.5, lines 10-23]*

Furthermore, distrust is not only apparent between the two manufacturers, but also in the manufacturer-municipality relationship.

> *Emily: "The main obstacle is the barrier between companies and the municipality. When we, as the municipality, contacted the companies, they were always concerned about what the intentions of the city are and that we may want to impose additional requirements. It took us quite a while to convince them that we aim for a mutually respectful dialogue and that we do not want to impose additional requirements." [Panel Discussion, p.9, lines 48-52]*

Hence, one may conclude that the low levels of trust among and the weak bonds of all actors within the network lead to an inability of influencing the decisions of others in the network. This is supported by the feeling of independency of actors when developing climate protection measures.

> *Harry: "We are definitely not dependent on the municipality or anyone in the sense that we cannot implement cost-saving or energy efficiency measures. We are certainly not and we do not feel that we are dependent on the municipality." [Interview IV, p.3, lines 33-35]*

> *Emily: "I do not think that the companies depend on each other. Developing cross-company solutions is very difficult. The easiest solutions are the internal approaches and there are many set screws. They will not save the world, but if everybody contributes a little bit then we already made a big step forward." [Interview IV, p.2-3, lines 51-2]*

Although the independency of actors may not hinder the development of individual measures in response to climate change, it may contribute to weaker interpersonal relationships within the network. Consequently, companies may fail to interact in response to climate change.

Human Deficiencies as Barrier to Climate Protection Measures

This relates to the argument that achieving agreements in interaction in response to climate change is fundamentally a human problem. Hence, behavioral decision theory is applied to analyze a set of cognitive and behavioral deficiencies embedded in the human decision making process. The decision making of actors within the CPN appears to be influenced by framing and reference points. The interviewees were presented a scenario[2] in which they had to decide between two projects in response to climate change. Both had different financial benefits/losses. They faced the following pair of concurrent decisions:

[2] The framing and reference point scenario is based on Tversky and Kahneman (1986)

Scenario: Imagine that you have to decide between two projects in response to climate change. Both have different financial benefits/losses. You face the following pair of concurrent decisions. First examine both decisions, and then indicate the options you prefer.

Decision I: Project A) A sure gain of 250€; or Project B) A 25% chance to gain 1000€ and a 75% chance to gain nothing.

Decision II: Project C) A sure loss of 750€; or Project D) A 75% chance to lose 1000€ and a 25% chance to lose nothing.

The scenario has been designed to identify risk averse and risk seeking behavior of actors within the CPN. All interviewees said that they would pick Project A in Decision I and Project D in Decision II. This is in line with the findings of Fishburn and Kochenberger (1979), Kahneman and Tversky (1979) as well as Hershey and Shoemaker (1980). Hence, we suggest that choices involving gains in climate change protection measures are usually risk averse and choices involving losses are often risk seeking. Consequently, this study claims that the presentation of a climate change related problem upon the decision-maker may have an effect on the decision made by the decision-maker. This has major implications for decisions guided by regulation. Particularly, the decision-making within the CPN could be influenced to increase the likelihood of deciding for the most climate beneficial projects when the problems are framed and referenced to ideal points.

CONCLUSION

This study was conducted to explore failure of business interaction in response to climate change. Our study has identified a set of barriers to these business interactions that may lead to failure when crafting responses to climate change.

Companies appear to focus more on climate protection projects that offer the biggest costs savings in the shortest time. Business interactions in response to climate change often result in specific measures which are typically energy efficiency projects at the individual level. One may conclude that companies take climate protection just as a means to save costs through energy efficiency measures, to gain image advantages, to protect resources valuable for the business or to comply with governmental regulations. The present study demonstrates that actors' behavior is self-serving in nature. Hence, contributing to solve the actual climate change problem is only a side effect. Although it is positive that companies conduct climate protection measures, its effectiveness in terms of climate protection might be improved when the environment is at the center of the decision and instead of self-interests. Mostly, the financially beneficial driven decision making leads to climate protection measures that might not be best for the environment, but might be best for the individual company. One may suggest from this line of thought, that a fundamental shift from financially driven climate protection measures towards environmentally driven climate protections measures is required.

The barriers to responses are wide ranging. However, in the particular context of business networks, it appears logical that the more actors are coerced to take part in climate protection measures, the more difficult it is to achieve a broad consensus. Here, the incongruence in goals and multiplicity of interests combined with the self-serving nature of actors represents the biggest barrier. In addition, the multiplicity and incongruence in goals may amplify the reduced trust within the network. Furthermore, this study suggests that companies may fail to respond to climate change, because of weak bonds among the actors in networks, low levels of trust and an inability to influence the decisions of others in the network. This may also be attributed to business managers' misguided perception that they are complete to craft their

own strategy (Ford and Mouzas, 2008). Although this does not hinder individual measures in response to climate change, it may contribute to weaker interpersonal relationships within the network which, in turn, could lead to failure to respond to climate change.

Furthermore, we have identified that human deficiencies in the decision-making process may impede responses to climate change. Here, this study shows that the presentation of a climate change related problem upon the decision-maker may have an effect on the decision made. Choices involving gains in climate change protection measures are usually risk averse and choices involving losses are often risk seeking. Hence, if a problem is presented in the right frame, then one might be able to influence the decisions away from projects that are most financially beneficial and more towards projects that are best for the environment.

Further Research

Further research is needed in conducting longitudinal studies of business interaction in response to climate change. We need more insights about how business interaction changes over time and what enablers prove to be effective. Additional research could also focus more on cognitive and behavioral barriers that impede climate protection measures *both* at the individual and the collective level. Moreover, studies could try to contribute further to the framing of problems to influence decision making in favor of the environment. Lastly, we demonstrate a case where most actors are risk averse and actor bonds are weakened. We suggest that it may be a promising stream of research to investigate the relationships between weak actor bonds and the notion of risk.

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