HOW DO SOCIAL RELATIONSHIPS, AMONGST OTHER DIVERSE FACTORS, SHAPE COMMUNITY CHANGE INITIATIVES IN THE CONTEXT OF CLIMATE CHANGE?

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Abstract

Guiding deliberate change in the context of climate change is a complex social process, shaped by multiple social factors over time, involving different actors, preferences and perspectives. One factor widely recognised as important is social relationships. However, understandings about how to navigate and work through social relationships to shape collective change processes are currently limited. This thesis examines how social relationships, amongst diverse other factors, shapes community change in the context of climate change. Through a series of stand-alone chapters drawing on a range of qualitative methods, overall four key insights are provided on how social relationships interact with community change initiatives in the context of climate change. These are: (1) quality of relationships; (2) multiple intersecting normative factors; (3) how particular ideas and initiatives are interpreted; and (4) the intentions guiding collective change processes as a whole.

This shows that social relationships are much more than structural patterns of connections between actors. They entail qualitatively different interactive opportunity spaces shaped by multiple social identities and social norms. These factors not only guide why and how relationships develop but also how relationships shape interpretations and any actions that unfold. Social relationships are clearly important within community initiatives. Yet, they do not emerge through a static dynamic and their nature shifts over time, resulting also in changes in the way they influence how actors interpret and engage with different situations and initiatives, and then what emerges through and from these complex social processes. Actors seeking to strategically work through relationships will need nuanced understandings of what social relationships entail and which recognise the multiple different normative dimensions involved in shaping how they develop. This nuance is critical for working with complex social processes more widely and for shaping opportunities for the emergence of meaningful change over time.

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Declaration

I declare that this thesis is a presentation of original work and I am the sole author of the overall thesis. Some of the chapters have been submitted for publication with co-authors. This work has not previously been presented for an award at this, or any other, University. All sources are acknowledged as references.

Chapters 1 & 6 - I wrote these chapters with supervisory support from **Ioan Fazey** (PhD supervisor), who provided guidance on the structure and editing of text.

*Chapter 5***:** I designed and undertook this research, collecting and analysing all data and writing 90% of this chapter. Other contributions came from; **Professor Ioan Fazey** (PhD supervisor), who contributed intellectually and editing contributions to the development of later drafts of this chapter.

Co-authorship contributions for each chapter submitted as a paper (*chapters 2 – 4*) are outlined below (see appendix 2 for statements of contribution).

Chapter 2: I designed and undertook this research, gathering and analysing all data and writing 90% of this chapter. Other contributions came from the following; **Professor Ioan Fazey** (PhD supervisor) who provided guidance on the aspects of the research design (refining research questions and analytical approach), intellectual input (on the concept of resilience) and editing of multiple drafts. **Professor Helen Ross** (School of Agriculture and Food Sciences, The University of Queensland, Australia) provided intellectual guidance for the later stages of the analytical process and editing of drafts of this chapter. **Dr Melissa Bedinger** (School of Energy, Geoscience, Infrastructure and Society, Heriot-Watt University, UK) helped edit later drafts of this chapter. **Dr Fiona Smith** (Department of Geography, University of Dundee) and **Dr Katrin Prager** (School of Geosciences, University of Aberdeen) both provided early supervisory input with guidance on the structure and content of initial drafts of this chapter. **Ms Kerry McClymont and Mr David Morrison** (PhD candidates, School of Energy, Geoscience, Infrastructure and Society, Heriot-Watt University, UK) both helped edit early drafts of this chapter.

Chapter 3: I designed and undertook all of the data collection and analysis and 90% of the write up of this chapter. **Professor Ioan Fazey** (PhD supervisor) contributed supervisory guidance at key points during analysis, the structure of this chapter and editing input. **Dr Richard Friend** (Department of Geography and Environment, University of York) provided advice on and edited a late draft of this chapter.

Chapter 4: This study was designed and undertaken by myself. I collected and analysed all data and wrote 90% of this chapter. Other contribution to this research was provided by the following; **Professor Ioan Fazey** (PhD supervisor) who provided guidance supervisory guidance and helped refine research questions and intellectual and editing input on numerous drafts. **Dr Guido Caniglia** (Konrad Lorenz Institute for Evolution and Cognition Research, Austria) contributed by guiding me towards scientific literature to explore different disciplinary perspectives and editing earlier drafts of this chapter. **Mr James Anthony and Ms Lynsey Penny** (Gate Church Carbon Saving Project, Dundee, Scotland) were instrumental in creating the opportunity to engage and observe the development of the community fridge in Dundee, openly sharing insights and validating initial findings.

Summary

There is an urgent need to engage with climate change challenges to bring about meaningful change to shift to more sustainable pathways and improve resilience. Guiding deliberate change in the context of climate change is a complex social process, shaped directly and indirectly by multiple social factors over time, involving different actors, preferences and perspectives. One factor widely recognised as important for shaping these processes is social relationships. However, understandings about how to navigate and work through social relationships to shape collective change processes are currently limited.

This PhD thesis aims to examine how social relationships, amongst diverse other factors, shapes community change in the context of climate change. It addresses this through a series of stand-alone chapters developed as research papers drawing on a range of qualitative methods to examine the nature and role of social relationships within different community change initiatives and social and socio-political settings.

Chapter 1 provides a brief introduction to the core research challenge, the questions to be addressed and the overall approach taken across the thesis as a whole. *Chapter 2* is a qualitative meta-synthesis of past studies on social capital and resilience examining conceptual and empirical understandings of the role of social capital for enhancing resilience. Among the many findings, four areas for future research are identified to provide a more nuanced understanding of how social capital and social relationships shape collective change processes for more proactive approaches to engage with climate change challenges.

Chapter 3 addresses the question of the qualities of social relationships and their role within community change initiatives in the context of climate change. This study involves 37 semi-structured interviews combined with visual methods with practitioners from 22 different community-based initiatives with different approaches for engaging with challenges of varying complexity. Core findings show the importance of relationship qualities for understanding and working through social relationships to shape how community initiatives unfold. Enhancing the role of social relationships to support community initiatives therefore requires actively shaping relationship qualities over time.

Chapter 4 examines the social dynamics of community climate action initiatives to address the question of how social relationships interact with other social factors in these complex processes to support opportunities for meaningful change. This involves an in-depth case study of the establishment of a community fridge (to reduce food waste as a contributor to climate emissions), with participant observation over 10 months and 23 semi-structured interviews with 15 community-based actors involved in this process. The core findings include how multiple normative factors interacted in different ways across scales to shape the role of social relationships and how key relationships changed

through the process. In combination, these social factors can shape processes in ways that increase tension, but can also create regenerative processes that bring actors together and strengthens key relationships for the future. Guiding collective change processes to engage with complex climate change challenges, therefore, involves developing and steering initiatives to work regeneratively through social relationships.

Chapter 5 addresses the question of how initiatives driven from within policy communities could enhance synergistic practice to enable policy environments to support engagement with complex climate change challenges. This examines the opportunities and challenges for bringing this about in practice between three national policy areas in Scotland (community (emergency) resilience, climate change and community empowerment), using semi-structured interviews and analysis of key policy documents. The findings identity social relationships as a key entry point alongside many other opportunities. However, many challenges that may hinder this in practice relate to less tangible, underlying dimensions within policy processes. The role of social relationships within policy communities could be enhanced to connect with other opportunity areas to help shape more synergistic policy practice, but this would require policy change initiatives with clear synergistic intentions that actively engage with the complexity of the socio-environmental challenges and policy environments.

Finally, *chapter 6* provides a synthesis of the different studies' empirical findings, drawing on these to address the primary research question. This underlines four key insights for a more nuanced understanding of how social relationships interact with community change initiatives in the context of climate change. Therefore this thesis contributes knowledge on how social relationships and their role within these dynamic social processes are understood. From this, three implications for practitioners are identified to guide relationship-based approaches for engaging with complex climate change challenges across settings.

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Chapter 1

1. Introduction

1.1. Background

Climate change is a complex socio-environmental challenge, interacting with different dimensions of human experience and interconnecting with other societal challenges in multiple ways (Leichenko and O'Brien, 2019). Such complexity in part arises from the highly interconnected nature of problems which occur across spatial scales and in unevenly distributed ways over time. This leads to diverse consequences, costs and benefits when interventions are introduced (Eriksen et al., 2011) and the need for working across multiple institutions, actors, perspectives, preferences and values (Ingold et al., 2019, Head, 2014). With such challenges, higher order goals are often ambiguous with no one single solution or end point, and decision-making is often highly contested (Voss et al., 2007). Traditional top down, managerial, technical approaches that have often guided thinking and acting to respond to collective problems are thus ineffective (Nightingale et al., 2019, McMillan and Overall, 2016). Instead, more diverse creative approaches and strategies are needed to deliberately steer collective change towards sustainable pathways and resilient futures (Scoones et al., 2020, Voss and Bornemann, 2011, Meadowcroft, 2007).

One of the key aspects affecting how effective collective change processes occur are social relationships (Berkes and Ross, 2013, Moore and Westley, 2011). Whilst often defined in general terms within climate change studies as connections between individuals (e.g. Stough et al., 2017), social relationships involve qualitatively different dyadic patterns of interaction, that create opportunities for exchange and meaning making (Francesca et al., 2020, Bernhard, 2018, Ferris et al., 2009) and involve psychological, behavioural and contextual dimensions (Butts, 2008). Social relationships are key to enhancing connectivity within and between particular action settings (Ingold et al., 2019) and for supporting meaningful change (Westley et al., 2013). This includes the way social relationships affect and shape community level initiatives associated with climate change. In these contexts, there have been diverse conceptual and empirical approaches for examining social relationships (Laycock and Mitchell, 2019, Smith et al., 2012a, Cox and Perry, 2011, Pelling et al., 2008, Janssen et al., 2006, Newman and Dale, 2005, Adger, 2003). Yet studies of social relationships in these contexts have also been critiqued for taking simplistic understandings of what constitute social relationships (Rockenbauch et al., 2019); failing to take into account how they operate across scales and time (MacGillivray, 2018, Colclough

and Sitaraman, 2005); and for examining relationships as a snapshot, leading to understandings of what they are but providing limited insight about what they could or might need to be, so as to inform the practice of working with complexity and change (Rockenbauch and Sakdapolrak, 2017).

Furthermore, increasingly there are calls for better understandings about how different types of change unfold and across scales (Angheloiu and Tennant, 2020, Fazey et al., 2018c, Waddell, 2016) and the interplay between different social factors involved in shaping different actions and outcomes (Wilson et al., 2020). Whilst explicit process-based perspectives are important to understand change (Mancilla García et al., 2020, Hedelin, 2019, Köhler et al., 2019), there is also an urgent need to understand the practical means of navigating and creatively engaging with the complexities of these social processes if meaningful change is to be achieved (Fazey et al., 2018c). Examining the interplay between social relationships and social change in the context of complex challenges can help develop more nuanced understandings about how to work with social relationships in practice to engage with complex challenges such as climate change.

1.2. Aims and objectives

The overall aim of this thesis is to understand how social relationships, amongst other factors, shape community change in the context of complex challenges such as climate change with the goal of informing how community initiatives might be improved in practice. The focus is on examining the nature and role of social relationships in community change initiatives to advance understandings about how to work through social relationships to better engage with complex challenges, including climate change.

To address the aim the thesis examines four specific questions;

1. What do past studies tell us about how social capital enhances resilience? (*chapter 2*)
2. How does the quality of social relationships influence community change initiatives? (*chapter 3)*
3. How do social relationships interact with other complex dynamics to help bring about meaningful change within communities? (*chapter 4*)
4. How can synergistic enabling environments (e.g. policy environments) be created for generating more effective outcomes in the context of complex challenges? (*chapter 5*)

1.3. Approach

This broad qualitative, inductive methodological approach was informed by a complexity ontology. This views the nature of reality as emerging through non-linear interactions between different elements

which interconnect in multiple ways over temporal and spatial scales to from dynamic and potentially recursive processes that shape human experience (Byrne and Callaghan, 2014). The epistemological approach was then taken to be broadly interpretivist. This recognises the subjective nature of social action to guide how we develop understandings about social phenomena (Bryman, 2016a). To gain such scientific insights, research processes therefore need to carefully examine multiple intersubjective interpretations of social phenomena embodied in the language and actions of social actors, and in ways that take into account both human agency and culture (Moses and Knutsen, 2012, McLaughlin and Dietz, 2008, Schwandt, 1994). Assumptions of the role of the research as detached and objective from the system under study were rejected, instead the researcher was embedded within the study context where feasible, e.g. as an initiative volunteer or policy intern. A flexible approach was adopted with the researcher shifting between roles (e.g. reflective practitioner, reflexive researcher, facilitator), creating opportunities to enhance sharing and understanding as the process progressed (Fazey et al., 2018c).

While precise methods used to address each question in each chapter were different (e.g. semi-structured interviews, visual methods, participant observation) they all encompassed this broad inductive and qualitative approach. This qualitative approach enabled the inclusion of multiple perspectives of actors embedded within and engaging with real world problems whilst recognising that some dimensions of their individual experiences may be difficult to articulate and thus share in the research processes (Creswell, 2009). An inductive research strategy is not concerned with testing theory and hypothesis, instead it involves being open to diverse interpretations within the data, examining patterns to establish new generalised insights (Blaikie, 2010). This requires an iterative and reflexive research process to move from exploring and developing descriptive accounts to more abstract, empirically grounded understandings for addressing research questions (Urquhart, 2013). This was a central dimensions throughout this PhD research processes. Within this multiple analytical methods were also used to help explore the data in different ways (e.g. memo writing, visual mapping and framework development) with a focus on developing scientific and practical insights relevant for engaging with climate change as the process developed. Ethical approval was gained from the school of social sciences and humanities research ethics committee at the University of Dundee (reference SRECPHD-019) and ethical practice (e.g. informed consent) was followed throughout the research process.

1.4. Structure of thesis

Chapter 2 addresses the research question: What do past studies tell us about how social capital enhances resilience? This involved a qualitative synthesis of existing studies on social capital and resilience and examined different conceptual and empirical understandings of how social capital enhances resilience. This aimed to provide an indicative account of what the literature overall tells us

about social capital and resilience building to identify research gaps that currently limit understanding of how social capital shapes community change processes. Three key findings were that: (1) the way social relationships are framed and studied is often simplistic, with limited attention to how the nature and qualities of the relationships shape community resilience and change initiatives (explored in *chapter 3*); (2) that there has been limited understanding of how social capital and social relationships interact with diverse factors to shape initiatives (explored in *chapter 4*); and (3) that a top-down approach within policy environments has often been applied to understand the role of policy communities in working with social capital for enhancing resilience, with limited attention to alternative enabling approaches within policy communities (explored in *chapter 5*).

Chapter 3 addresses the question: How does the quality of social relationships influence community change initiatives? This study, through the use of 37 semi-structured interviews and relationship mapping with actors in 22 community initiatives in Scotland, examined how the nature of relationships qualitatively differed and how this connected with different outcomes. Three key findings were; (1) the quality of relationships mattered in terms of the flexibility and generative potential; (2) the quality of relationships could change over time; and (3) the role of relationships was improved with more sophisticated approaches that involved learning through relationships within initiatives. Therefore, this study showed that relationship qualities are important to understand the potential of relationship-based approaches within initiatives. However, active strategies are needed to nurture this in practice over time for engaging with the complexities of climate change.

Chapter 4 addresses the question: How do social relationships interact with other complex dynamics to help bring about meaningful change within communities? This examined the social dynamics in developing a community climate action initiative, using an in-depth case study of the establishment of a community fridge in Dundee, Scotland. This entailed participant observation (10 months) and 23 semi structured interviews with 15 local actors involved in the process. Core findings included: (1) how multiple normative factors interconnected in different ways to shape the role of social relationships in the process; (2) the emergence through social relationships of diverging shared interpretations of the initiative and arising tensions; and (3) a shift towards a regenerative process as social (alongside the environmental) intentions guiding the initiative were surfaced, creating space to organise collective actions and shared intentions that improved key social relationships for the future. This revealed the importance of intersecting socio-cultural factors across scales in shaping how social relationships influenced the process and how they changed through the process.

Chapter 5 addresses the question: How can synergistic enabling environments (e.g. policy environments) be created for generating more effective outcomes in the context of complex challenges? This study examined different opportunities and challenges for enhancing synergistic working within policy communities for engaging with complex policy challenges. It used a pragmatic research approach that involved semi-structured interviews with 8 national policy actors from three national policy areas

(community (emergency) resilience, climate change and community empowerment) in Scotland, and analysis of key policy documents. Core findings included: (1) the potential to develop the role of social relationships, amongst other opportunities, to enhance the potential for policy synergies; and (2) underlying, less tangible aspects of policy processes as potentially hindering how synergistic working is able to be enhanced in practice. Therefore, intentional relationship-based synergistic strategic policy initiatives are necessary to explore and work with less tangible policy dimensions to develop interconnections between social relationships and collective outcomes in ways that are greater than the sum of their parts.

Chapter 6 integrates key findings from each of the previous main chapters to examine how this thesis addressed the overarching aim. In this chapter four broad socio-cultural factors were found to be important for understanding how social relationships interact with community change initiatives; (1) relationship qualities; (2) multiple interconnecting normative factors across scales; (3) initiative intentions; and (4) relationships for shaping shared interpretations within change processes. From this three broad implications for working through social relationships to engage with complex community change processes to enable meaningful change were also identified.

1.5. Personal approach to developing independent research capacity

In developing this thesis it is important to note that there were a number of issues that influenced how it was approached and what emerged beyond simply broad methodological considerations. The research training was approached as a personal learning journey to develop independent capabilities for working to examine and engage with complex challenges in the real world (McGowan et al., 2014). To create and seize diverse experience-based learning opportunities this thesis was developed as a series of discrete studies and research papers to examine the nature and role of social relationships from different perspectives, within different types of communities and collective change initiatives. This approach enabled me to capitalise on opportunities to gain experience of different research methods, develop relationships and networks through those working at the science-policy-practice interface and iteratively move through the research cycle in ways that also supported research capacity for publication in peer reviewed scientific publications. During the process of the work, an opportunity emerged for a 3 month policy internship with the Scottish Government community resilience division. This then led to the final empirical chapter that focused on understanding national policy processes and environments (chapter 5). Another opportunity then emerged for a 6 month write-up fellowship (with the Konrad Lorenz Institute for Evolution and Cognition Research in Austria) that provided new opportunities to

explore diverse theoretical understandings of different dimensions of socio-environmental systems and processes of change (influencing in part *chapter 4*).

One outcome of this experiential and opportunistic approach taken in the development of the thesis was then independent chapters written in the form of publications that had contributions from different scientific and practice-orientated authors. In all of the chapters I developed the methods, collected the data, conducted much of the analysis and led the writing.

Finally, opportunities also emerged throughout this process to contribute to a diversity of other scientific and practice orientated publications (see appendix), many of which are cited within this thesis.

Chapter 2

Chapter 2 addresses the question: What do past studies tell us about how social capital enhances resilience? Whilst there are diverse conceptual and empirical approaches for examining social relationships in relation to community change initiatives, social capital and resilience are two concepts found across studies from different disciplines that are particularly widespread. This study therefore involves a meta-synthesis examining how social capital for enhancing resilience is currently understood across this diverse body of literature. The aim here is to identify areas for improving understandings about how social relationships, amongst other factors, shapes community initiatives for proactively engaging with climate change challenges.

This chapter has been submitted for peer review to the scientific journal AMBIO

2. Building community resilience in a context of climate change: The role of social capital

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Abstract

Building community resilience in the context of climate change is widely recognised as critical. For resilience social capital is often identified as important yet insights about this relationship are scattered across disciplines. This review examines conceptual and empirical aspects of the social capital and resilience literature, identifying four research gaps and practical implications. These gaps are: 1) Moving beyond structural understandings of social capital to better understand the different actions and outcomes for resilience; 2) adopting systemic approaches to understand interconnections between social capital and other factors over time; 3) examining different roles for formal actors to strengthen social capital for community resilience; and 4) more widely engaging with sociocultural factors which shape the form and function of social capital and, thus, if and how climate action unfolds. Addressing these gaps can support more nuanced understandings of the role of social capital for resilience in the context of climate change.

Key words: Social capital, community resilience, climate change, resilience policy, socio-cultural factors

2.1. Introduction

The impacts of a changing climate are already emerging (Travis et al., 2018) and recognition is growing of the need for enhancing resilience and adaptive capacities of communities, cities and regions to its impacts (Berbés-Blázquez et al., 2017). Enhancing resilience requires working with interactions between social actors, institutions, values, beliefs, and knowledge across scales (Smit and Wandel, 2006) as well as the many different human social dimensions involved. Much of the conceptual and empirical work on resilience is at the scale of communities (Berkes and Ross, 2013), i.e. collectives of people loosely organised around geographic and symbolic meanings of place and shared history, where those involved usually have diverse perspectives, values and interests (Delanty, 2009). While there has been extensive focus on conceptual aspects, there has been much less on understanding how to build resilience in practice (Fazey et al., 2018c).

Core to enhancing understanding of practice is enhancing understanding of the complex social dynamics involved (Fazey et al., 2021). An important social aspect that has received considerable attention has been social capital (Maclean et al., 2014). Social capital is defined broadly as the social networks and relationships, shaped by socio-cultural factors (e.g. identities and social norms), that provide a resource for shaping outcomes (Ooi et al., 2015, Casey, 2009). Such research on social capital has included the role of social relationships, networks and trust in mobilising social groups for action to improve disaster management (for general (Aldrich and Meyer, 2015) and specific (Jacobs and Cramer, 2017) threats), and for climate change adaptation (in community (Adger, 2003) and organisational settings (Pelling et al., 2008)). Despite increasing attention to relationships between social capital and community resilience, there has been limited explanation of what this relationship means for the practice of resilience.

This paper therefore aims to review and draw out the key implications for practice from studies that have examined relationships between social capital and resilience. To do this we first provide an overview of both concepts. We then explain how the review, which included a meta-synthesis of 187 research articles from across diverse fields of study (e.g. disaster management, community development, health, psychology and youth studies) was approached. Because empirical findings closely relate to how each of the concepts are interpreted, the findings of the review first outline how resilience and social capital, and their inter-relationships, have been interpreted. The second part of the results then highlights the empirical findings of the studies and their implications for resilience building. Finally, we draw out insights about critical research gaps for understanding the how social capital enhances community resilience to climate change.

2.1.1. Resilience, social capital and climate change

Resilience and social capital have both received extensive attention in the literature. The concept of resilience has been applied across disciplines such as ecology (Folke, 2006) and psychology (Hegney et al., 2007). This has led to different perspectives and understandings of resilience, such as ecological, engineering, psychological, community or social-ecological resilience (Norris et al., 2008). The social-ecological perspective, for example, views resilience as the ability of a system to adapt in the face of different shocks and stressors, with the nature of such adaptation emerging through complex, nonlinear and dynamic relationships between human and bio-physical factors and process across scales (Folke, 2006). A community perspective on resilience emphasises the role of community actors in developing and engaging resources for the community to thrive in the face of change (Magis, 2010), and sometimes with recognition of how social actors are influenced by and influence different social scales (Moore and Westley, 2011).

Perspectives can also vary as to whether resilience is viewed as a property of a system (Faulkner et al., 2018) or as a normative process or goal (Walsh-Dilley and Wolford, 2015). The latter highlights that human agency, or the ability and willingness to deliberately act, is a key aspect of resilience (Skerratt, 2013). Initiatives can also be framed as either generalised resilience building for unanticipated events (e.g. through response diversity) (Zautra et al., 2008) or as specified resilience, such as for fires or floods (Jacobs and Cramer, 2017). Here, a narrow focus on specified resilience may hinder generalised resilience (Folke et al., 2010). This has led to growing awareness that some approaches to resilience have limited potential for engaging with the complexities of climate change and guiding the type of change necessary for community resilience for the long term (Pelling, 2011). There is a growing interest in the way multiple and integrated systemic interventions can simultaneously enhance specified and generalised resilience (Berkes and Ross, 2016). Alongside the urgency to actively engage with grand challenges like climate change, there has been a shift away from a focus on the tangible and easily measured, towards viewing resilience as emerging from complex longer-term social processes (Fazey et al., 2018a) shaped by normative dimensions such as values, social norms and power (Walsh-Dilley et al., 2016).

Social capital is another complex and often contested concept that has been interpreted in different ways. At the core are social relationships and networks. These may be viewed as either a potential or an actual resource (Portes, 1998) that may be applied to and examined in a specific domain, purpose, activity or task, such as social relationships and networks to enhance educational achievement (Coleman, 1988). Social capital is also viewed as a foundational resource to enable access to other resources, for example to access hard-to-reach resources for disadvantaged groups.

Overall however, resource availability is contextually contingent, being shaped by many factors. In broader studies of social capital, this has led to an emphasis on social capital as an embedded resource.

For example, membership to a social group enables access to other resources (Bourdieu, 1986) and this influences other outcomes such as political engagement (Putnam, 1995) and learning (Pelling et al., 2008). These different interpretations have led to different kinds of approaches, such as structural approaches focusing on the topology of connections between actors, content-based perspectives to explore attributes that shape outcomes (e.g. norms of reciprocity, trust and shared goals), and integrative approaches that attempt to bring together these elements (Phillips, 2016).

The concept of social capital has been used to understand interventions aiming to enhance community capacities and resilience, including those directly or indirectly related to climate change, such as in relation to natural hazards (Babcicky and Seebauer, 2017), health (Cattell, 2001), economic development (Flora et al., 1997), natural resources (Pretty, 2003), participation (Cleaver, 2005), and identity and cohesion (Chan, 2010). Such studies highlight that social capital is complex and does not always lead to outcomes widely desired in a community (Tenzin and Natsuda, 2016). There is also limited understanding of how social capital dynamically shapes collective action and more extensive change (Rockenbauch and Sakdapolrak, 2017), which is key to understanding how to achieve the kinds of systemic and transformative changes needed to enhance resilience to climate change (O'Brien, 2012).

In summary, resilience building for communities in the context of climate change is an important but complex social process which requires, among other things, understanding of the role of social relationships and networks. Yet, because there are so many different ways in which both social capital and resilience are interpreted, drawing out both empirical insights from different studies and their implications for practice is challenging. This review seeks first to understand the ways in which social capital and resilience have been framed in this varied body of research, and then draw out key empirical insights and practical implications.

2.2. Methodology

This research conducted a meta-synthesis to examine the nature, role and significance of social capital for community resilience, including both conceptual and empirical understandings of resilience and social capital. A meta-synthesis approach employing interpretivist and qualitative methods was used to generate substantive and integrated findings (Zimmer, 2006, Finfgeld, 2003). In this process, a modified version of more systematic review processes was used (Fazey et al., 2004). First, a wide range of articles were identified through search engines (e.g. Scopus) using diverse search terms such as resilience and social capital. From this, additional material was sourced, e.g. through tracing articles from the primary search as citations in newer articles, and by widening search terms as a better understanding of how the two concepts were being framed was developed. Articles were excluded if they appeared in the search

multiple times, they were not published in English, or they could not be accessed. In total, the process resulted in 187 papers.

Qualitative and inductive methods were then used for analysis. This included descriptive in vivo coding (Saldana, 2016) to highlight text in the articles relating to: (1) conceptualisations of social capital, resilience and their relationship; (2) empirical findings; and (3) key knowledge gaps, with care taken to avoid subjective and speculative discussion about the empirical findings (Bondas and Hall, 2007). Following the initial phase, a random sample of 50 articles was used to develop codes which were applied to the remaining articles. Coding was iterative, allowing for new interpretations to emerge throughout the process (Strauss and Corbin, 1994). Codes and their interconnections were then explored using visual mapping techniques to develop themes (Ritchie et al., 2003). A modified version of the pattern matching technique (Cao, 2007) was then used to compare and contrast patterns (Trochim, 1989) and identify key issues to inform future research directions.

It is important to note that this review was not exhaustive; rather this provides an indicative account of what the literature overall tells us about social capital and resilience building. There are thousands of papers on resilience and associated social issues, and many of these would broadly relate to the topic. Many pragmatic judgments were needed to ensure the review was sufficiently focused while also encompassing of a diversity of studies. As is the case with many qualitative studies, the emphasis was therefore on identifying broad patterns by seeking diversity of different studies and interpretations, rather than trying to present a more quantified view of what was present in the literature as a whole. Finally, the included papers did not always relate directly to climate change. Our goal was to bring together more generalised insights about relationships between social capital and resilience that could then be applied to resilience building broadly within a context of major challenges like climate change.

2.3. Findings

2.3.1. What are the different ways in which resilience, social capital and their relationships have been conceptualised?

2.3.1.1. Concepts of resilience and social capital

Around three quarters of studies provided definitions of resilience. Of these, there were three general interpretations of resilience: 1) reactive resilience; 2) responsive resilience; or 3) proactive resilience. The vast majority of studies viewed resilience as reactive or responsive, with few (around one tenth) defining it as proactive.

Reactive resilience was viewed as actions to cope with the immediate aftermath of a shock, with an assumed goal of stability and a timely return to the status quo, i.e. to resume 'business as usual'. This conceptualisation often assumed the need for top-down command and control (Murphy, 2007) or unsupported actions undertaken by local people (Uekusa and Matthewman, 2016).

In contrast, responsive resilience was viewed as learning from shocks, to enact adjustments to social, environmental or physical components, i.e. to strengthen the existing system in a way which reduces negative consequences from future shocks. Here, resilience was viewed as multidimensional, encompassing different actors, interests and capacities (Vallance and Carlton, 2015) and shocks as being part of an ongoing process of change (Exner et al., 2016).

Finally, proactive resilience was emphasised as an ongoing process of foresight, experimentation, reflection and learning, requiring systemic perspectives and multi-scalar approaches recognising the importance of norms, identities and values and potential need for radical change. This view highlighted the need to examine governance arrangements, meanings and power dynamics. It emphasised the importance of redundancy, flexibility and proactively working to shape complex, non-linear, dynamic and context specific change processes (Kizos et al., 2014). The climate challenge is not likely to be addressed without system-oriented cultural change (Pelling et al., 2015), thus this kind of proactive resilience is much more likely to be relevant than other types which emphasise maintenance of the status quo. Despite this, very few studies viewed resilience as a proactive process, with most conceptualising resilience as either reactive or responsive.

Around three quarters of the studies explicitly defined social capital. This included four broad definitions, including social capital as: 1) social networks; 2) social networks and outcomes; 3) social networks, trust and norms of reciprocity; and 4) social networks and socio-cultural dimensions. Of the studies including definitions of social capital, around a third defined social capital as social networks (1), with other definitions each accounting for around one fifth of studies.

Across these conceptualisations social capital was often disaggregated as three types of network connections. These were: 'strong ties' or 'bonding social capital' between people and groups (Barrett et al., 2011) i.e. interpersonal relationships based on ideas of 'homophily' or 'sameness'; 'weak ties' or 'bridging social capital' across different social groups, emphasising ideas of 'heterogeneity' or 'difference' (Islam and Walkerden, 2014); and/or 'linking social capital', emphasising connection across formal hierarchies, (e.g. between community members and government officials) (Parés et al., 2018) and implicitly acknowledging underlying power dynamics and different social identities.

The first conceptualisation viewed social capital as social networks that connect people (Carpenter, 2015) e.g. though membership of formal groups (Kim and Marcouiller, 2016). The second included social networks and associated outcomes e.g. improved health, information or civil engagement (Cairns-Nagi and Bambra, 2013, Barrett et al., 2011). The third conceptualisation viewed social capital

as social networks combined with trust and norms of reciprocity (Peters, 2019). Here, social networks were characterised as structural dimensions, while subjective norms of trust and reciprocity were often characterised as cognitive and/or relational dimensions (e.g. Brown and Sonwa (2018). Structural and subjective aspects (trust and reciprocity) were often argued to be closely intertwined and mutually reinforcing in shaping outcomes (e.g. Bankoff, 2007). However, most studies emphasised the structural connectivity between different types of actor, more than subjective aspects (Laycock and Mitchell, 2019, Smith and Frankenberger, 2018).

The fourth conceptualisation viewed social capital as a dynamic relationship between social networks and socio-cultural dimensions. Together these shaped actors' expectations, attitudes, actions and outcomes (Bakker et al., 2019, Wickes et al., 2017), such as willingness to cooperate and experiment, pro-environmental actions and more sustainable environmental outcomes (Kizos et al., 2014). Here, socio-cultural dimensions related to values, identities, norms, beliefs and traditions that encourage or constrain actors' actions, and resulting outcomes (Carrico et al., 2019). These socio-cultural and structural dimensions of social capital dynamically interact to shape expected and actual access to and control over different resources over time (Lisnyj and Dickson-Anderson, 2018).

Overall, few studies considered subjective socio-cultural aspects in detail, usually focusing on outcomes for specific social groups. At the community level studies tended to focus on trust and reciprocity. Other sociocultural dimensions (e.g. social norms and values) were often considered superficially, without explanation about connections between multiple socio-cultural dimensions and structural dimensions (Hurlbert and Mussetta, 2016). Some recent studies provide more integrative conceptualisations of social capital (e.g. Bakker et al. (2019)) by, for example, emphasising social identities and norms of solidarity. However, the overall limited acknowledgment of socio-cultural dimensions may foster misleading interpretations about the type of outcomes that emerge from different social networks.

This is relevant for climate change as both mitigation and adaptation are needed across all levels of society. Thus, overlooking the role of underlying socio-cultural dimensions may place undue emphasis on structural aspects (as most studies did) that could hinder understanding how outcomes may (or may not) come about to enhance resilience to climate change.

2.3.1.2. Relationships between social capital and resilience

When the two concepts were brought together, six different conceptualisations emerged of how social capital was expected to influence or give rise to community level resilience (Figure 2.1).

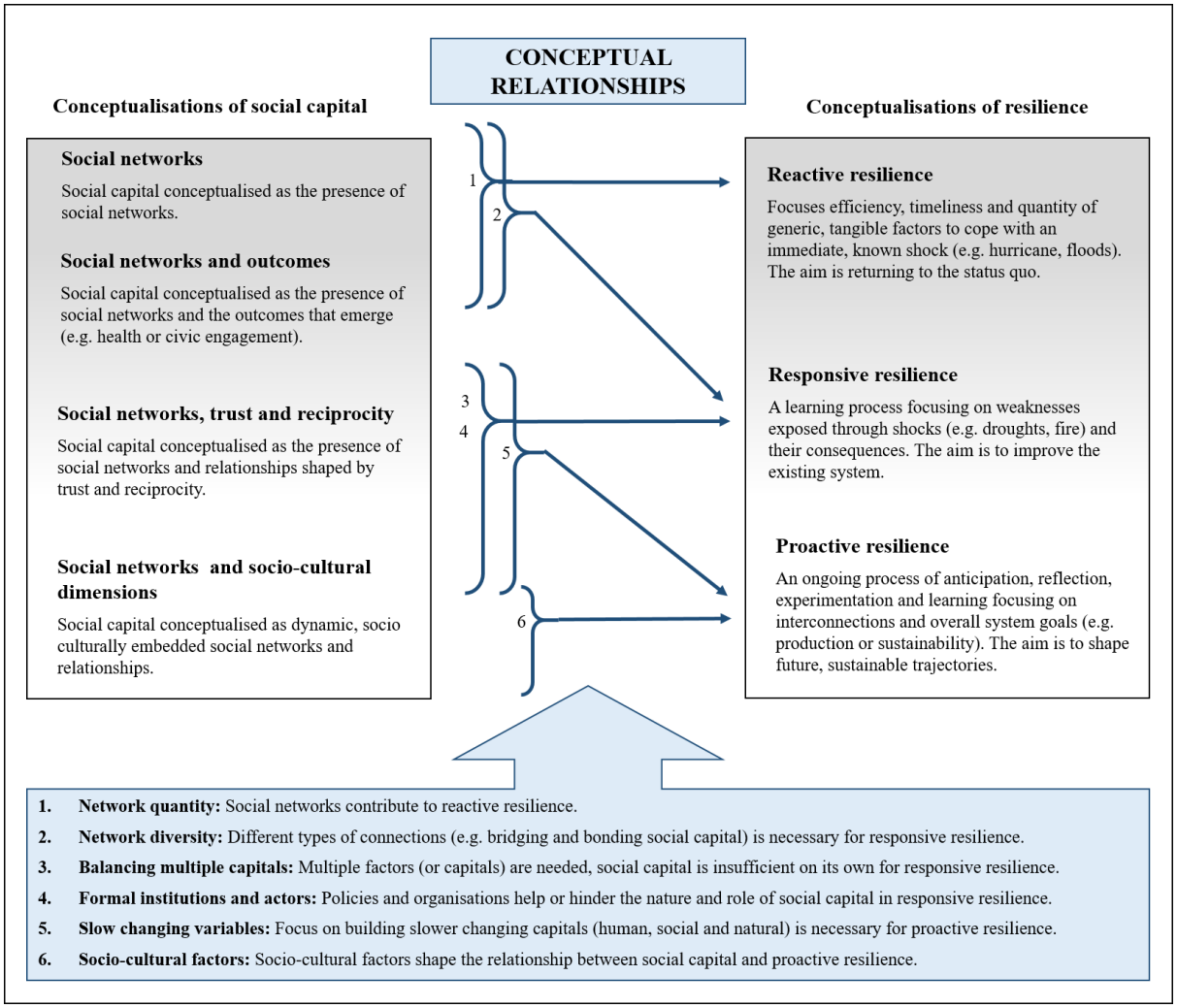

Figure 2.1: Six different ways in which social capital was considered to influence or give rise to resilience.

The first conceptualisation related to network quantity (1, Figure 2.1). Here, the quantity of social networks (e.g. number of links, agents) was assumed to increase social support, information and good will, which in turn was viewed as important for enhancing ability to respond to shocks (i.e. reactive resilience) (Cassidy and Barnes, 2012). Many of these studies viewed 'bonding' social capital (social networks of family and friends) as a key buffer to adversity (Aldrich and Meyer, 2015) which needed to be cultivated before shocks (e.g. a fire) and activated when needed (Wickes et al., 2017). Such studies suggest existing social networks developed over time, and provide critical collective resources to minimise disruptions from climate related shocks. However, these generally focused on quantifiable aspects, and excluded consideration of more subjective dimensions shaping resilience.

The second conceptualisation of how social capital leads to resilience was through network diversity (2, Figure 2.1). Here, different types of social capital (e.g. both bonding and bridging) were considered important for moving beyond dealing with an immediate crisis, to also identifying areas for longer-term

improvement (Jordan, 2015). In such studies bonding social capital was considered important within communities for coping with adverse conditions and shocks (Barrett et al., 2011). Bridging social capital was considered necessary for new information, ideas, and knowledge to help shape learning, decision making and cooperation between groups (Blackman et al., 2016), such as between communities and government agencies (Smith et al., 2012b). This conceptualisation often assumes that diverse social networks (those that enable access to existing sources of support *and* new ideas) are important for more effective responses to future climate change impacts. However, these studies did not usually consider a wide range of factors or their interactions as being important in shaping resilience.

The third conceptualisation was that social capital in the form of networks, trust and reciprocity was important for resilience – but that other assets, capacities or collective resources were also required (Singer et al., 2015) (3, Figure 2.1). Here, a need for active management of a combination of natural, physical, economic and human factors was emphasised, but with limited overall explicit consideration given to how such factors interacted or to the wider cultural dimensions involved (Kim and Marcouiller, 2016). Thus, while this conceptualisation suggests that resilience building is a multidimensional social process, studies mostly focused on how these gave rise to responsive resilience. These studies provided limited understanding of the less tangible and subjective dimensions relating to social capital and resilience.

The fourth conceptualisation emphasised the role of formal institutions and actors and how these contributed to responsive forms of resilience (4, Figure 2.1). While considering social capital as networks, trust and reciprocity, such studies underscored the importance of laws, national policy, regulatory frameworks (formal institutions) and actors (local government and non-government organisations), in helping or hindering social capital and, resilience (Hossain and Rahman, 2016). Linking social capital, and the ideas within formal institutions and practices within organisations, was considered important for collective action (Oteng-Ababio et al., 2015) and for identifying and making adjustments in communities for building resilience (Blackman et al., 2016). Socio-cultural dimensions relating to power and access to formal processes were sometimes considered (Jacobs and Cramer, 2017), but the central focus remained on behaviours of formal actors, rather than on less visible underlying socio-cultural factors. Thus this conceptualisation suggests that the goals and practices of formal actors across different levels of governance hold strong influence over effective responses to climate change impacts.

The fifth conceptualisation involves social network structures, norms and trust being related to proactive resilience (5, Figure 2.1). These emphasised the importance of enhancing slow-changing factors (e.g. the nature of social relationships, experiential knowledge and natural resources) that would, in the long-term, enhance proactive resilience (Kizos et al., 2014). This viewed changes over long periods of time in natural, human, cultural and social capital as having important implications for flexibility and adaptability (Wilson, 2010). This perspective emphasises that joined-up management and action,

focused on slow-changing capitals across social scales, is important for overcoming a range of climate challenges as they emerge.

The final conceptualisation highlighted the significance of socio-cultural dimensions of social capital in shaping proactive resilience (6, Figure 2.1). Here the core assumption was that socio-cultural dimensions (e.g. social norms, identities and values that influence collective efficacy and agency) are central to proactive resilience processes (Webb et al., 2016, Skerratt, 2013). These socio-cultural dimensions included subjective dimensions such as sense of place, belonging, norms, identity and values and which were considered closely entwined with material factors (e.g. place) (Cox and Perry, 2011). For example, resilience could be proactively developed by overcoming collective norms that exclude or favour certain types of actions, or that promote a willingness to change (Béné et al., 2016, Smith et al., 2012b). This conceptualisation also assumed there were dynamic interconnections between multiple actors, identities and goals, and explicitly emphasised the important role of power and agency in shaping resilience (Jacobs and Cramer, 2017). From this perspective, socio-cultural factors are important in shaping which aspects of climate change are recognised in decision-making and prioritised for action (resilience to what), which actors are involved and who benefits (resilience of what and for who).

Overall, these conceptual relationships show the diverse ways in which social capital is considered to give rise to, or enhance, resilience, with the first conceptualisations (e.g. 1 – 4, Figure 2.1) more prevalent than more nuanced understandings (e.g. 5 & 6, Figure 2.1). This diversity is derived from the different ways in which social capital and resilience are defined, reflecting different underlying epistemologies. For example, a focus on purely structural dimensions of social capital and on resilience to specific climate shocks (Cassidy and Barnes, 2012) tended to reflect positivist perspectives. These promote a focus on finding ways to enhance resilience to immediate shocks, with less attention paid to deeper social aspects which affect vulnerability and resilience but operate over longer timeframes.

In contrast, conceptualisations that emphasised how diverse socio-cultural factors related to social capital were more likely to view resilience as proactive. These reflect interpretivist perspectives (Cox and Perry, 2011), and place greater emphasis on the deeper underlying causes of challenges that emerge for communities. These differences are important as they greatly influenced the kinds of approaches and practice that might be adopted to enhance resilience (Moses and Knutsen, 2012). For example, a focus on network quantity and diversity, with emphasis on reactive resilience, leans toward actions that focus on climate impacts and seek to help a community return to normal, rather than responding to climate change in a way that explores deeper causes. Thus, the epistemological and ontological foundations of different understandings about the relationship between social capital and resilience matter. Researchers and practitioners using one or both concepts must be explicit about their assumptions, and how this leads to different outcomes.

2.3.2. How does social capital contribute to resilience?

The previous section examined conceptualisations of the relationships between social capital and resilience. This section turns to key empirical insights emerging from different studies about the relationship between social capital and resilience and their implications for practice. These findings are organised around three overarching themes of: 1) the role of social capital in influencing resilience; 2) factors that interact with social capital to influence resilience and; 3) the role of formal institutions and organisations (Table 2.1).

Table 2.1: Summary of empirical insights about the relationship between social capital and resilience at the community level

Theme	Empirical insights from literature	Example literature
Role of social capital in influencing community resilience	• Bonding social capital enhances reactive resilience.	Baral and Stern (2011), Murphy (2007)
	• Bridging (including linking) social capital is important for responsive resilience at the community level by providing access to new resources (e.g. physical and financial) but bonding social capital shapes whether and how action is undertaken.	Bakker et al. (2019), Birhanu et al. (2017), Smith et al. (2012b)
	• The relationship between social capital and resilience is dynamic, shaped by routine and practices over time and changing needs and locations.	Blackman et al. (2016), Tilt and Gerkey (2016), Vallance and Carlton (2015) Peters (2019)
	• Perceptions of unequal access to resources can cause distrust and tension leading to loss of social capital and access to resources for future (responsive) resilience. Longer term influences on resilience, however, may also be buffered by norms of community support.	Islam and Walkerden (2014), Berke et al. (2008)
	• Social capital can facilitate learning but the type of learning and norms of inclusion/ exclusions within decision making processes are particularly important for influencing the type of resilience.	Baehler and Biddle (2018), Wickes et al. (2017), Barrett et al. (2011)
Factors that interact with social capital to influence resilience	• Social capital is one of a number of factors within a social-ecological setting important for shaping resilience.	Cassidy and Barnes (2012), Smith et al. (2012a)
	• Social capital interconnects in complex ways with other slow and fast changing factors through time to shape resilience. But, feedbacks between slow changing factors relating to human, cultural and social capital are particularly important.	Guillotreau et al. (2017), Kizos et al. (2014), Sinclair et al. (2014)
	• Social capital is necessary but insufficient for shaping resilience even in settings which encompass high levels of social capital. But, social capital can be an effective strategy to develop or access hard to reach resources.	Béné et al. (2016), Jordan (2015), Islam and Walkerden (2014)
	• Combinations of different types of social capital and other resources will vary in importance for shaping resilience across different social settings and objectives.	Oteng-Ababio et al. (2015), Skerratt (2013), Smith et al. (2012b)
	• Socio-cultural factors, for example norms of inclusions/ exclusion, sense of community and support and sustainable use of shared resources, facilitate collective agency to build community resilience.	Smith et al. (2012a), Bankoff (2007) Moreno et al. (2019), Carrico et al. (2019), Parés et al. (2018)
The role of formal institutions in shaping the relationship	• Decisions at higher levels of governance that shift the balance of power between actors can influence different actors' practices and social capital (structural and norms of cooperation or competition) that shape resilience.	Kizos et al. (2014), Sinclair et al. (2014)

between social capital and resilience	• Limited recognition of the importance of linking social capital can lead to missed opportunities for more coordinated collective action and further development of social capital between organisations and community level actors for shaping resilience going forward.	Morris et al. (2019), Thompson and Lopez Barrera (2019), LaLone (2012)
	• Linking social capital can contribute to and support the development of different factors that shape resilience, for example voluntary and transformational leadership programmes.	Webb et al. (2016), Madsen and O'Mullan (2014)
	• Embedded institutional socio-cultural factors (discourses, attitudes and practices) can influence the access of social groups to different spaces and resources that shape resilience.	Oteng-Ababio et al. (2015), Singer et al. (2015), Cox and Perry (2011)

2.3.2.1. The role of social capital in influencing resilience

There were five key findings about how social capital influenced resilience. First, the ability of households to cope during crises was enhanced by bonding capital, such as in the immediate aftermath of floods, cyclones, fires and during more prolonged crises such as droughts. Bonding social capital also enhanced access to psychological and material support (Birhanu et al., 2017) and operated as a strategy for households to cope more effectively with crises (Béné et al., 2016). Bonding social capital is thus important for all forms of resilience building and directly contributes to reactive resilience.

Bridging and linking social capital was also important in the immediate aftermath of crises (e.g. within a few days post-flood) for enhancing access to new information, resources and support to address immediate and future material losses, e.g. access to building materials and financial aid (Birhanu et al., 2017). Bonding combined with limited bridging social capital, however, was suggested to limit whether and how the need for change is perceived and acted upon (Bakker et al., 2019), such as collectively recognising climate change as a threat but with factionalised views on the type of action and change required (Smith et al., 2012b). Thus the collective learning needed to improve responsive resilience can be helped or hindered through different combinations of social capital.

Third, shocks interacted dynamically with social capital (Blackman et al., 2016). For example, loss of bonding social capital could occur due to a crisis, when friends and neighbours are dispersed (Singer et al., 2015). In social settings with limited resources this leads to a loss of resilience in the long term (Tilt and Gerkey 2016). Crises can, however, also nurture further social capital as when locations, routines and everyday practices change, creating opportunities to form new relationships. Through this new collective initiatives can emerge to meet new needs and spread new ideas and information, building responsive resilience (Vallance and Carlton, 2015). This highlights that although pre-crisis social capital is important for resilience to disruptions, disruptions can also promote depletion, maintenance and/or development of social capital in the long-term.

Fourth, tensions around the distribution of resources in the immediate aftermath of crisis may lead to a longer-term loss of bridging and linking social capital. For example, community relationships between households (and to aid organisations) are weakened from competition for accessing scarce external support (Islam and Walkerden, 2014). Existing norms that emphasise community support fostered the development of social capital prior to crises, while also reducing tensions during crises, thus preventing potential losses of social capital in the future once a crisis has abated (Berke et al., 2008). Thus, the underlying socio-cultural norms focused around community support and cohesion may support resilience-building over time, by both encouraging the development of social capital and buffering against potential losses and conflict as communities move through periods of scarcity.

The final key finding was that crises may open up space for learning about how a local setting can be strengthened, to reduce negative consequences in the future (Wickes et al., 2017). Specific crises can contribute to responsive resilience as the community learns and updates its understanding of issues and factors hindering resilience generally. Critical aspects affecting whether learning contributes to responsive resilience were the distribution of learning (e.g. the different actors in a network and the connections between them for ideas and knowledge to flow), the type of learning (e.g. understanding weaknesses in physical infrastructure and/or the need for coproduction approaches to build resilience), and if and how this learning informs collective decision-making (Blackman et al., 2016). Social capital, however, can also limit learning and decision-making if it results in the exclusion of different perspectives and learning practices (Brown and Sonwa, 2018). Thus although social capital can support experiential learning, the type of learning that emerges and for who, and thus the type of resilience that unfolds, varies across contexts.

Overall these results show that shocks (e.g. floods and droughts) and crises that some actors may experience often represent an inflection point for activating, building or weakening social capital. These dynamics are often explained in terms of more visible changes to the structural dimensions of social capital (the quality and diversity of bridging and linking social capital). However, underlying social norms are also important to structural dimensions of social capital, as complementary or exclusionary norms can lead to trade-offs between structural types of social capital. Norms also guide longer-term shifts in social networks, catalysed by shocks and crises. For example, social norms mediate if and how tensions between different actors arise and are overcome, and if and how learning shapes action. Thus social network structures interact with less visible, underlying social norms to help shape the type of resilience that emerges. This is important as addressing the climate challenge requires moving beyond framing resilience in terms of shocks and crises. The iterative development and spread of climate mitigation and adaptation ideas is required, to shape action that connects with diverse settings and actors (e.g. to support and strengthen different communities). More nuanced understanding of how social capital (both structural and socio-cultural dimensions) can help or hinder different outcomes is therefore important to understand how different types of resilience emerge in practice, and how resilience-building efforts might be enhanced.

2.3.2.2. Factors interacting with social capital to influence resilience

There were five key findings about different factors that interacted with social capital to influence resilience. First, while social networks were widely found to be a key resource drawn from in times of change (Tilt and Gerkey, 2016), a range of other factors were important, including natural resources, livelihoods, knowledge and experience, the built environment and financial resources that together shape decision making and actions associated with resilience (Jordan, 2015, Baral and Stern, 2011). Across settings studies often emphasised different combinations of factors, such as the importance of

natural capital in rural settings and physical capital in more urban settings. This reflects differentiation of potential resources across settings at the community level. This highlights a need to consider the role of multiple factors for shaping resilience.

Second, social capital, combined with other factors, interacted in complex ways through feedbacks between social, human, cultural and natural factors to shape goals and practices over temporal (years and decades) and spatial scales (e.g. households to industries) (Guillotreau et al., 2017). In these studies, faster changing factors were suggested to have, overall, much less importance than slower changing factors, even for reactive and responsive resilience (Sinclair et al., 2014). Furthermore, a focus on developing social capital was part of wider deliberate, proactive strategies by community actors that included strengthening diverse factors for enhancing resilience (Skerratt, 2013). This highlights the importance of considering slow-changing factors (e.g. social capital and cultural dimensions) in the formation of, and within, efforts seeking to promote resilience over longer timeframes.

Empirical studies also suggested that social capital is important but insufficient in shaping resilience for those who are marginalised, excluded or in contexts of high social inequality. Here, other influential factors may constrain opportunities for resilience, such as in systems where bribery is common thus access to resources is hindered (Islam and Walkerden, 2014). In such circumstances, no matter how much social capital is available, there is limited possibility for building proactive resilience (Hossain and Rahman, 2016). This may not be the case, however, when resources within or outside communities are available but difficult to access, as social capital can help gain access to new opportunities and resources (e.g. micro credit) and thus enhance resilience (Jordan, 2015). The key point here for building resilience is that although social capital may be central for shaping action, the type of outcomes that unfold are also shaped by the availability of other resources.

Fourth, different combinations of social capital, such as bonding, bridging and linking, were also found to be important within different settings and for achieving different objectives (Skerratt, 2013). For example, a combination of high bonding, bridging and linking social capital was found to be important for expressions of autonomy at the community level, whereas bonding capital was important for consolidating community identity (Smith et al., 2012b). Different social networks within communities, the connections between them, and the multi-functionality of these networks provide flexibility through time to mobilise different resources in relation to a range of events, from natural hazards to infrastructure failure (Vallance and Carlton, 2015, Murphy, 2007). The implication of this for building resilience is that collective goals and visions will vary across scales, and different configurations of social capital relate to how these emerge and are pursued in practice.

Finally, socio-cultural factors associated with social capital play a substantial role in shaping resilience. Norms, values and identities influence the form and function of networks, such as exclusionary norms that lead to isolated factions, hindering the development of bridging social capital or norms that

perpetuate unsustainable practices (Carrico et al., 2019). Cultural norms that contribute to collective agency relate to good neighbourliness, solidarity and activism (Parés et al., 2018, Sinclair et al., 2014). Wider socio-cultural factors were also identified as important in shaping the relationship between social capital and resilience, e.g. acceptance of the status quo and thus the ability to imagine an alternative future (Birhanu et al., 2017). Specific factors (or aspects of communities) that had particular symbolic value and contribute to community identity were also shown as important for collective agency (Smith et al., 2012a), including if social capital was actively used as a strategy for building resilience (Skerratt, 2013). Thus socio-cultural dimensions shape agency, social capital and resilience as well as the relationships between them. This implies the need to work with socio-cultural dimensions of social capital to guide community resilience-building.

Overall, these results show that resilience is multidimensional. Social capital is one of many dynamic, interconnected factors that shape resilience. For resilience processes over longer timeframes, slower changing factors and their interconnections are particularly important. These include social and human capital, and underlying socio-cultural factors – such as values, social norms and collective identities that shape overarching goals and the factors identified as key resources. Social capital can be actively used to shape other factors and access hard-to-reach resources. This highlights the importance of collective agency to strategically leverage social capital as part of proactive resilience-building processes. Thus, underlying socio-cultural factors, selected goals and the active management of multiple, interconnected factors at the community level are all important for shaping resilience in practice.

In the context of climate change, social capital is an important resource for shaping resilience. However, in practice, working with social capital to enhance resilience requires avoiding a narrow view of resilience so that a sufficient range of challenges are included so as to understand and work with their interconnections to develop and draw on diverse resources over time. Importantly, approaches to, and studies of resilience that do not take a systems perspective oversimplify the potential role of social capital for resilience building.

2.3.2.3. The role of formal institutions and organisations in shaping the relationship between social capital and resilience

Four key findings were also identified around the role formal institutions and organisations played in shaping the relationship between social capital and resilience. This role included decision-making, actions of government organisations, ideas and policies at national or local levels.

First, decisions at higher levels of government were found to shape local decisions and practices that reduced social capital and resilience (Luthe and Wyss, 2015). For example by altering power dynamics between actors and changing the way they interacted, bridging and bonding social capital was eroded

(Kizos et al., 2014). This loss of resilience at the community level can occur through cultural and ideological changes in national-level policy processes, e.g. shifts toward market-based approaches leading to greater competition between local producers (favouring individualism over cooperation) or toward technical rather than holistic solutions (Guillotreau et al., 2017, Sinclair et al., 2014). For community resilience, the role of social capital can be unintentionally eroded overtime through government change programmes.

Empirical findings also suggested that a lack of linking social capital between local organisations and communities created missed opportunities for coordinating different resources (e.g. in response to a crisis or shock). This lack of social capital can cause a mismatch between actions of communities and local organisations (LaLone, 2012). Such coordination can involve regular interactions between local organisations and communities thus strengthening the quality of social capital for the future (Thompson and Lopez Barrera, 2019). This highlights that social capital is a dynamic resource that can be strengthened when activated over time to enhance resilience.

Third, some formal organisations (e.g. state agencies and non-government organisations) provide support via funded programmes and linking social capital. These are important for enhancing community resilience in direct (e.g. providing access to micro-credit) or indirect (development of transformational leadership skills) ways, that in turn enhance social capital (Madsen and O'Mullan, 2014). Here, the presence of linking social capital between formal institutions and communities shaped programme outcomes, such as increasing access to critical financial support and indirectly supporting the development of social capital within communities. This highlights that formal institutions can have a role in strengthening existing stocks of social capital for building community resilience, however in practice the effectiveness of such interventions is shaped by linking types of social capital.

Finally, socio-cultural dimensions of relations between communities and local organisations were suggested to shape community resilience indirectly. For example, perceptions of injustice in the practices of formal organisations (e.g. distributing resources) may indirectly hinder social capital by creating tensions between community-level actors (i.e. between neighbours) (Tilt and Gerkey, 2016). Formal organisations with top-down leadership approaches may lack a social capital mind-set. These perspectives may not create the space for communities to lead decision-making processes aimed at identifying and addressing current and future needs for improving resilience (Blackman et al., 2016). Furthermore, institutional processes and practices that overlook the role of social capital may lead to indirect, unintended losses of social capital that may reduce opportunities for shaping resilience processes (Cox and Perry, 2011). This suggest the practices and norms within formal institutions are important for enhancing community resilience, and the role of social capital in these processes over time.

Overall, these findings show that formal organisations are an important actor for shaping the nature and role of social capital for resilience at the community level. At a national level, policy paradigm shifts may alter the nature of social capital and thus the accessibility of resources to different actors. At a community level, the behaviour, attitudes and actions of organisational actors may directly and indirectly influence the nature of social capital and its role in resilience building. The complex challenges associated with building resilience in a changing climate necessitates joined up action to mitigate and adapt to the impacts across society. The goals and practices of multiple actors shape such actions and outcomes, however they also shape less visible outcomes that are also important for resilience building processes in the context of climate change, such as if social capital is overlooked and eroded or recognised and developed for shaping resilience building. Thus, the role of formal institutions and organisations in resilience-building processes at the community level and in the context of climate change could be enhanced by applying, across multiple scales, an explicit social capital and resilience lens to shape policy and practice.

From these empirical insights, implications for practice are identified (Table 2.2).

Table 2.2: Practical implications identified from empirical insights from within studies

Theme	Implications for resilience practice for working with social capital
Role of social capital in influencing community resilience	• Bonding social capital is important for all forms of resilience building and directly contributes to reactive resilience • Pre-crisis social capital is important for resilience to disruptions. Social capital can also be depleted, maintained and/ or developed through disruption for the longer term. • Collective learning needed to improve responsive resilience can be helped or hindered through different combinations of social capital • Social capital can support collective experiential learning, however the type of learning and for who for improving responsive resilience will vary across social settings and decision-making spaces. • Underlying socio-cultural norms orientated towards community support and cohesion can help resilience building over time by directly encouraging the development of social capital whilst also buffering against any losses in social capital and potential conflict as communities move through periods of scarcity.
Factors that interact with social capital to influence resilience	• Consider the role of multiple factors for shaping resilience. • Longer time frames are important as some cultural factors and social capital that shape resilience change slowly. • Social capital is central for shaping action, however the type of outcomes that unfold are also shaped by the availability of other resources. • Collective goals and visions for improving resilience vary across scales and settings, and different configurations of social capital will help shape how these emerge and are pursued in practice. • Socio-cultural dimensions are important for social capital, resilience and the agency to take action on the ground. There is therefore a need to understand and work with socio-cultural dimensions within resilience building efforts.
The role of formal institutions	• Government interventions can support or unintentionally erode the role of social capital for resilience.

in shaping the relationship between social capital and resilience	•	Drawing on social capital in practice can help build social capital over time to enhance resilience.
	•	The effectiveness of government interventions to strengthen social capital at the community level is influenced by linking social capital between communities and public organisations.
	•	Practices and norms within public organisations are important for if and how social capital is recognised and utilised for enhancing resilience over time.

2.3.3. Critical knowledge gaps for studies of resilience, social capital and climate change

The previous sections examined conceptualisations and empirical insights about the relationship between social capital and resilience. This section presents four critical knowledge gaps for researchers and practitioners to advance knowledge and action on this subject, in the context of climate change.

The first key gap is the need to go beyond understanding *what* emerges from social networks, to understanding *why* and *how* they emerge. This requires moving beyond purely structural descriptions of social capital, i.e. network quantity and diversity. There is often a conceptual focus on types of social capital, e.g. bonding, bridging and/or linking social capital, or the strength of such ties, that connect different types of actors. Empirical findings suggest that the binary existence of social relationships and networks (i.e. whether or not agents are connected) appears to be less important than the nature of those relationships. Perspectives, goals, skills, and resource needs at least partially determine the nature (i.e. type and quality) of social capital, as well as decision-making and action for different resilience processes. Thus to enhance understanding of how social capital can contribute to resilience in the context of climate change there is a need to focus not only on what emerges from social networks and relationships, but also why and how they emerge. This will stimulate greater attention to a wider diversity of factors and their interactions, and inform how to achieve change that enhances resilience in the context of a changing climate.

Second, there is limited empirical knowledge about the dynamic relationships between social capital and other factors, especially slow-changing capitals (i.e. human, natural, cultural and social capital that changes over decades), have for resilience. Empirical studies have tended to focus on tangible factors, e.g. infrastructure and indicators of economic development in the emergency planning literature, emphasising reactive resilience. These studies have overlooked the dynamic feedbacks between factors that reinforce or dampen resilience capacities. This is particularly important in relation to the climate challenge which is both a systemic issue and an emergent property of the way in which societies function. Enhancing proactive resilience in relation to climate change cannot be addressed without taking systemic social and ecological dynamics into account.

An enhanced understanding (both conceptually and empirically) is needed around how formal organisations can contribute more effectively to resilience in the context of climate change. Currently,

studies tend to adopt top-down, hierarchical perspectives that assume formal organisations and policies direct resilience building and often focus on reinforcing the status quo that may hinder overall resilience in the context of climate change. Often, by ignoring questions of unequal power relations, opportunities are missed to improve understanding about the different (potential) ways formal organisations can support social capital and resilience in communities. Alternative perspectives on the role of formal institutions are rare, particularly where resilience is viewed as a proactive process connected with climate change. Non-traditional perspectives may involve examining how formal organisations and policies can 'flatten' hierarchies by altering the dynamics between actors, and support the co-development of locally relevant resources and actions for resilience building. This suggests a subtle perspective shift away from a 'change-led-by' towards a 'change-within' formal organisations to enhance the role of policy environments in actively building resilience at a community level.

Lastly, improving conceptual recognition and empirical understandings of the role socio-cultural dimensions (e.g. values, norms and beliefs) play in social capital, in relation to resilience-building is needed. These socio-cultural dimensions shape meanings attached to ideas, goals, resources and interactions between actors, and if and how challenges associated with climate change are recognised and addressed. Conceptually, when taken into account, socio-cultural factors are considered within studies that examine relationships between social capital and proactive resilience processes, such as how values and norms influence foresight, reflection, experimentation and learning, and hence resilience (McLean, 2017). Yet such considerations are not common, especially in studies focusing on resilience at the community level. The need to consider such factors in change processes is increasingly acknowledged, e.g. where norms are related to poor health choices and actions to promote sustainability (Peattie, 2010, Rimal and Real, 2003). Norms and other dynamic socio-cultural factors are suggested to shape the type of outcomes from, and the function and form of, social networks (MacGillivray, 2018). This highlights the importance of understanding the combinations of social networks and socio-cultural dimensions that have the greatest potential to lead to desirable outcomes in relation to community resilience to climate change.

Overall, addressing these four critical knowledge gaps will improve understanding of social capital for community resilience around climate change. A strong focus on the structural forms of social networks (e.g. the presence of bonding, bridging or linking social capital) is a common approach used to examine the relationship between social capital and resilience. However, resilience-building at the community level is a multidimensional, dynamic process. Greater attention must be paid to proactive forms of resilience, its social-cultural aspects, and how these interact dynamically with other factors associated with resilience over time.

2.4. Conclusions

This review synthesised conceptual and empirical understandings about the relationship between social capital and resilience, and how this relates to building resilience at a community level in the context of climate change. Findings highlight the multitude of ways in which relations between social capital and resilience are conceptualised, and the need for researchers and practitioners to be more explicit about their underlying assumptions. Many studies suggest there is high potential for working with social capital to leverage collective action and resilience. There are, however, also many nuances in empirical findings, such as potential for certain forms of social capital to constrain or erode resilience. Care must be taken to avoid oversimplified conceptualisations of both social capital and resilience, as this may lead to knowledge, interventions or policies that have perverse or unexpected outcomes.

To advance understandings of resilience-building, both social capital and resilience need to be viewed as complex multi-dimensional processes. This includes giving much greater attention to understanding and working with the socio-cultural dimensions that shape the form and function of social relationships and networks which dynamically connect different actors and potential resources, and which influence how resilience itself is understood and approached. Most studies, however, still focus on relationships between structural dimensions of social capital in relation to specific crises, rather than on less tangible socio-cultural dimensions of social capital and proactive forms of resilience operating over wider time scales. More systemic, socio-cultural perspectives of social capital and resilience will provide a more nuanced, effective understanding of community resilience to climate change that also take into account the deep causes associated with the climate challenge.

Chapter 3

The previous chapter (chapter 2) examined conceptual and empirical understandings of social capital for enhancing resilience. The core findings identified diverse ways for understandings the concepts of social capital and resilience and how social capital enhances resilience. From this a number of research gaps were identified for developing more nuanced understandings of how social capital shapes community initiatives for enhancing resilience in the context of climate change. These gaps included a need to: (1) move beyond simplistic, binary approaches that focus on the type of actors and structural connections involved in social relationships; and (2) take more dynamic, systems perspectives on the shifting role of social capital and interactions with other factors across resilience processes framed around different goals and challenges.

This chapter (chapter 3) presents a study that addresses the question: How does the quality of social relationships influence community change initiatives? This question emerged from the two research gaps from chapter 2 outlined above. This next chapter qualitatively examines the nature of relationship and if and how this shapes their role within community change initiatives.

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3. Relationship qualities and their role within community change initiatives in the context of complex climate change challenges

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Abstract

This study examines the importance of the qualities of social relationships in community change initiatives and in the context of complex challenges. Through semi-structured interviews with 37 actors involved in 22 diverse community initiatives supportive relationship qualities with their diverse contributions and potential tangible and intangible benefits are shown to be particularly important. These qualities involve the development of equal interactive spaces of exchange, shaped by respect, integrity and honesty of those involved. Such relationship qualities should be understood for their generative potential for guiding and informing different problem solving strategies across spatial and temporal scales. Social relationships can help actors driving change initiatives to understand and shape their landscape of relationships and require actors to recognise the learning potential through social relationships and embrace the dynamic qualities of relationships. This provides the flexibility to respond to changing circumstances, issues and perceived needs of varying complexity through time.

Key words: Social relationships, relationship qualities, climate change, community initiatives, relationship-based practice

3.1. Introduction

Societal challenges such as those associated with climate change are increasingly recognised as complex, involving diverse actors, interests, perspectives, knowledge and power for shaping action and change on the ground (Voss et al., 2007). Engaging with such complexity is important to steer action in the present whilst maintaining and developing capacities for the future (Etzion et al., 2017). Around the world groups of actors embedded within different communities are working to organise and guide change aimed at bringing about more sustainable, resilient futures, e.g. to mitigate and adapt to the impacts of climate change (Parkhill et al., 2015, Adger, 2003).

Social relationships are widely acknowledged as key for change processes (Laycock and Mitchell, 2019), from enhancing environmental sustainability to reducing the impacts of flooding, particularly for sharing knowledge, overcoming problems and learning to shape action that enables the conditions of change to unfold (Goldstein et al., 2017) and for enhancing resilience to climate change (Berkes and Ross, 2013). This involves a strong focus on different elements of social relationships that includes the structure of social connections, and particularly the networks formed (Bodin and Crona, 2009), the consequences and/ or outcomes that emerge (Falk and Kilpatrick, 2000), and, to a lesser extent, their content (in terms of social norms) and their qualities (Therrien et al., 2019, Wilshusen, 2009), particularly in relation to trust (Pelling and High, 2005). From this social relationships are often considered in terms of bonding and bridging types of relationships and/ or strong and weak ties (Moore and Westley, 2011) with the presence of social connections often assumed for policy purposes as important for shaping desirable outcomes, such as resilience to natural hazards (MacGillivray, 2018). Examining different types of social relationships involves an emphasis on the types of actors and action spaces involved, delineated in terms of homophily (or sameness) and heterogeneity (or difference) (McLean, 2017). This is problematic as it may externally assume fixed boundaries and simplistic identities (e.g. for community and social groups)(Smith et al., 2012b, Colclough and Sitaraman, 2005) as well as static outcomes from such connections (Wilson et al., 2020), potentially limiting understandings of their role in generating change.

Whilst integrated, hybrid approaches have emerged, for example involving common purpose, trust and norms of reciprocity, these actor-oriented perspectives often conflate these different elements of relationships (Phillips, 2016) and the different scales involved. Furthermore they also often prioritise structural perspectives that quantitatively capture the form (or strength) of social connections between actors at a specific point in time (Rockenbauch and Sakdapolrak, 2017). Who is involved (the form) and what outcomes may or may not emerge from these connections between actors has been widely studied (for example Therrien et al. (2019), Bodin and Crona (2009)). This has led to an emphasis on the role of different types of social relationships in helping or hindering the flow of information and ideas and thus learning (Newig et al., 2010, Kilpatrick and Falk, 2003). Whilst learning is widely

recognised as a critical element of resilience building initiatives, learning may unfold in different ways and at different levels, e.g. single loop learning for improving current activities or deeper, double loop learning that involves re-examining underlying assumptions that shape different actions (Reed et al., 2010). Thus, not all social relationships and what unfolds may be considered equally desirable by different actors.

Social relationships are dyadic patterns of interaction that develop between individuals (Ferris et al., 2009). As these interactions unfold they create interactive spaces that facilitate exchange and (co)construction of different understandings about phenomena and the interconnections between them (Bernhard, 2018). Such interactive spaces vary qualitatively, shifting and evolving over time to guide and inform collective processes in different ways. Actor oriented approaches must address the quality of these interactive spaces to unpack the role of social relationships for shaping action and collective change processes, and how those involved can develop and work through them to respond to complex challenges.

The aim of this study is to examine the qualities of social relationships in community change initiatives to build theory grounded in empirical data about the role of different qualities in shaping such initiatives in the context of complex challenges related to climate change. To address this aim, we first explain the inductive methods used to interview actors from diverse community based initiatives. We then outline the findings pertaining to the different relationship qualities experienced by these actors, the key factors shaping interactions, and the role of relationship qualities in community change. These findings are then discussed to explore implications for steering change at the community level. The paper is novel in the way it goes beyond identifying types of relationships to understand the nature and role of qualities present in them, and then in how it provides new insights about the practice of working with complex community-based initiatives.

3.2. Methods and materials

3.2.1. Approach

Qualitative interviews were held with participants from 22 community-based initiatives in Scotland to understand their perspectives on the role and importance of the quality of relationships in helping bring about successful action. An interpretivist epistemology was used to allow for the subjective nature of social relationships (Moses and Knutsen, 2012) in combination with a modified version of grounded theory (Urquhart, 2013, Charmaz, 2008) to help avoid influence of preconceived theoretical ideas and underlying assumptions during data collection and analysis (Strauss and Corbin, 1994). Reflexivity was also key for surfacing diverse possible interpretations (MacBeth, 2001).

3.2.2. The community-based initiatives

The study was undertaken in Scotland where many different community initiatives towards greater environmental sustainability and enhancing resilience are already underway, many supported by various governmental policies and programmes, and national networks that aim to connect and share learning across them. Community initiatives were defined as voluntary, collective endeavours led by actors from within communities seeking to bring about change with wider social benefits (Celata et al., 2019). They encompassed both rural and urban contexts, involved at least 3 core members and had been in existence for at least 1 year. Initiatives primarily focused on environmental challenges, in some cases with a supplementary focus on social dimensions of community change. How problems were defined varied depending on specific local issues addressed, including extreme weather, environmental sustainability, climate change and community development more broadly.

3.2.3. Data collection

Data collection involved semi-structured in-depth interviews combined with visual techniques (Pain, 2012). 37 individuals were interviewed from 22 community initiatives from across Scotland (table 3.1). The interviews were supported by visual methods to graphically elicit structural understandings of key social relationships (existing connections to other actors). An interview guide was developed and a priming question provided to interviewees a day in advance to give interviewees time to select different relationships to explore with the researcher. The graphic elicitation created by interviewees at the start of each one hour interview enabled exploration of performative aspects of social relationships, and underlying factors involved in shaping different experiences of them. This helped to capture both breadth and depth of views from interviewees about the types and roles of social relationships within initiatives. Informed consent was obtained, including the use of audio recording to ensure accuracy. Interview data was transcribed verbatim and, along with relationship maps, were organised and coded using NVIVO software. Data collection was an iterative process that involved holistic coding of data and memo writing to guide theoretical sampling for the selection of community initiatives and individuals to participate in the study (Saldana, 2016).

Table 3.1: Types of community initiative, interviewees and their role*

*(B) Board member involved in project development; (MA) Manager involved in developing activities and overseeing delivery; (C) Coordinator involved in developing and delivering activities; (ME) Member of the group involved in delivering activities.

Community initiative		Number of projects	Type of funding	Interviewee role	Gender	Interviewee code
A focus on extreme weather events and infrastructure	Initiative 1	Single	Local government (small scale)	Coordinator	Female	1Ca
				Coordinator	Male	1Cb
	Initiative 2	Multiple	Unfunded	Coordinator	Male	2C
	Initiative 3	Single	Local government (small scale)	Coordinator	Male	3Ca
				Coordinator	Male	3Cb
	Initiative 4	Multiple	Local government (small scale) and external funding	Coordinator	Female	4C
				Member	Female	4M
	Initiative 5	Single	Local government (small scale)	Coordinator	Male	5C
A focus on environmental sustainability and climate change	Initiative 6	Multiple	Multiple external (small scale)	Coordinator	Female	6Ca
				Coordinator	Female	6Cb
	Initiative 7	Multiple	Multiple external and national government (large scale)	Board member	Male	7B
				Coordinator	Female	7C
	Initiative 8	Multiple	Multiple external (small scale)	Coordinator	Male	8C
	Initiative 9	Single	External (large scale)	Coordinator	Male	9C
	Initiative 10	Multiple	Multiple external and national government (large scale)	Coordinator	Female	10Ca
				Coordinator	Male	10Cb
	Initiative 11	Single	None	Coordinator	Male	11C
	Initiative 12	Single	National government	Board member	Female	12B
				Coordinator	Male	12C
				Member	Male	12ME
	Initiative 13	Multiple	None	Coordinator	Male	13Ca
				Coordinator	Female	13Cb

A focus on community development and environmental sustainability and climate change	Initiative 14	Single	National government	Coordinator	Female	14Ca
				Coordinator	Female	14Cb
	Initiative 15	Multiple	Multiple external and national government (large scale)	Board member	Male	15B
				Coordinator	Female	15C
	Initiative 16	Multiple	Multiple national government funding (large scale)	Manager	Male	16MA
				Coordinator	Female	16C
	Initiative 17	Single	National government	Manager	Female	17MA
				Coordinator	Male	17C
	Initiative 18	Multiple	Multiple external (small scale)	Manager	Female	18MA
				Member	Male	18ME
A focus on community development	Initiative 19	Multiple	External (large scale)	Coordinator	Female	19Ca
				Coordinator	Female	19Cb
	Initiative 20	Single	None	Coordinator	Female	20C
A focus on a specific community issues (youth; local economy)	Initiative 21	Multiple	Multiple external (large and small scale)	Coordinator	Female	21C
	Initiative 22	Single	External (small scale)	Coordinator	Female	22C
					Total number of interviewees = 37	

Interviewees were invited to participate based on their active involvement in different community level initiatives. Interviewees' formal role varied with the scope and size of initatives and included board members, managers overseeing specific projects or activities, coordinators driving forward projects and members involved in planning and implementation.

3.2.4. Analysis

Initial coding and memo writing was used iteratively as data collection occurred. This helped guide collection of new data. Analytical memos helped organise and guide the analytical process for reflection and to support a shift from descriptive accounts to the development of theoretical understanding grounded in the data (Saldana, 2016) (figure 3.1).

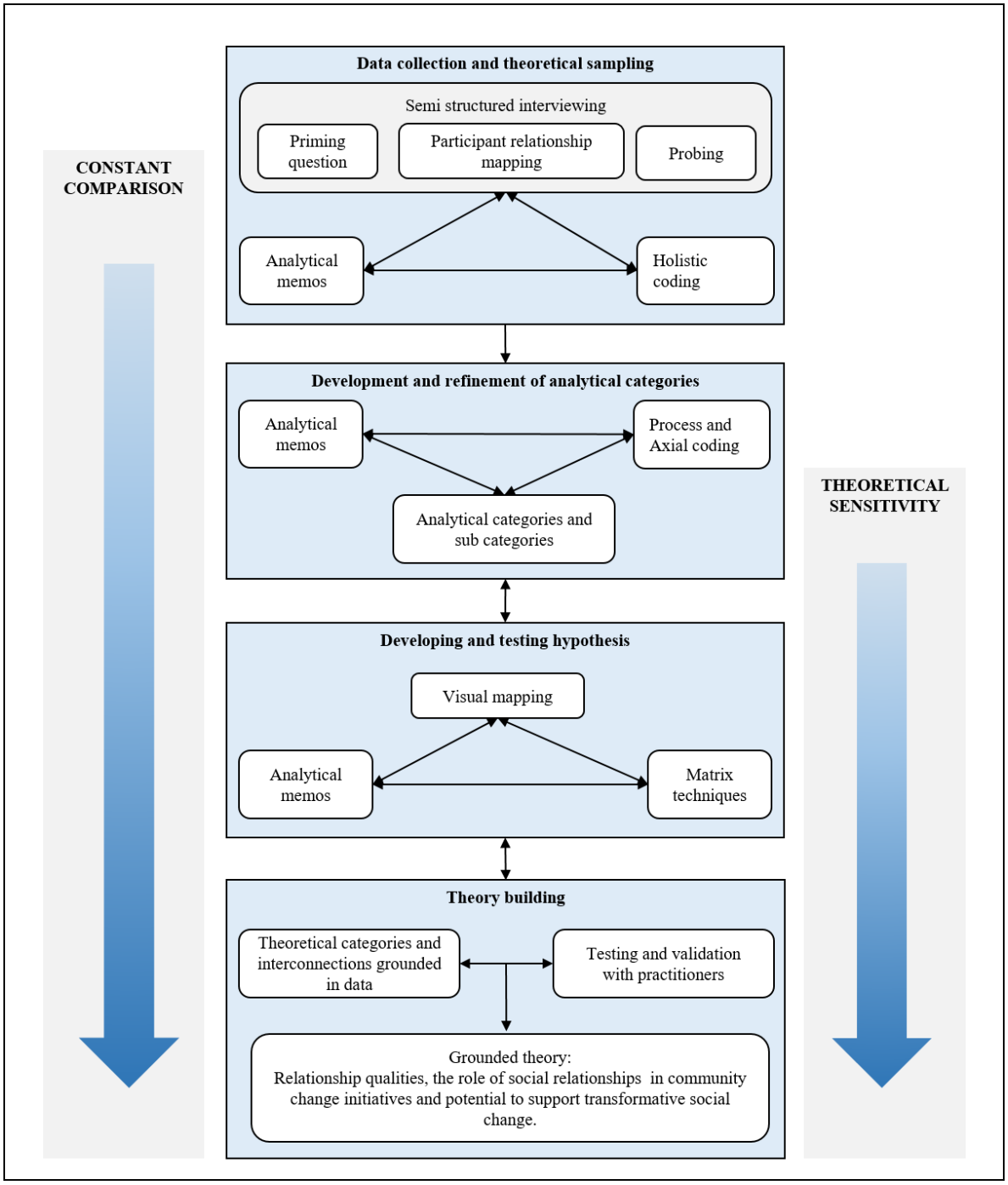

Figure 3.1: The modified version of grounded theory approach applied in the research process

Alongside memos, analysis involved the use of axial coding techniques to develop and refine categories, labelled to represent core idea(s) in the data. Process coding techniques were also used to identify key narrative accounts detailing experiences of social interactions and underlying factors emphasised as important for shaping how social relationships unfold and link with different initiative activities. Whilst data related to relationships with different actors, the anylsis focused on exploring those relationships out with the core group of actors who were working together to actively develop each initiative (e.g. with individuals from other groups or organisations). Visual mapping and matrix techniques were then

used in parallel with a futher set of analytical memos to identify and test patterns and connections across the data (Ritchie et al., 2003, Attride-Stirling, 2001, Miles and Huberman, 1994). Constant comparison was used throughout the process to develop categories and ideas, helping to incorporate simple quantification to assess relative importance of connections within the data (Bernhard, 2018). Theoretical sensitivity was also applied throughout the process involving awareness of existing theoretical perspectives as theoretical understandings were inductively developed from the data for building theory (Urquhart, 2013). Initial results were presented and discussed with practitioners as part of the process of developing and refining theoretical categories. Explicitly adopting a relationship approach across change initiatives in this way enhanced the validity of the theory-building process. The outcome was both findings about the qualities of relationships and how they related to the way initiatives progressed and developed in the context of complex sustainability and climate change challenges.

3.3. Findings

There were three categories of findings: 1) The different qualities of relationships; 2) Factors shaping how relationships interacted with initiatives; and 3) the role of different qualities in shaping the initiatives.

3.3.1. Qualities of social relationships

Three primary qualities were identified: Supportive, pragmatic and tense (fig 3.2). The first of these refer to qualities that were experienced as supportive, helpful, easy and positive. Here actors were perceived to be working together or in parallel as genuine equals with interactions characterised by respect, honesty and integrity. Beyond direct interactions interviewees emphasised a sense of broader support as a feature of these relationships. These supportive relationship qualities were considered energising and empowering, creating space to explore and test out new ideas for different actions.

The second were pragmatic relationships, experienced as purpose driven, inauthentic, necessary and potentially paternalistic. A key feature of these pragmatic relationships was emphasised by interviewees as asymmetry in terms of underlying power and benefits accrued over time. Such pragmatic relationship qualities often require diplomacy and negotiation to progress actions.

Finally, interviewees also experienced tense qualities in relationships, which were difficult, unavoidable and challenging, with actors disagreeing on how problems and potential solutions are understood. Key features of these relationship qualities were friction, confrontation and the potential for conflict, considered to be draining and creating barriers to action.

For some, shifts in qualities occurred as relationships developed through repeated interactions that deepened understanding, or qualities that fluctuated through time as situations and wider circumstances

also shifted. Those developed through interaction often, although not always, entailed a broadening and deepening of relationships qualities. Those fluctuating, however, more often than not, involved shifts between tense and pragmatic qualities.

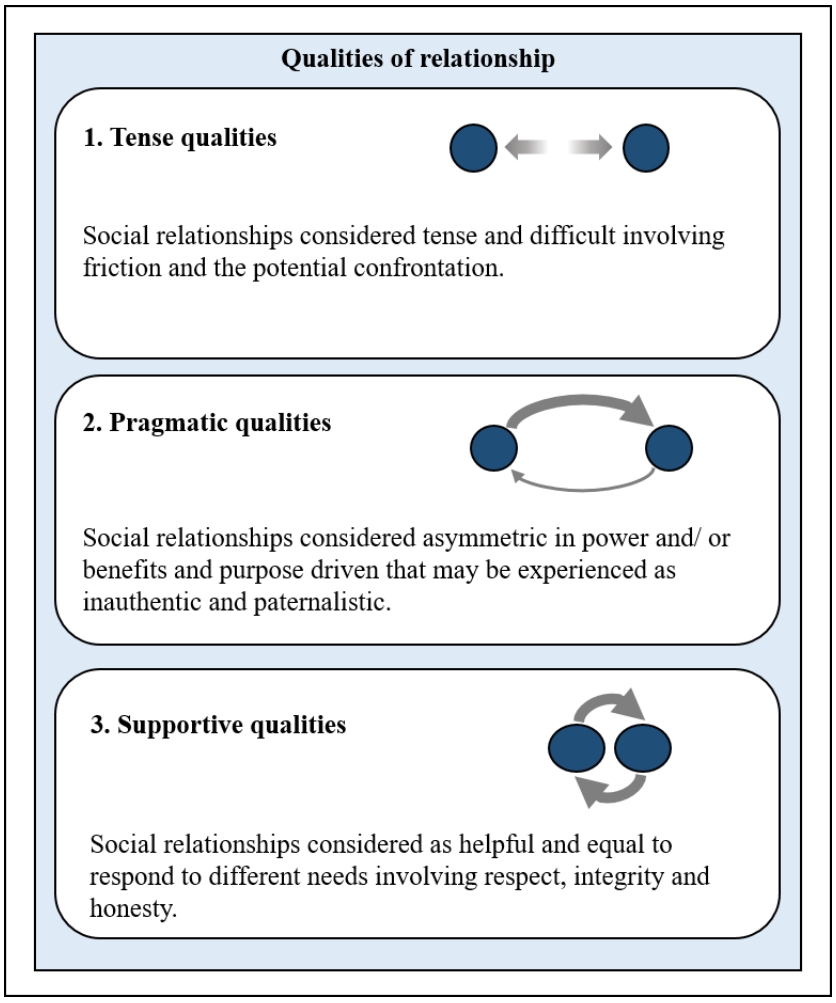

Figure 3.2: Three qualities of relationships

3.3.2. Factors shaping how social relationships related to strategies, actions and initiatives

Three broad interacting factors were identified as being related to the qualities of social relationships within the different initiatives and intersected in the following way (figure 3.3). Different *qualities* resulted in diverse *direct contributions*, which then influenced how different *types of benefits* emerged in combination with other factors. These benefits – such as strategic approaches – then interacted with underlying *views about how relationships developed,* which in turn affected how actors worked with relationships. In this section, we first explain contributions, benefits and views. In the final section of the results we bring together these findings to explain how qualities feed through to shape community initiatives.

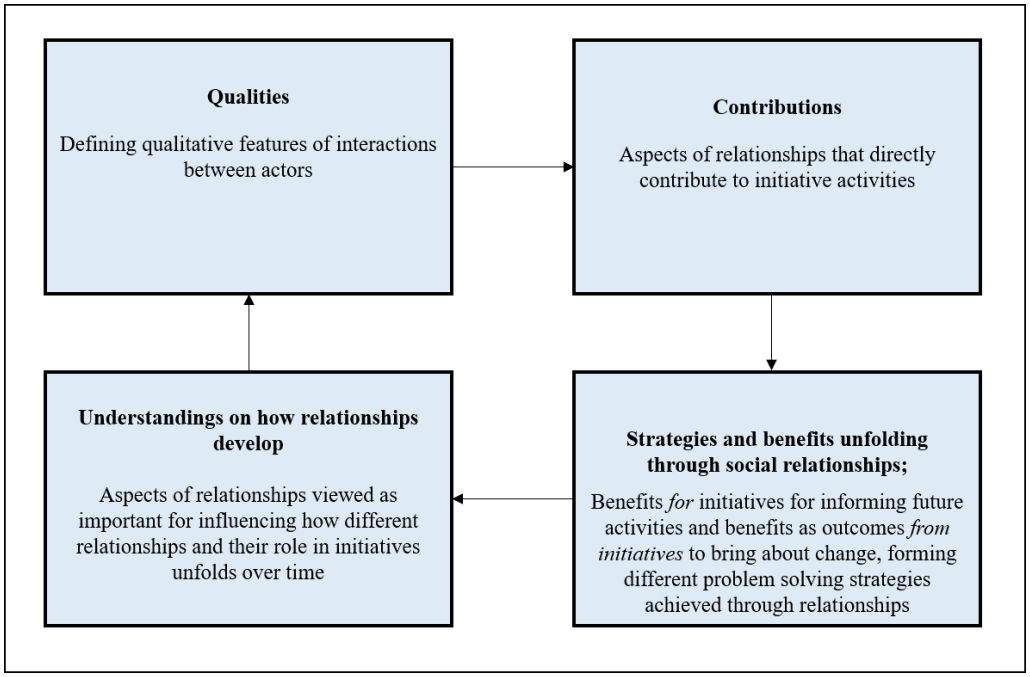

Figure 3.3: Key factors involved in shaping the role of relationships in general within community initiatives

3.3.2.1. Contributions

Four broad types of contributions arising from relationships were identified (table 3.2). These included: 1) knowledge contributions including about the context and specific expertise or knowhow; 2) psychological contributions, such as encouragement and empathy; 3) gatekeeping contributions, such as helping access people, spaces and other resources; and 4) physical contributions such as use of equipment, manpower and financial donations. On their own or in combination these contributions informed or helped enable initiative activities to progress.

Table 3.2: Types of contribution directly from relationships

Contribution	
Knowledge 	Contextual knowledge; Know-how (skills); Formal knowledge products (reports, guidance etc.); Ideas; Technical knowledge/ expertise; Knowledge about actors/ networks
Psychological 	Enthusiasm/ inspiration; Solidarity/ encouragement; Reflecting on bigger picture; Recognition; Empathy
Gatekeeping	Introductions/ recommendations; Invitations; Permissions/ backing; Media platform; Legal frameworks

	
Physical	Physical spaces; Equipment/ facilities; People/ manpower; Financial resources
	

3.3.2.2. Strategies and benefits unfolding through relationships

A complex array of benefits arose from the direct contributions. These included two overarching benefit domains: (1) benefits arising from contributions that enhanced existing or future activities the interviewees were engaged in; and (2) benefits as outcomes arising from the initiatives but which emerged through the contributions made by social relationships (table 3.3). In the first domain, benefits included how social relationships and their contributions helped: a) develop activities in the future (e.g. funding proposals and formalising processes and procedures); b) build physical capacities (e.g. new spaces and manpower); c) build relationships with new actors; d) enhance learning to inform future activities. For the second domain, benefits from social relationships included: a) spread of ideas to greater numbers of people; b) influences on formal decisions of policy actors; and c) shifting how issues were framed and connections between people. In both domains, the benefits presented here only include those identified as being related to social relationships (e.g. there were many other benefits arising from initiatives).

Importantly, actors in some initiatives that had recognised the value of working with social relationships to bring about these different benefits were working with five core strategies: Reaching out to more people; influencing policy processes; crafting physical and socio-cultural connections; bringing others on board; and strengthening connections (table 3.3). These strategies can be used to enhance and guide future initiatives and strategically help bring about outcomes from them and wider action and change.

Table 3.3: Strategies applied through, and benefits arising from social relationships

Benefits for shaping future activities of initiatives				Benefits from the initiatives			Broad strategies being used to bring about the benefits from social relationships
Organise future activities	**Physical development**	**Building new relationships**	**Learning**	**Spread of ideas to more people**	**Influence formal decision making**	**Shift issue framing and social connections**	
x	x			x			**Reaching out to more people** Relationships help provide opportunities to improve awareness of key issues and involvement of greater numbers of people, with particular emphasis on a specific place. The issues are often specific local issues (e.g. flooding or tourism) and/ or involve emerging initiatives (e.g. that require people to shape visions, ideas, and actions). Relationships help enhance the capacity of the initiative through the development of formalised processes and permissions.
x				x	x		**Influencing policy processes** Though relationships initiatives challenge or influence formal decision making processes which are perceived as hindering outcomes more widely and to spread ideas and raise awareness of concerns to a wider number of people. New projects may be identified as relevant but struggle to gain traction.
x	x		x	x		x	**Crafting physical and socio-cultural connections** Relationships help shape a physical, interactive element at the centre of these initiatives (e.g. a building or garden) and to involve increasing numbers of local actors (e.g. from across a place). The formal and informal interactions that come about shape deeper connections, particularly between people, but also with nature and place. Close alignment with other local initiatives may increase organisational capacity of the initiative. Experience supports learning of the group about the importance of relationships.
x	x	x	x	x		x	**Bringing others on board** Relationships create opportunities to access different groups/ networks to help spread ideas, increase awareness and encourage specific actions, e.g. to encourage more environmentally sustainable behaviours. Those engaging in these spaces may also develop relationships, but this may be an unintentional consequence. Relationships help benefit initiatives for

							developing future activities through new funding proposals, and learning to improve existing activities (singe loop learning).
x	x	x	x	x		x	**Strengthening multiple connections** Relationships help shape opportunities for engagement that enables those involved to develop stronger social connections (between people) and explore connections between cultural (traditions and norms) and environmental concerns. New and existing relationships help develop the capacity of the initiative (e.g. new projects) and provide opportunities to learn about the views and priorities of others to identify opportunities to inform future activities.

3.3.2.3. Understandings of how relationships develop

Three broad views were held by those driving forward initiatives about how social relationships developed (table 3.4). These views influenced how the role of relationships within community initiatives were understood and how action was approached. The first viewed relationships as a two-way interaction between actors, shaped by behaviours and attitudes. This led to a focus on the individual level (and often the other individual involved) as the key loci of control and responsibility for how relationships developed. The second viewed social relationships as contextually embedded and unfolding from the wider social context, such as through alignment or misalignment of actors' actions with their wider institutional norms of engagement and collaborations with different organisations. This tended to lead to a focus on alignment between actors with a shared institutional setting or individuals diverging from institutional norms as key to shaping relationships. Finally, the third viewed relationships as a selective process where actors were viewed as being more capable of selecting opportunities to develop social relationships and thus different kinds of engagement and to implement different initiative strategies. This was often linked to an explicit adoption of a strategic relationship-building approach as a central feature within initiatives. Overall, relationships were considered by interviewees to be formed through one or more of these mechanisms. Whilst those that viewed relationships as a two-way process and/ or contextually embedded tended to be involved in initiatives directly linked to government programmes, with a strong perceived need to engage with specific formal actors and/ or a specific, narrow focus, e.g. initiatives focusing on preparing for and responding to flooding, those viewing relationships as a selective process tended to have a broad focus that emerged through a more explicit bottom-up approach.

Table 3.4: Different understandings of how relationships develop

View on how relationships develop	Explanation
Social relationships as a two way process	Social relationships as interactions over time between two actors developing from overlapping interests and/ or geography. Key factors shaping social relationships are individual actors' behaviours and attitudes, such as communicating, sharing, obstructive, defensive, and enthusiastic.
Social relationships as contextually embedded	Social relationships shaped by formal institutional contexts which actors are embedded within. Adherence to institutional norms and practices, such as norms of engagement with different actors and types of collaborative practice influences how social relationships unfold.
Social relationships as a selective process	Social relationships are central to bring about change and are shaped by multiple factors. Relationship building is a process of exploration and selection driven by capacities of initiative actors, e.g. leadership, autonomy and reflexivity.

3.3.3. The role of different qualities in shaping initiatives

The third key finding related to the way the different qualities intersected with the different factors – contributions, benefits, and understandings of how relationships develop – to shape the way initiatives progressed and how change was enabled or unfolded.

3.3.3.1. Role of tense relationships

Tense relationships provided only a limited contribution that enhanced knowledge in the service of initiatives' activities (figure 3.4). Those experiencing such contributions found them little help in shaping benefits for initiatives and the development of potential solutions orientated outcomes. Whilst interviewees often emphasised tense relationships as unsatisfactory and/or necessary, these qualities were often not discussed in terms of any explicit underlying understanding about how they emerge in the first place. This may limit the potential for understanding the overall role of social relationships within community initiatives. Some interviewees did however emphasise that tense relationships were sometimes a precursor to the development of pragmatic relationships. Overall tense relationships with their restricted contribution have a limited role within initiatives and are associated with not achieving any clear problem solving strategy, particularly when they persist over time.

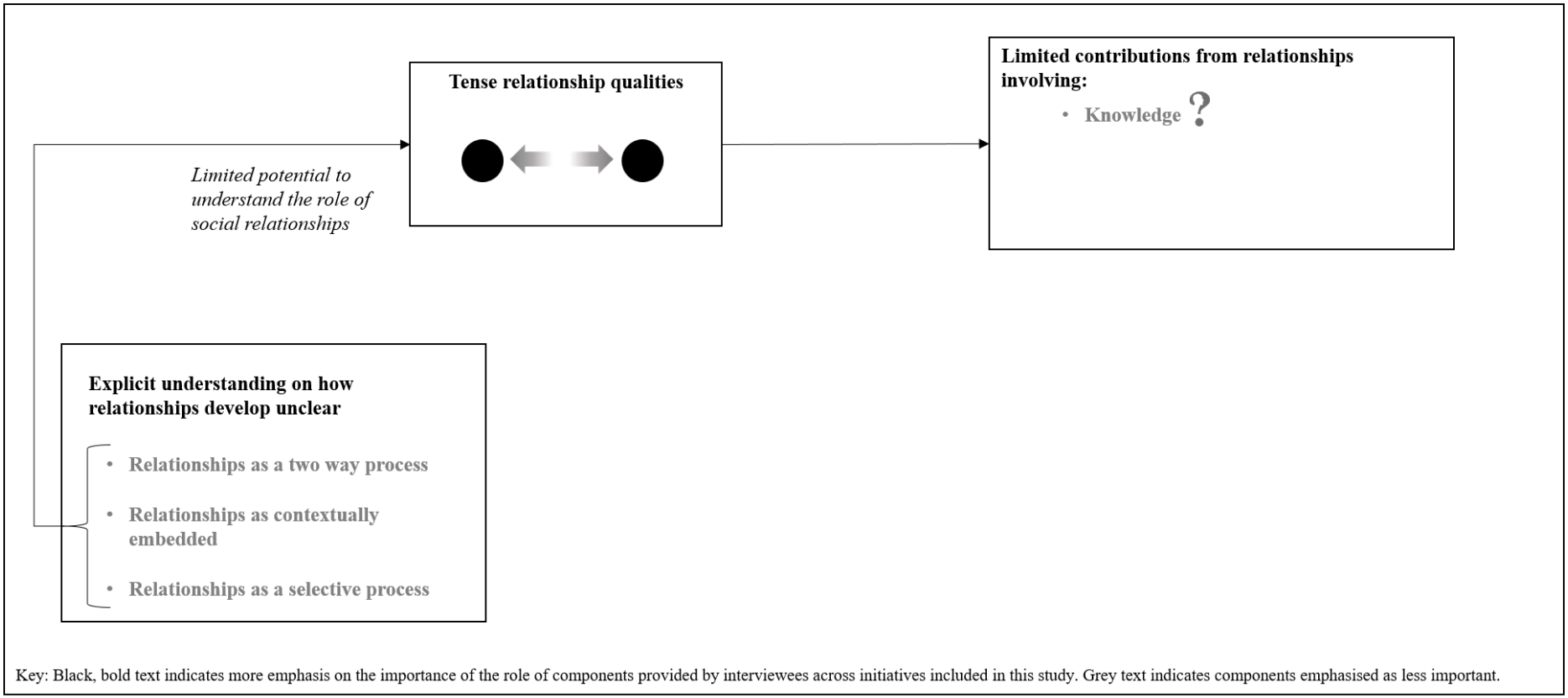

Figure 3.4: The role of tense relationship qualities in community change initiatives

3.3.3.2. Role of pragmatic relationships

Pragmatic relationships contributed to different kinds of knowledge, from expert to contextual knowledge, and to limited gatekeeping and physical contributions. Interviewees emphasised the importance of institutional context to understand both how these relationship qualities develop and their limited or specific role within initiatives. This combination of contributions through pragmatic qualities helped to establish some benefits, particularly for organising future activities (e.g. new funding proposals) and solution-orientated outcomes, especially the spread of ideas. In combination these enabled some types of problem solving strategies to be achieved, but not others (figure 3.5).

Whilst benefits for initiatives included developing new relationships and learning, the latter involved learning about improving social interactions, e.g. to better engage people and enhance the flow of ideas, potentially helping to expand the number of social relationships in the future. With a strong focus on spreading ideas, some potential for creating the conditions for social change through pragmatic qualities was identified. In combination these potential benefits and solutions enabled some problem solving strategies to be established, but not others. Thus, initiatives seeking to reach out to more people, bring others on board and, to a lesser extent, influence policy can potentially implement such strategies through pragmatic relationships.

Overall, while pragmatic relationships played a specific role in enhancing access to new knowledge, these contributions only led to a limited diversity of benefits and solutions and therefore potential to achieve a few problem solving strategies. The opportunities afforded through pragmatic relationships predominately focus on enhancing the quantity of interactions and relationships with actors, rather than enhancing their quality and overall role.

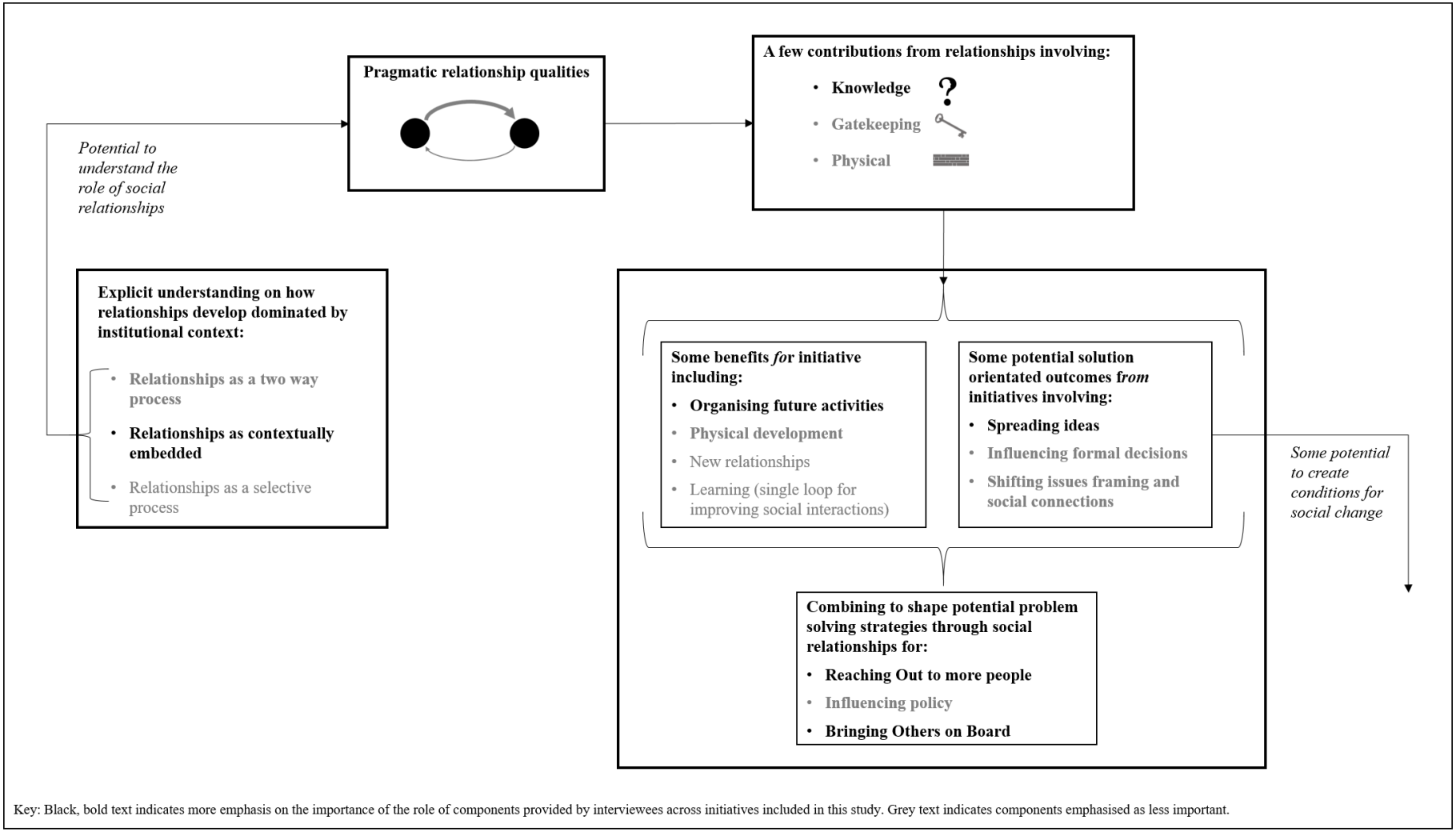

Figure 3.5: The role of pragmatic relationship qualities in community change initiatives

3.3.3.3. Role of supportive relationships

Supportive qualities directly helped provide a wide range of knowledge, psychological, gatekeeping and physical contributions. These, in turn, helped initiative activities achieve diverse strategies involving a range of benefits for and from initiatives. These benefits included the spread of ideas, influencing formal decision-making and enhancing understanding of interconnected social and environmental issues of the diverse actors they engaged with (figure 3.6). These potential benefits had a strong focus on organising future activities and developing physical assets (e.g. creating new spaces such as community gardens to strengthen collective identities and sense of community) but also included new relationships and learning. This diversity of potential benefits enabled an array of problem solving strategies to be achieved through supportive relationships. These included strategies to bring other people on board and more multidimensional strategies to craft and strengthen understandings and engagement with social and environmental connections by other actors, and thus involved the potential for a wider range of strategies to emerge than through pragmatic qualities. Through supportive relationships, initiatives were able to create conditions for wider change and for developing initiatives for the future.

The learning benefits, compared to initiatives with pragmatic relationships, included learning about improving existing activities, e.g. to improve engagement skills, and deeper learning from experience of different relationships and interactions. This experiential learning helped identify opportunities for relationship building to contribute to initiative activities. Additionally, understandings about how supportive relationships developed was broad, involving a focus on relationships as a two way process shaped predominately by the other actors behaviours and attitudes, the institutional context, and/ or relationships as a selective process driven by initiative actors. These diverse, explicit understandings of different factors involved in shaping relationships helped some actors to understand more fully how the role of social relationships for initiatives unfolded through time. By re-shaping framings and strategies (deeper double-loop learning), some actors were able to navigate relationship building to focus efforts and capitalise on opportunities, to develop supportive relationships for the purpose of enhancing initiatives. This effect was enhanced when actors viewed social relationships selectively. Such active development of supportive relationships tended to occur in initiatives with problem solving strategies orientated to developing social and environmental connections (strategies for crafting physical and socio-cultural connections and strengthening multiple connections). Thus, a combination of learning experientially through relationships with a more nuanced understanding of social relationships allowed actors to more actively engage in and shape social relationships, enhancing the overall role social relationships played in different initiatives.

Overall, supportive relationships have a particularly important role for creating conditions for deeper types of change in the ways that they bring more diverse contributions, are applied strategically, and

ultimately in the benefits that unfold. Whilst supportive qualities were identified as important across initiatives to guide and inform activities, some actors that experienced supportive relationships were also explicitly embracing the opportunities for learning in order to build relationships for the future. This led to enhanced and sophisticated approaches to using and developing relationships to support change.

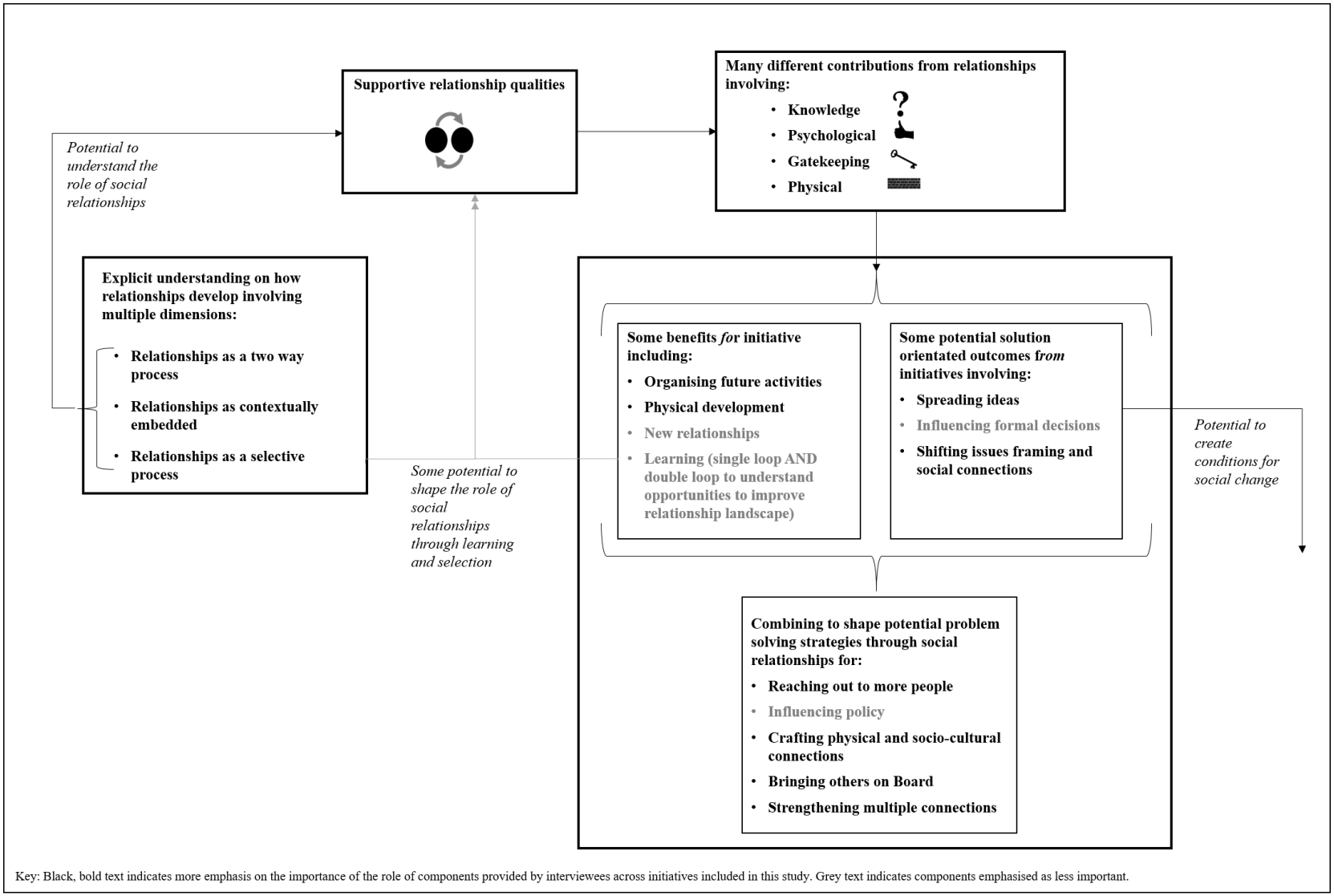

Figure 3.6: The role of supportive relationship qualities in community change initiatives

In summary, different relationship qualities were associated with different contributions for shaping different types of initiative outcomes. Supportive relationships with the most diverse contributions provide more opportunities to inform the development of initiatives. Relationship qualities are therefore important for shaping how different types of social change processes unfold.

Relationships between actors can shift over time. A focus on relationship qualities and their role in initiatives helps to draw this out explicitly. These dynamics may be viewed as developmental, e.g. as tense relationships give rise to more pragmatic relationship qualities or shifts from pragmatic to supportive relationships as formal actors work towards or deviate from institutional norms. However such dynamics may also relate to fluctuations between different relationship qualities as new problems arise that may shift how actors, issues and actions are perceived by those involved. These dynamics of social relationships may be actively embraced to seek out and build supportive relationships. Here these actors are navigating the landscape of different types of actual or potential relationships to enhance the potential role of social relationships in initiatives more broadly over time.

3.4. Discussion

This study examined relationship qualities and their role within different types of community-based initiatives. Supportive qualities within social relationships had significant impacts, providing equal, constructive spaces for sharing resources, exploring and solving problems and inspiring and enthusing action. In contrast, pragmatic relationships offer limited contributions and benefits, whilst tense qualities involve contestation, contributing only limited insights. Supportive relationships can thus be viewed as being particularly important.

The experiences of different relationship qualities and their role in community-based initiatives were underpinned by different understandings of how social relationships develop. These understandings varied in their focus on different dimensions involved in shaping social interactions, e.g. by emphasising the factors and scales (spatial and temporal) such as individual, institutional or initiative as key to the development of relationships, their contribution and the actions that emerge for initiatives. These different views thus also related to actors' understandings about how the role of different social relationships unfolded for initiatives. This reaffirms the subjective nature of social relationships and construction of identifies within and through relationships (Bernhard, 2018), emphasising normative and scale dependent dimensions. Surfacing such views at the beginning of initiatives would thus be helpful as a way to better situate and position different actors and scales.

The findings also highlight how social relationships and their role in community-based initiatives are dynamic. When and how contributions and benefits emerged fluctuated over time. Shifts in the quality of social relationships also occurred, such as driven by changes in the attitudes and behaviour of other

actors, or as experience was gained over the course of multiple interactions. Sometimes shifts in the initiatives occurred as new insights were gained about the role and importance of qualities of social relationships, leading to active attempts to improve or build some relationships rather than others. This has two important implications for future initiatives. First, whilst some relationship qualities may be relatively stable (e.g. when personalities do or do not align), in some instances opportunities will arise to build on existing relationships, such as helping move from pragmatic to supportive to enhance outcomes. Second, whilst agency is important for seizing and shaping such opportunities, changes in the quality and role of specific relationships is influenced by other actors and broader factors. Flexibly working with potential opportunities across different relationships over time can therefore be actively built into ongoing strategies within initiatives.

Learning was also key within the findings, with those actively learning through relationships about relationships tending to have a much more nuanced sense of the role of social relationships within communities and how they facilitate social change. Whilst relationships are widely recognised as involving opportunities for learning (Pelling et al., 2008), who is learning, what and how this is applied in practice is key for shaping change and for resilience (MacIntyre et al., 2018). This study suggests that learning ***through*** social relationships, rather than simply gaining knowledge to improve initiative activities ***from*** relationships, is important for further shaping and developing strategies. Thus, initiatives that actively engage with the dynamic nature of social relationships, actively seek to apply strategies using social relationships, and which also reflexively examine how such approaches might be improved, have potential to create positive feedbacks within community-based initiatives. Careful attention to building such feedbacks has potential to shift projects from simply delivering direct benefits to putting in place critical system dynamics and capacities for continued outcomes (Fazey et al., 2021). What this study has shown is the importance of the qualities of relationships in this regard.

As community-based initiatives engage with increasingly complex challenges such as those associated with climate change, the diverse contributions and problem solving strategies that can emerge through supportive relationship qualities become increasingly important. Across all initiatives studied, those that broadly sought to develop supportive relationships found there were significant gains in terms of enhancing flexibility, and opportunities. This required actors evaluating opportunities to develop relationships as they arise, bypassing those considered to have limited potential or those who might hinder action in the longer term, and focusing instead on crafting supportive relationship landscapes that span the individual-initiative-institutional scales. Doing so requires respect, integrity and honesty to help create equal spaces of exchange between individuals involved. Ultimately, developing supportive relationships is about understanding how they work and building their generative potential over time.

Building deliberate change processes are increasingly central to addressing complex and interconnected challenges. Strengthening capacities to act collectively and respond to current and uncertain future

challenges (Magis, 2010) is common to different understandings of resilience. Improving community resilience is a social process of learning (Reed et al., 2013), embracing and shaping change whilst maintaining flexibility (Fazey et al., 2018a). Social resilience is driven by human agency, often of actors embedded in the community level (Skerratt, 2013). Social relationships are key in shaping how these processes unfold and the outcomes that emerge (Berkes and Ross, 2013). Yet this study suggests that the flexibility and opportunities for learning within and across supportive relationships has significant potential to support resilience building efforts in practice. Resilience therefore requires an explicit focus on working through social relationships, creating conditions to better enable initiatives to learn about and craft supportive relationship landscapes.

Overall, whilst connections to a diversity of actors with different perspectives is important, the quality of relationships is key, rather than the type of actor involved per se. This orientation away from the types of actors to focus on the qualities of social relationships is important, particularly as the mere presence of social connections between different actors is often considered a key indicator of community resilience (Sherrieb et al., 2010). Whilst many studies on social relationships examine the form and function of connections between actors, often quantifying this leads to a static, snapshot view of the role of relationships in community initiatives (Rockenbauch and Sakdapolrak, 2017), providing few insights about how relationships and their role can vary and change over time. This study provides a more nuanced understanding of the role of social relationships in community-based initiatives that foregrounds relationship qualities and dynamics.

3.5. Conclusion

This study emphasises the importance of supportive qualities with their diverse contributions and potential tangible and intangible benefits that may arise. Supportive relationships entail the development of equal interactive spaces of exchange, shaped by respect, integrity and honesty of those involved. Such relationship qualities should be understood for their generative potential for guiding and informing different problem solving strategies across spatial and temporal scales. Social relationships can help actors driving change initiatives to understand and shape their landscape of relationships. This requires such actors to recognise the learning potential through social relationships and embrace the dynamic qualities of relationships. This can help enhance their overall role in shaping community change initiatives, developing the flexibility necessary to respond to changing circumstances, issues and perceived needs of varying complexity through time. If we really want to bring about meaningful social change to build community resilience in a complex and uncertain world then building, and strategically working through supportive relationships would be an effective place to start.

Chapter 4

The previous chapter (chapter 3) addressed the question: How does the quality of social relationships influence community change initiatives? It found that the quality of social relations can be understood in terms of tense, pragmatic or supportive qualities and these qualities influence the potential role of relationships within community initiatives. These different qualities can shift over time, yet actively nurturing the role of social relationships entails sophisticated approaches for working through relationships to harness the generative potential of supportive relationship qualities. These findings provide insights about how initiatives can actively work to enhance the quality of relationships and their role.

Chapter 4 now examines the social dynamics involved in shaping community change initiatives and the different social factors that interact with social relationships as these complex social processes develop. This involves a case study of a process to develop a community climate change initiative (a community fridge) to create meaningful collective change. This chapter addresses the question: How do social relationships interact with other complex factors to enable meaningful change within communities? This question emerged from dialogue with community practitioners and from the research gaps identified in chapter 2, which included a need to; (1) take a more dynamic perspectives on the shifting role of social capital and interactions with other factors across resilience processes framed around different goals and challenges; and (2) take into account a more socio-cultural perspective to social capital to examine and better understand the role of different normative factors in the form and function of social capital for enhancing resilience. This builds on the findings from chapter 3 that showed the importance of improving social relationships for engaging with complex climate change challenges within community initiatives.

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4. The nature and role of social relations and dynamics in complex community climate change initiatives: The development of a community fridge in Scotland

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Abstract

Research to support community-based change initiatives tends to underplay the role of the quality of social relations. This study aimed to understand such relations alongside other complex social dynamics and the implications of these for future sustainability practices. An in-depth action-oriented transdisciplinary approach was used that worked with local initiative leads to develop a community fridge. Four critical social dynamics were identified: reinforcing interpretations, reinforcing interconnections, re-alignment of identities, and quality social relations. Overall, this led to a pattern of initial degenerative social relations as different understandings emerged and were shaped by local identities and norms of solidarity. Uncovering and aligning social identities from wider social scales then drew out underlying social values, instigating a regenerative phase that strengthened social relations and action around a shared purpose. Overall the study highlights that future community based change initiatives need to be guided by explicit approaches that work with social relationships but where these relationships are conceptualised as including: (1) wider norms, values and identities; and (2) social spaces of interaction. Further, initiatives need to explicitly focus on developing beneficial reinforcing regenerative dynamics where advances in one aspect of social relationships begin to reinforce others. Embedding notions of regenerative design through social relationships is thus critical for bringing

tangible benefits to many while simultaneously enhancing the building of capacities for future collaborative action as a whole.

Key words: Social dynamics, climate change, community change initiatives, system change, community resilience, regeneration

4.1. Introduction

Overcoming and working with complex challenges like climate change and food insecurity require deliberate change across societies to guide more sustainable futures (Vermeulen et al., 2012, Bohle et al., 1994). Such challenges are dynamically complex, with issues interconnected and continuously configured over time and across spatial scales (Preiser et al., 2018). Collective change processes within these contexts are non-linear, with complex patterns emerging as different actors try to make sense of challenges and engage in different ways (Schlüter et al., 2019, Stedman, 2016, Andrachuk and Armitage, 2015). Broad social engagement is necessary to work with such issues, but change efforts are also challenging, as actors with diverse perspectives and preferences come together and with the needs to develop shared concerns and problem solving capacities (Etzion et al., 2017, Voss et al., 2007). Developing understanding of how social actors work with and through such complexity, including the diverse values and perspectives involved, is thus critical to advancing knowledge about how to support and strengthen community sustainability initiatives within the wider context of rapid global social and environmental change.

Across the world different groups of community-based actors are engaging with complex challenges. Understanding the social dynamics that shape how these processes develop is important, yet many questions still remain about how these processes unfold (Mancilla García et al., 2020, Köhler et al., 2019) and how more effective practices can be supported (Fazey et al., 2018b). Structural approaches are often considered key, such as those focusing on enhancing governance to support change (e.g. Becker et al. (2018), Laakso et al. (2017)). This, however, often leads to a focus on developing more formalised decision-making processes and on the role of strategic actors in change (Strambach and Pflitsch, 2018). There is now growing recognition that enabling approaches that harness human agency and capacities through softer and less tangible aspects, including navigating normative and emotional aspects, are important for change initiatives to be successful (Scoones et al., 2020). Enhancing understanding of these aspects is essential for providing more nuanced 'human felt' understandings and for attending to the 'real and lived experiences' associated with change, which affect how change initiatives unfold (Fazey et al., 2021).

This study therefore aims to examine the human social and cultural dynamics in community level initiatives within a wider context of social and environmental sustainability in order to inform how such

initiatives can be improved in practice. The work is based on an in-depth investigation of an initiative to establish a community fridge in an urban context in Scotland that aimed to meet multiple interconnected goals, including helping reduce food waste, mitigate climate change and supporting provision of food to those in need. The paper first provides an overview of what is currently known about some of the social dynamics of community change and sustainability initiatives. We then outline the transdisciplinary methodology and case study, followed by presentation of the findings relating to the key social dynamics that were important in shaping the development of the initiative. Finally, we discuss implications of the findings for how meaningful change can be supported. The paper is novel in the way it seeks to draw out lessons for practice from understanding the deeper social-cultural dimensions associated with change. It will thus have wide relevance to those seeking to advance knowledge about sustainability and change in practice.

4.2. Conceptual background

Collective change processes for sustainability are purposeful interventions involving multiple interacting factors over time to shape understandings and actions of different actors involved (Fazey et al., 2018c). Communities are dynamic and complex (Berkes and Ross, 2013), with change unfolding through interaction between different issues, and through the way change coalesces and shifts over time (Fazey et al., 2016, Boulton et al., 2015). Initiatives aiming to support collective change require engagement with different subsystems (e.g. food and waste at the community level) (Spring and Biddulph, 2020) and working across action spaces that make up community life, such as livelihoods, technology, natural environment and individual and collective values, practices and discourses (Pelling et al., 2015). As these aspects interact, tensions and conflict emerge as different understandings of problems and possible solutions are surfaced (Fazey et al., 2021, Turnhout et al., 2020, Hahn and Nykvist, 2017). Sustainability oriented change initiatives thus tend to be dynamic and multifaceted (Fazey et al., 2018a). This then requires approached that help: (1) stimulate continual learning (Fazey et al., 2018a), (2) enhance social relationships between actors (*chapter 3*) and (3) working with diverse emotive and other normative dimensions (Fazey et al., 2021, Grenni et al., 2020). Each of these aspects is expanded on in the discussion below.

Enhancing opportunities for collective learning is critical in community based initiatives to draw out and work with different perspectives, experiences and expertise (Fazey et al., 2021, Caniglia et al., 2020). Learning is a cognitive process through which new insights and 'ways of seeing' phenomena develop (McFarlane, 2011, Reed et al., 2010). This can be understood as different types of learning, ranging from the most basic level with improvement in existing habits to conscious reflection about individual choices and assumptions leading to new habits that help guide preferences and actions within particular situations, for example in relation to accessing and using food (Garnett, 2014) or more

fundamentally, how actors see and position themselves in the world (Fahrenbach and Kragulj, 2019). Whilst learning unfolds through experience, opportunities for learning can be enhanced by critical reflection as actors actively engage in new situations that may shift how problems are understood and how possible constraints, opportunities, and consequences of actions are viewed through different behaviours, skills and capacities (Pelenc et al., 2015, Ansell, 2011). Deeper levels of learning through collective initiatives are therefore recognised as a critical dimension for creating meaningful opportunities for transformative change (Fazey et al., 2021, MacIntyre et al., 2018). Shaping and embracing opportunities for learning is important in practice, but it is less clear how this can be effectively achieved among a dynamically interacting set of issues across regions and scales to help align values, perspectives and actors on the ground so as to bring about meaningful change.

Enhancing, and working with social relationships that connect actors in different ways are widely recognised as important for shaping community change processes (Rockenbauch and Sakdapolrak, 2017) (*chapter 2*). Social relationships are multifaceted, including: different connections between individual actors (Bodin and Crona, 2009); the nature of interactions, such a trust and social norms (MacGillivray, 2018); and outcomes arising from them, such as ideas and learning, improved health or enhanced collective action (Hausman et al., 2005, Kilpatrick and Falk, 2003) (*chapter 3*). Social relationships develop through ongoing interaction between individuals, including through co-constructed understandings. This includes co-constructed meanings about the interactions themselves, including the actors involved, their perspectives, interests and expectations (Jones and Tanner, 2017). Co-constructed meanings then provide opportunities that helps better define problems, solutions, or future consequences and goals (Madsen and O'Mullan, 2016). Currently, most studies of community initiatives have placed emphasis on analysing the different actors involved (Laycock and Mitchell, 2019), the networks and connections (Moore and Westley, 2011) and on the importance of trust (Chow and Chan, 2008, Lyon, 2000) but much less on how different aspects of social relationships come together and interact. This has hindered development of more nuanced understandings of the role and quality of the social relationships in collective change processes (Rockenbauch and Sakdapolrak, 2017).

Finally, it has been long understood that working with the complexity of sustainability challenges requires attending to diverse normative dimensions. This includes social identities, emotions, values and norms within sustainability initiatives (Voss et al., 2007). Social identities are multifaceted, including how groups want to be viewed in relation to particular contexts (Fresque-Baxter and Armitage, 2012), including in particular places or with or by different social groups (Grenni et al., 2020). Values relate to what is considered important (Horlings, 2015), often expressed as preferences, whereas social norms can be understood as collective expectations of behaviour (Fehr and Fischbacher, 2004). Such normative dimensions are important for guiding what is or is not considered acceptable, including in relation to the actions of others (Gorddard et al., 2016, Smith et al., 2012a). Normative dimensions interact in complex ways across temporal and spatial scales, shaping perceptions of what is

and is not possible (Everard et al., 2016) and how actors interact (Granderson, 2014). This dynamic interplay often leads to surfacing of contradictions and tensions between actors (Demski et al., 2015). Whilst working with normative dimensions may not on their own be sufficient for change (Katrini, 2018), they are increasingly recognised as important in shaping the kinds of change which emerge (O'Brien and Sygna, 2013, Smith et al., 2012a). Many studies and most change initiatives fail to take such dimensions into account, underestimating their importance. Understanding such aspects and their interplay with other aspects, is thus critical for enhancing capacities to support sustainability.

Overall, while there is a growing number of studies on social aspects of bringing about change in relation to sustainability, many have focused on more formalised change processes and structural or 'harder' dimensions involved, and much less on the way diverse, multiple social and cultural factors interact over time. Advancing such understanding is critical for providing insights about how actors come together, understand, and act and for providing insights about how community level change can be more effectively stewarded.

4.3. Methodology and methods

4.3.1. Research approach

An inductive, transdisciplinary approach based on an in-depth qualitative case study was used to examine the social dynamics of community-based sustainability initiatives. Transdisciplinary research aims to address real world problems alongside a commitment to develop new, relevant insights to the problem in question (Lang et al., 2012) through trying to manage more equal relationships between scientific and social actors as knowledge is co-created (Carmen et al., 2018a, van Kerkhoff, 2014). Transdisciplinary research may also involve rejecting assumptions that knowledge comes from a researcher being independent to what they observe, and instead recognises the value of researchers being able learn by doing and by being much more deeply involved with the actors seeking to bring about change (Fazey et al., 2018c). In these approaches, validity arises because a researcher is embedded not by standing from the outside looking in, divorced from sense making that is stimulated as action unfolds. Rigour is, however, enhanced by continuously reflecting on how a researchers involvement affects interpretations, with the researcher regularly stepping in and out of the context when a more critical stance is required (Fazey et al., 2018c).

In this study, the transdisciplinary research involved a small collaborative team with a background in research (E. Carmen) and from practice (two community-based practitioners). These practitioners worked together, one overseeing overall progress of a community initiative, whilst the other focused on implementation of this initiative, coordinating activities (and working directly with others) to bring the

change initiative to fruition. The researcher had multiple roles in the process, including being a: knowledge broker, reflexive social scientist, and transdisciplinary champion that helped the wider team draw out insights that then guided their actions, as well as being a critical friend to help them drive forward the collective efforts in the community-based initiative this study sought to understand (Miah et al., 2015). Thus, while the primary researcher was not involved in 'doing', they were involved in helping facilitate the core actors' endeavours, in part by collecting information from different actors and creating opportunities for reflection for the practitioners that enhanced sense making about what was happening and why for all members of the transdisciplinary team (both the researcher and the practitioners).

4.3.2. Case study

4.3.2.1. Background

The case study involved a climate change initiative that aimed to create a new community fridge in an urban context in the City of Dundee, eastern Scotland, with a post-industrial history and population of around 150,000 people. During the twentieth century Dundee had some of the worst slum conditions in Scotland. This was then followed by extensive economic regeneration and cultural development (Watson, 2017). Areas of high social deprivation continue to persist within the city (Scottish Government, 2020) but this also sits alongside a strong sense of community, working together, and helping others overcome challenges. Across the city, a network of community-based initiatives has emerged, with a particularly strong focus on responding to social needs and supporting specific social groups. This includes a small team that has been developing various initiatives across the city connecting action for both poverty and the environment.

One of these initiatives aimed to develop a community fridge. A community fridge is a physical space created for sharing excess food by making it available for use in the community for free. Part of a wider urban food sharing movement (Spring and Biddulph, 2020), such initiatives contribute to climate mitigation by reducing food waste and associated greenhouse gas emissions. Sharing and using excess food may, overtime, also help different, more sustainable food practices to develop and involve the potential to support other local needs and aspirations (Morrow, 2019). By 2018 over 30 urban community fridges had been established in various guises in England. Yet few, if any, had been established in Scotland. The small team began to develop a community fridge in 2018 by drawing on learning from other community fridge initiatives elsewhere and other, more local, community initiatives. The Dundee fridge was explicitly framed as an experiment to enhance learning about community fridges and community initiatives more widely. Core to the design of the fridge was that it needed to be accessible to those who needed it. This led to the fridge being established in a small public

space near to the host organisation on the edges of, but still close to, the city centre in an area that included a diversity of independent shops and cafes (Figure 4.1).

4.3.2.2. How the community fridge initiative unfolded

The aim of this research was not to evaluate the success of the initiative but rather to understand the social dynamics of the change that occurred. Understanding these dynamics does, however, require a descriptive overview from the data of how the initiative unfolded. Once government funding was secured for the initiative, formal planning permission was then sought. As decisions were made about different features of the new space, information was shared with owners of a small business located adjacent to the proposed site. Initially, interactions with these business owners turned negative. A public meeting to understand local concerns was then held. At the same time local newspaper articles appeared quoting local businesses as describing the area as 'exclusive' and that they considered people coming to use the excess food as 'undesirables'. This backlash from the media led to some businesses withdrawing their opposition with others remaining concerned. Other sites were explored by the project leads and evidence was collected about impacts on businesses from other fridge initiatives. Given the lack of appropriate alternatives, the efforts continued to proceed with the original site. During further meetings with the localised business, which took an empathic approach, space was opened up for emerging agreements between different parties, including how they could work together to change aspects of the exterior (figure 4.1) and to emphasise support from businesses in future media coverage and new ideas for working together to improve the area in the future. Planning permission was then granted with no objections.

During the first 6 months of the operational phase (May 2019 – Dec 2019) at least 1987 people used the fridge, including some local business actors, and 19.4 tonnes of surplus food was redistributed (figure 4.2). The initiative was lauded as successful for the local area and the city as a whole by many local actors, including business owners, leading many to suggest expanding this idea to develop similar initiatives in other districts. Concerns about potential spill over of the 'them' versus 'us' perspective that emerged during the development phase did arise but were quickly overcome through bringing into play the learning from the first initiative that placed emphasis on informal face to face dialogue between local actors. Overall, the case has provided important insights about how the contested initiative and the complex social, emotional and cultural issues involved, and the insights this provides for future community-based initiatives.

Figure 4.1: The exterior view of the new community fridge once established (with a glass front)

Figure 4.2: The interior space of the new community fridge where people select surplus food

4.4. Methods and materials

In order to understand the social dynamics, an iterative and collaborative process of multiple data collection and analysis methods was used. This included three interacting phases (Figure 4.3), similar to those applied in other transdisciplinary research (Lang et al. (2012).

Phase 1: Relationship building and collaborative problem framing. This involved focus on building a shared understanding of values within the transdisciplinary team and the broad problem and solution framings across project initiatives, loosely defined around the need for social change at the community level to respond to climate change.

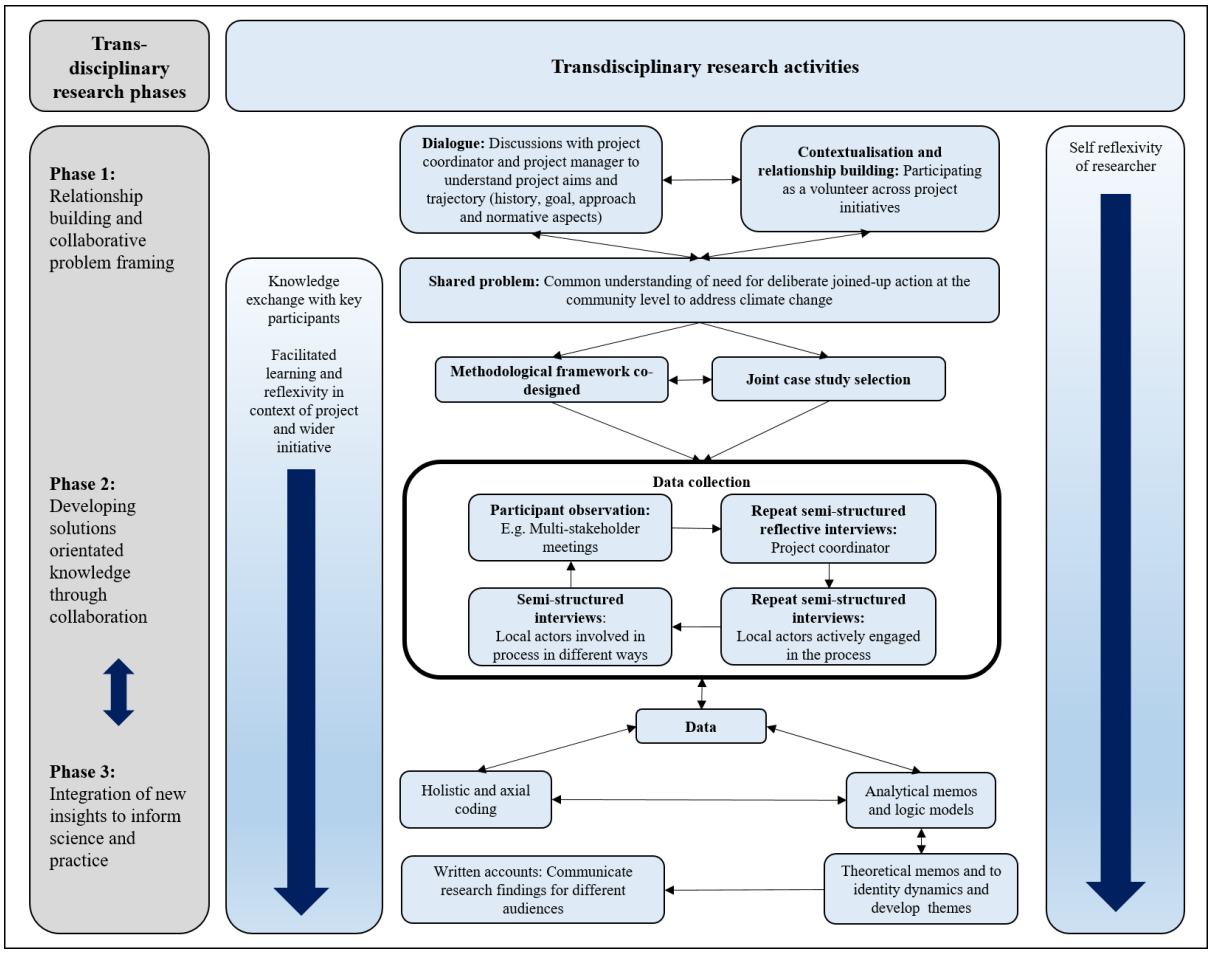

Figure 4.3: Transdisciplinary research process applied

Phase 2: Developing solutions orientated knowledge through collaboration. Data was collected through participant observation and semi-structured interviewing. Participant observation (180 hours over 10 months) entailed adopting the role of a volunteer in the initiative, supporting practitioner activities and creating opportunities to observe and discuss different aspects of the initiative, from which increasingly focused field notes were developed (Gomm, 2008, Silverman, 2006). These notes involved descriptive layers relating to; 1) the setting/ wider community; 2) the broader initiative and

organisational setting; 3) social and physical dimensions of interactions within specific spaces; 4) researchers role and interactions in specific spaces; 5) reflections on the process; and 6) self-reflections on values and actions on the process (Crang and Cook, 2007). This was supplemented by local news articles and on-line public responses to these articles. 23 Semi-structured interviews were also conducted throughout with 15 different key actors for more detailed exploration of specific phenomenon, interconnections and events from the perspectives of key actors engaging in the process (Table 4.1). Interview guides were developed and probing techniques used to test assumptions and ideas emerging in field observations, increasing richness of the data (Rubin and Ruben, 2005). Interviewees were identified using a referral strategy (Bryman, 2016a) and selected based on their engagement in deliberations about the initiative. Interviewees included the practitioners developing the initiative, individuals from the public sector with formal roles and varying responsibilities related to the development of community initiatives (e.g. community development and planning officers and local councillors), and local business owners (Table 4.1). The majority of interviewees were local business owners reacting to the idea of a community fridge in the local area. These business owners had premises close to the proposed site of the new fridge and some strongly objected to the proposal based on potential harm to their livelihoods. Data collection therefore quickly focused on the nature of these objections, the social interactions involved and exploring the perceptions and social relationships underlying these as the process progressed. Interviews with practitioners involved a reflective practice interview design to enhance opportunities for learning and exchange.

Table 4.1: Number of interviews and interviewees

Interviewee code	**Level of engagement in process (1) High: Engaged throughout/ (2) Medium: Engaged in some aspects/ (3) Low: Not formal engagement in process)**	**Interview style**	**Interest/ stake in process**	**Number of formal interview events**
1.1P	1 (High)	Reflective practice	Project coordinator (P)	6
1.2P	1 (High)	Semi-structured/ narrative	Project manager (P)	2
1.3B	1 (High)	Semi-structured/ narrative	Business co-owner (adjacent) (B)	2
1.4B	1 (High)	Semi-structured/ narrative	Business co-owner (adjacent) (B)	1
2.1B	2 (Medium)	Semi-structured/ narrative	Business owner (nearby) (B)	2
2.2B	2 (Medium)	Semi-structured/ narrative	Business owner (nearby) (B)	1

2.3F	2 (Medium)	Semi-structured/ narrative	Formal role as local council officer (F)	1
2.4F	2 (Medium)	Semi-structured/ narrative	Formal role as local council officer (F)	1
3.1F	3 (Low)	Email	Formal role as local council officer (F)	1
3.2B	3 (Low)	Semi-structured/ narrative	Business owner (nearby) (B)	1
3.3B	3 (Low)	Semi-structured/ narrative	Business owner (nearby) (B)	1
3.4B	3 (Low)	Semi-structured/ narrative	Business owner (nearby) (B)	1
3.5B	3 (Low)	Semi-structured/ narrative	Business owner (nearby) (B)	1
3.6B	3 (Low)	Semi-structured/ narrative	Business owner (nearby) (B)	1
3.7B	3 (Low)	Semi-structured/ narrative	Business owner (nearby) (B)	1
Total interviewees: 15				**Total interviews: 23**

Phase 3: Integration of new insights to inform science and practice. Data analysis involved a combination of coding, process modelling and analytical memos. Data included detailed field notes, which encompassed non-verbal and nuanced elements from across the process (e.g. physical actions/ inflections), and data collected in interviews which often involved a focus on exploring different aspects of key events as they arose and from the perspective of those involved. Field notes and interview data were analysed in combination, helping to bring to the fore areas of overlap and contradiction (Crang and Cook, 2007). This supported the identification of patterns within the data which were explored as the analysis developed to create credible interpretations about how the process as a whole progressed, the different factors involved and how, why and when these intersected to shape how the process unfolded through time. In combination this data was analysed in three broad stages. First, verbatim interview transcripts and field notes were organised using NVIVO software, annotated, coded holistically to identify key events and broad factors involved in the process. Second, axial coding techniques were used alongside the development of analytical memos to identify analytical categories relating to key process factors and conceptual ideas within the data, e.g. social relationships, emotions and learning (Saldana, 2009). Third, a series of logic models (five) with theoretical memos were developed to iteratively explore interconnections between different factors (Quinn Patton, 2002) (for example see Figure 4.4). The principle of anti-dualism helped guide the process-orientated analysis that focused on linking analytical categories and understanding these as mutually constituted and interdependent rather than as involving different competing claims to guide examination of the different

factors and interconnections between them that unfolded over time (Ison, 2018, Farjoun et al., 2015). Importantly, the combination of analytical techniques enabled a shift from descriptive to more theoretical accounts grounded in the data. The analytical process was iterative and each stage involved the establishment of a clear chain of evidence back to the data. This strengthened validity and enabled suitable sections of data to be selected to illustrate study findings in written communications (Bryman, 2016a, Yin, 1994). Overall, and throughout the research, the method used to collect, analyse and interpret information greatly enhanced opportunities for exchange and learning, and to enable insights to be fed back into the ongoing actions of practitioners working across this and other initiatives within the city.

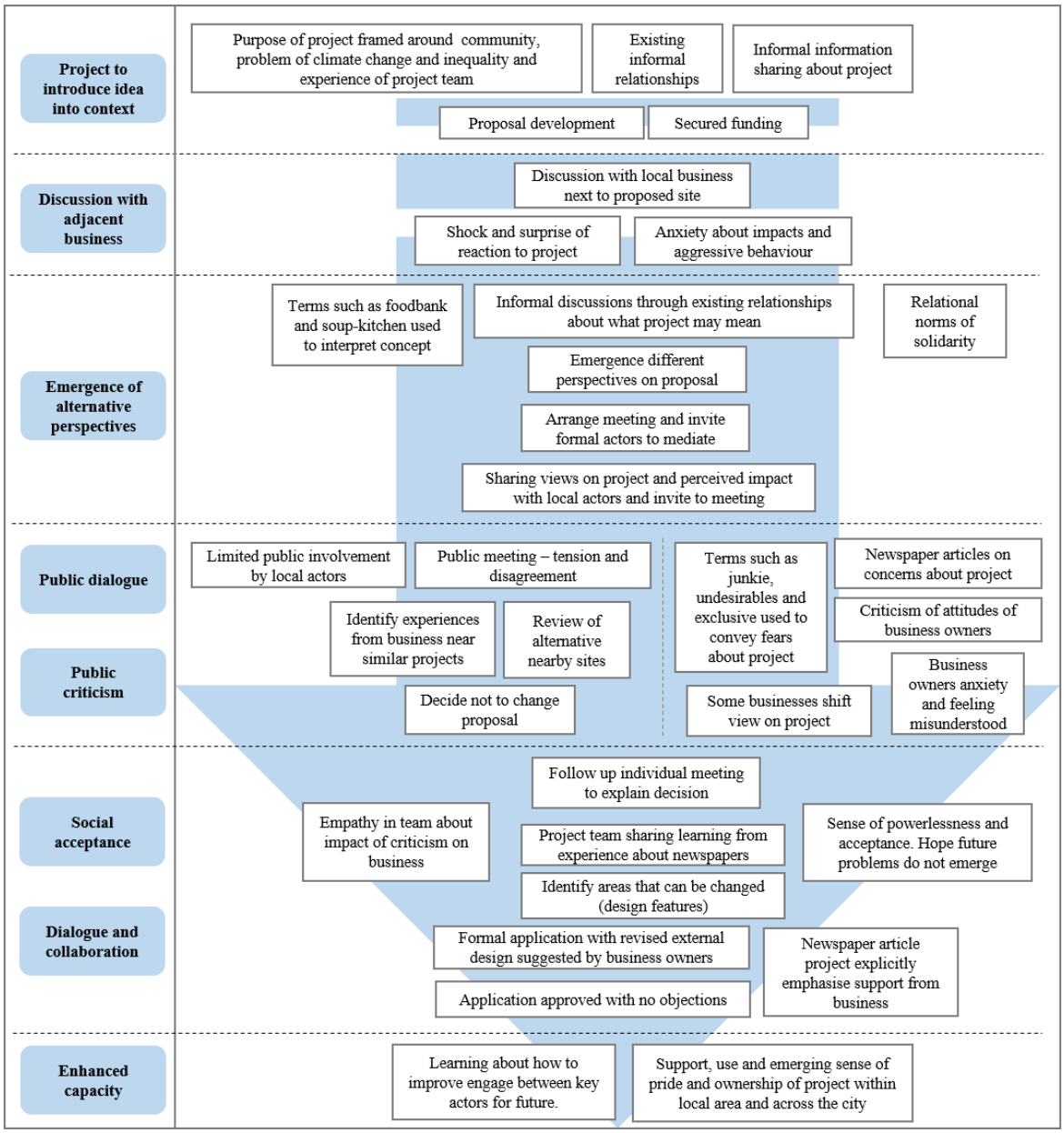

Figure 4.4: Example logic model developed to help analyse different factors and interconnections shaping the development of the community fridge through time

4.5. Findings

4.5.1. Social dynamic 1: Reinforcing interpretation

Four core social dynamics unfolded during the process of developing the community fridge, with each including a range of interconnected factors. The first core social dynamic involved a pattern of reinforcing interpretation, which led to increasing divergent and polarised perspectives and more generally towards a pattern of degenerative social relationships between those in favour and those against the initiative. This process involved an interplay between: concepts applied or understood; assumptions; and emotional responses of the different actors involved. Initially, ideas for developing a local community fridge were shared informally with business owners close to the proposed location for the fridge. Here, initiative leads used the **concept** of a food bank to help explain the initiative. This set a train of interpretive events that included invoking other **concepts**, such as the notion of providing "*food for all*" (1.1P) which was new and challenging for some of the business owners. This led to formation of certain **assumptions** *"right at the start*" (2.1B) about the initiative being the same as a "*food bank*" (1.1P) or "*soup-kitchen*" (3.2B). This then shaped **assumptions** about who was going to be using the fridge and why, such as those "*who were needy rather than [the fridge being] a community resource*" (3.2B). Some struggled to understand why *"going and taking something you're not needing because you can afford to buy it"* was "*being community minded*" (3.3B).

As some of the local business owners discussed the fridge, assumptions then became "*ingrained*" (1.1P), leading to the surfacing of other concepts, such as potential users being "*junkies*" (1.1P) and "*undesirables*" (2.4F). These concepts and assumptions, which conveyed unease about the initiative and its potential impact on businesses, were then closely related to the **emotions** that emerged. One key actor, for example, commented "*[very quickly] I started to feel concerned*" (1.3B), with the growing sense of fear sometimes manifesting as anger and "*aggressive*" (2.1B) behaviour. As the project leads became aware of the negative views of the initiative, they organised a formal meeting which, as described by one of the business owners, *"got a wee bit out of hand*" (1.4B). Business owners felt they "*weren't being listened to"* (1.3B) while the initiative leads were frustrated about the way they felt business owners viewed them as having just *"thought this idea up and not really thought seriously about any of the consequences for businesses"* (1.1P). There were also others who held positive views and were excited by the prospect of a local community fridge.

The interplay between concepts, assumptions and emotions, which reinforced positive or negative perspectives, also influenced how the actions of others were interpreted. Some actors interpreted the "*level of negativity*" (2.4F) expressed by some local actors as "*narrow minded*" (2.1B) with "an *agenda fixed in their head*" (2.4F) limiting consideration of "*any positive stuff*" (1.1P). These **assumptions** and negative interpretations not only surprised and "*confused*" (1.1P) the initiative leads but also invoked

further emotional responses, with one interviewee commenting "*[I resent their assumption that] poverty equals anti-social behaviour*" (2.4F). On the other hand, as new information about different perspectives of different actors arose, the initiative leads began to reflect what was happening and alter their approach. This included trying to understand better, and help further inform local business owners. After one such attempt, one of the business owners commented "*[at first] I was affronted as a business….[but] I felt quite positive after the conversation [with the project coordinator]" (3.2B), and another that "initially it was panic…..[then I became] much more relaxed about it*" (2.1B).

Overall, the project was initially beset by a diverging interpretive dynamic, with misunderstanding of the initial concepts, which was fed by a reinforcing cycle of negative responses as assumptions were made and emotions came to the fore. Initially, this included divergence and tension, limiting possibilities for some actors to try and understand how the initiative could work in reality. This social dynamic was thus a process of sense-making and interpretation, which then shaped actions and how actions of others were understood and viewed. While the initiative leads were initially confused because they had not anticipated negative responses, they then started to adapt and shift their approach. While not explicit, this did include attempts to break the cycle of negativity by trying to better understand the business owners concerns and better inform them about what was intended.

4.5.2. Social dynamic 2: Reinforcing interconnections

The divergence of, and increasingly polarised perspectives about, the initiative was further enhanced by the second core dynamic of reinforcing interconnections. This involved the influence of social connections, common local identity, and following norms of solidarity. First, existing **social connections** provided pre-established spaces for interaction and deliberation. This meant that different groups became increasingly convinced about their own interpretations as to what was happening. For example, deliberations within and between businesses and customers tended to be with those they already had connections with, which reinforced negative views.

This was also reinforced by common local **identities**. For example, small business owners had a shared sense that "*priorities every day [were] to make a living… [and we're] a bit protectionist"* (3.2B) and that they faced "*a bigger risk than just finding a job*" (1.3B). This **collective identity** helped frame deliberations about the potential impacts to small businesses. It was also often linked to perceptions of the local areas as being "*unique*" (1.3B),*"exclusive*" (2.4F) and "*the nice end of town"* (3.4B) with many questioning "*whether this is the right place [in the city for a fridge]….. because I don't really see that many people needing to use it*" (3.3B) and "*[it's] just in a storage container and totally out of context in the area*" (1.4B). Identities were further reinforced through mobilisation of a "*loose group*" (1.4B) of local business owners who were particularly vocal and who highlighted "*we're all of the same opinion"* (1.3B) and with "*[most people] against it"* (1.4B*)*. Similarly, initiative leads tended to speak

to businesses that they already had connections with and who were already more positive, reinforcing positive perspectives, with one lead commenting *"everyone I spoke to was just so enthusiastic*" (1.1P).

In some cases deliberation within groups led to some assumptions being challenged. More often than not, however, it also led to others coming on board as they conformed to **norms of solidarity**. For example, motivations for some to participate in the formal meeting came from "*a strange sense of loyalty"* with a sense that *"we should stick together*" (2.1B) to "*support the others*" (2.2B). The combination of connections, identities and norms of solidarity then led to "*a group mentality*" (1.1P), creating a 'them' and 'us' framing with one commenting: "*I felt there was an atmosphere when I walked in [to the meeting]…..battle lines were drawn*" (2.1B). This framing continued to shape discussions about the initiative within the meeting with, for example, one key actor having commented "*why is saving food more important than small businesses and livelihoods?*" (1.3B). As these discussions unfolded some participants began to question the arguments against the initiative and their role in this, with one highlighting "*there was even mention of a toilet…..I thought to myself they don't need a toilet…. [then] I'm starting to think, I'm making things up here just to have something against it*" (2.1B).

In summary, the reinforcing interconnection dynamic of existing social connections, shared identities and tendencies to follow norms of solidarity enhanced the first reinforcing interpretation dynamic. This made it very difficult for the initiative leads to navigate, especially given that they were also caught up in the same dynamic, albeit leading to a reinforcement of their own positive perspectives of the value of the initiative.

4.5.3. Social dynamic 3: Re-alignment with wider identities

The third core social dynamic occurred when wider perspectives beyond the locality influenced the initiative and where a major readjustment occurred when some of the common **local identities** were found to be at odds with wider city identities. Around the time of the formal meeting, local journalists began writing articles about the opposition, quoting one business owner as using the concept of "*undesirables"* and describing the area as "*exclusive"*. The response to this from people across the city was overwhelmingly critical of these notions, which more widely were perceived not to be aligned to the strong **city identity** about helping others and supporting people. One initiative lead emphasised this disconnect highlighting the "*spirit…… [across the city where] people like to help other people"* and how business owners wanted *"it to be an exclusive area but that doesn't [need to] involve shutting people out*" (1.1P). The criticism from some city-wide actors and the media led to a sense of threat and vulnerability for some local businesses who felt fear for the future, sense of being "*powerlessness ….[from] feeling backed into a corner* (1.3B), and that they were being misunderstood. The consequence was that business owners concluded they were unable to continue to openly oppose the initiative, removing all barriers to formal planning approval.

4.5.4. Social dynamic 4: Reinforcing quality of social relations

While it would have been possible to move forward with the development of the fridge irrespective of the feelings of local business owners, the initiative leads were able to use the opportunity provided by resigned acceptance of the initiative by businesses to build a more regenerative social dynamic, where beneficial outcomes, including collective working and learning began to emerge. This started from initiative leads showing **empathy**, which was initially expressed in a meeting with the adjacent business to explain the decision to continue to develop the fridge on the proposed site.

The meeting did lead to alternative ideas to be explored, but through this process a shared understanding between different actors about the challenges also began to take shape. This further created space to be "*…able to actually talk in detail about the why of their concerns, and share in detail about actually what the project looked like….that was very productive*" (1.2P). Initiative leads then offered to adapt aspects of the physical appearance of the new space and emphasise the support for the initiative by local businesses to local media and ideas of how to improve interactions with local journalists. This opportunity was seized on by the key business actors involved. The unfolding conversations then enhanced "*a level of comradery…like [we] were in that togeth*er" (1.2P). Through the subsequent co-design process underlying **emotions** and actions of the key business actors significantly shifted, "*[from] almost shouting [to]… saying I'm actually quite excited*" (1.1P) with new ideas being proposed during further interactions for working together in the future to continue to enhance the site and immediate area. This further helped to shift the experiences of key business owners from resigned acceptance to enthusiasm about the initiative.

The initial showing of empathy combined with acceptance by business owners of the initiative then enhanced **interpretation** and **interconnection**, and began a reinforcing regenerative dynamic. This included enhanced shared understanding of concepts, clarified assumptions, more positive emotions, new connections, more aligned identities and emerging solidarity around shared challenges and goals. As this regenerative dynamic unfolded, two additional social aspects began to emerge, further reinforcing regenerative outcomes and processes: **alignment to common purpose and values** and **learning**.

The actions of the initiative leads were already guided by an explicit purpose and underlying values, which were "*to add and benefit our community*" (1.2P) that entailed "[*not creating] any negative impact*" (1.2P) for any social group. This had already included local businesses, with one lead already having commented that "*we want [local businesses] to be our biggest fans [for the initiative to be a success in the future]*" (1.2P). This purpose was underpinned by previous experience of initiative actors and underlying values based on achieving "*social good [and] care for the planet*" (1.2P). As a more beneficial interpretation and interconnection dynamic emerged, the purpose and underlying values could be more clearly expressed. As this occurred, a more widely shared and aligned purpose and values

began to take shape. This included willingness to work together between more diverse actors, with the result that relationships were further strengthened. One key business owner commented "*they were very kind…they didn't have to do that…it was good of them*" (1.4B), and as interpretation and interconnection dynamics improved, so did capacity for collective problem solving.

Opportunity for **learning** was also enhanced. For example, enhanced social relations helped the initiative leads gain new insights about the underlying emotions shaping the actions of key business actors. One initiative lead commented *"[other key actors had] a lot of time to think and make it into something else in their heads….. [I now see they were] so compounded by their fears that they weren't able to hear any of the good stuff*" (1.1P). This helped initiative leads change future actions to better understand and reduce tensions with one commenting "*we'd approach it differently….we know how well [fridges] have worked elsewhere, but no-one else does*" (1.2P).

Learning also emerged for others, such as about the nature of the initiative. One commented how they understood the aim to be to help address "*food waste….rather than [being] a food kitchen, which is a bit different....it's an addition to the area*" (2.1B) and another who felt they "*see it now, it's a really good idea*" (1.4B). It also led to practical **learning** about improving interactions to help share information, explore concerns and develop understanding between actors in the future. One commented, for example, that "*I'll probably just ask for more private meetings than a public one*" (1.4B). This was emphasised as particularly important when dealing with novel ideas where "*there were always going to be cross lines*" (1.4B) leading key business owners to convey a willingness to help strengthen this sense making process elsewhere "*to encourage other community fridges in other areas, giving other people comfort.… because no doubt [small businesses] will have the same concerns as us*" (1.4B). Overall, the enhanced opportunity to learn as the quality of social relations were enhanced included: learning by leads about how to improve dialogue and interaction in future initiatives and by key business owners about the concepts; intentions and potential local benefits; the need to improve dialogue for future collective problem solving, including tangible ideas about how to do it.

In summary, as qualities of social relationships improved, the project turned from being a degenerative dynamic towards being one that was regenerative, where beneficial reinforcing dynamics came to the fore. Importantly this was initiated by the leads showing empathy and their project being founded on core values that sought to achieve unity. The improving quality of social relationships were then driven by the same reinforcing social dynamics of interpretation and interconnection, which began to shift in more beneficial directions as dissonance between different and polarised groups began to work together. This included enhanced alignment of purpose and values, as well as enhanced learning.

4.6. Discussion

The findings highlight there are many different facets involved in community-based change processes (Figure 4.5) even when initiatives are relatively small in scale, such as in the case examined in this study. The findings, in particular, highlight the importance of understanding and working with social relationships and their qualities in relation to wider personal and interpersonal processes, including how concepts and others are interpreted, the role of emotions, existing social connections, identities, and norms, values, and how they are influenced by wider contexts. Together, the findings show that the dynamics of interpretation and interconnections, if not managed well, can quickly lead to a degenerative process (Figure 4.5). Yet equally, if purpose, values and identities can be aligned, then the reinforcing nature of interpretation, interconnection, and learning can lead to the development of quality social relations and a regenerative dynamic. This includes a process where beneficial outcomes and relationships reinforce each other enhancing outcomes and the development of future collaborative capacities (Figure 4.5).

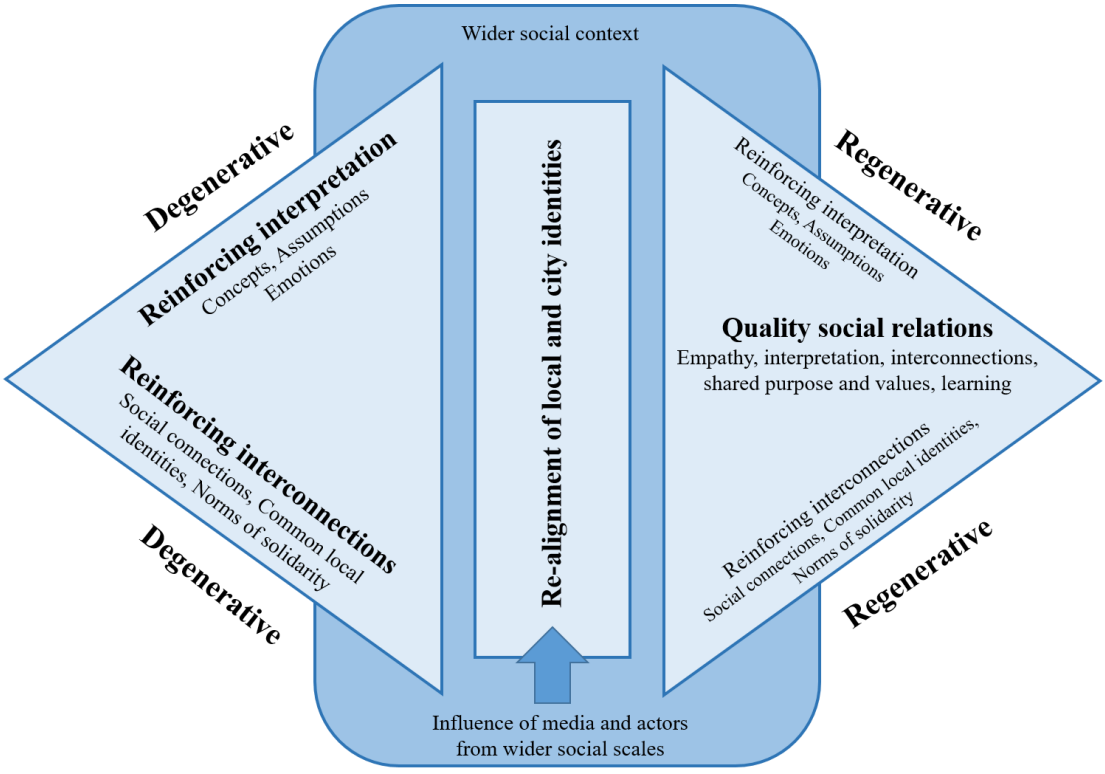

Figure 4.5: The overall unfolding dynamic that led to the establishment of the community fridge

This study provides important insights for how future initiatives might be approached. Whilst the study involved a single case, it provides much wider lessons for practice and research more generally. Here we examine three of the more important implications the findings have for practice. The first implication relates to the need for initiatives to carefully guide how issues and change are interpreted. The findings highlight that as unfamiliar circumstances unfold, local actors reach for cues to guide a process of

interpretation and re-interpretation and these cues shape assumptions and emotions for those involved (figure 4.5). There is therefore a need for new initiatives to be understood as a process of narratives in the making, constructed through experience and interaction between actors in the process. The importance of narratives is increasingly recognised in how challenges such as climate change are perceived (Veland et al., 2018, Bushell et al., 2017), for opening up new opportunities for action (Garud et al., 2014) and for shaping collective movements (Riedy et al., 2019, Polletta, 1998). As shown in this study, this process of interpretation may unfold in ways that can both diverge from, or converge around core intentions embedded within initiatives. Guiding the co-construction of initiative narratives through dialogue is therefore key for limiting the potential for different understandings to amplify tensions between actors, such as by selecting and using appropriate metaphors to help convey core intentions and guide interpretation. Decisions and what emerge are, in part, influenced by interconnections between underlying factors, such as values and knowledge (Gorddard et al., 2016). This study suggests that deliberate engagement in narrative-in-the-making within initiatives could support different actors to more quickly align their thinking and actions, to surface shared values and develop shared understandings that enable opportunities for further action in the future. Crafting narratives within initiatives is therefore also performative (Riedy et al., 2019), as links between actions and meanings are dynamically re-configured, guiding how processes unfold and what emerges (as highlighted by different organisations working in sophisticated change projects in practice (e.g. https://strongerstories.org/, https://www.frameworksinstitute.org/ and https://www.storybasedstrategy.org/)).

Second, these findings highlight the way different social identities influence how actors relate to each other and position themselves as they engage in initiatives (figure 4.5). Normative factors (e.g. identities, values and beliefs) are increasingly recognised as important dimensions of change processes (Horlings, 2015, Masterson et al., 2017). This includes an emphasis on place-based identities and a need to strengthen connections to place through action (Grenni et al., 2020, Fresque-Baxter and Armitage, 2012, Smith et al., 2015). This study shows that although some social identities are likely to be perceived as being at odds with understandings of initiatives as circumstances unfold, the diversity of social identities also creates opportunities to build connections with initiatives as they develop. Local knowledge of normative dimensions, and attending to them, is thus important, particularly for shaping initiatives so they align with shared social identities at the community level. However, as this study reiterates, change initiatives are dynamic social processes, within which the perceived importance of different factors (or aspects of communities and/ or initiatives) may shift, through which unanticipated opportunities can arise (Fazey et al., 2021). Importantly, working with such normative dimensions and different identities needs be integrated into approaches that engage with change initiatives as continual processes of learning (for all). Whilst learning is widely recognised as critical for shaping how change processes unfold (Van Poeck et al., 2020, Orleans Reed et al., 2013), this study shows how a learning approach can help strengthen connections with social (place-based) identities, thus helping initiatives

to contribute to (not weaken) a shared sense of place. For this to emerge however engagement with diverse actors across social scales to help define and refine these understandings of identities is important for contextualising and guiding initiatives as they develop in practice.

Third, these findings highlight how an inclusive social purpose and underlying values are critical within collective sustainability change processes for navigating through perceived value-based contradictions between actors. Tensions are inevitable within collective change processes, emerging as different factors across scales interact over time (Fazey et al., 2021, Collier, 2009). This study also shows that tensions also need to be understood as opportunities to express and therefore surface values for shaping outcomes. Thinking in this way helps move away from 'us versus them' framings to those focused on 'we'. Building 'we' intentions is important for enhancing collective agency and for finding ways to reconfigure social boundaries to help develop capacity for more transformative kinds of change (O'Brien et al., 2019, Tuomela, 2005). In the case of the community fridge initiative, this was made possible because of the way the core initiative leads held strong underlying values of a desire for collective benefits and empathic responses to those who initially opposed the project. Future projects thus need to actively build in the surfacing of tensions and be guided by deeply embedded core values that help drive unity, working with and strengthening shared identities and supporting opportunities for shared understandings about initiatives to develop. Thus, holding and expressing social values through action is important for future orientated learning, capacity and action.

In addition to more practical implications, our study provides new insights about the concepts of social relationships themselves. First, it highlights that social relationships entail more than the presence of social connections between different actors or even notions of 'quality' (e.g. see *chapter 3*). It also requires bringing in a diverse array of normative dimensions if more sophisticated 'human felt' approaches that work with social relations to bring about change are desired (Bernhard, 2018). Second, our research shows that social relationships also entail pre-defined shared social spaces which actors draw on to explore new situations and potential problems. The type of space is shaped by dynamic interconnections between the different social identities and relational norms, leading to relationships that may help reinforce or challenge assumptions, or enable alternative perspectives to be explored from which new insights may emerge. Thus, as different normative factors in change initiatives come to the fore, the way different relational spaces contribute also shift, with potential for opening up opportunities to build on the quality of some relationships for the future. From a conceptual standpoint it is thus important to conceptualise social relationships within social spaces (e.g. situational) as well as in terms of quality (see *chapter 3*) or multiple (contextual) normative aspects (*this chapter*). Third, the overall process highlights the importance of seeking ways to build social dynamics that enhance potential for regenerative social relations, where success drives and enhances further success and benefit through the different kinds of dynamics involved (Figure 4.5). In this case this emerged through a range of factors,

but with re-alignment to city wide values and empathic core values held by initiative leads being central to emerging success.

The study also has important implications for further research. First, while aspects of power, including the power of different ideas (e.g. the uncontested idea of climate action) and the shifting capacity of actors to mobilise other actors, were incorporated in the in-depth analysis, the lens of social power was not explicitly used in this study. Social power, such as the power to dominate different spaces and in terms of ideas and capacities to mobilise others, is a highly complex issue and well known to be critical in shaping initiatives (Mudliar and Koontz, 2020, Avelino, 2017). Thus further research is needed to examine how dynamic interconnections involving multiple normative dimensions (e.g. different social identities) across social scales and spaces shape aspects of relations as defined and explored in this paper. This would involve, for example, exploring how a power lens may re-shape interpretations about social relationships, including how change plays out and why in cases similar to that explored in this paper.

Second, in this case the wider context of the city was key in influencing how social relations and many other factors evolved and changed and how the initiative ultimately played out. The importance of such wider scale processes for developing opportunities for collective change have received considerable attention in the literature (Hölscher et al., 2019, Westley et al., 2013). Importantly, however, this study showed how it played a specific role in social relations within the process and thus there is a need for further research to examine how some of the micro relational dynamics link to wider issues of governance, values, identities and other social dynamics. Such studies need to have a specific focus on learning *how* these wider dynamics and environments can be enhanced to create more effective enabling environments to help shape change on the ground, as opposed to just studying what is already occurring and the barriers involved.

4.7. Conclusions

This study examined the social dynamics involved in developing a community-based climate action initiative. This included an explicit focus on the role of different aspects of social relations within initiatives. Four key integrated social dynamics were identified: Reinforcing interpretations; reinforcing interconnections; re-alignment with wider identities; and reinforcing quality of social relations. Overall, this led to a pattern of initial degenerative social relations as different understandings emerged and were shaped by local identities and norms of solidarity. Uncovering and aligning social identities from wider social scales then drew out underlying social values, instigating a regenerative phase that strengthened social relations and action around a shared purpose. Overall the study highlights that future community based change initiatives need to be guided by explicit approaches that work with social relationships

but where these relationships are conceptualised as include: (1) wider norms, values and identities; and (2) social spaces of interaction. Further, initiatives need to explicitly focus on developing beneficial reinforcing regenerative dynamics where advances in one aspect of social relationships begin to reinforce others. Embedding notions of regenerative design through social relationships are thus critical for bringing tangible benefits to many while simultaneously enhancing the building of capacities for future collaborative action as a whole.

Chapter 5

The previous chapter (chapter 4) addressed the question: How do social relationships interact with other complex factors to enable meaningful change within communities? Core findings showed how the role of social relationships changes over time, shaped by multiple intersecting socio-cultural factors as this initiative unfolded. The social (inclusive) intention of practitioners guided the overall process in ways that helped overcome tension that had emerged to create and seize opportunities to build common understanding, shared intentions and subsequent collective action, through which the quality of key social relationships for the future improved. Amongst other things, these findings highlight how initiatives can be designed and guided as a regenerative process to strengthen collective capacity to continue to actively engage with complex climate change challenges in the future.

The next chapter (chapter 5) examines opportunities and potential challenges for change initiatives within policy communities for shaping more enabling policy environments for engaging with complex policy challenges such as those linked to climate change. It addresses the question: How can synergistic enabling policy environments be created for generating more effective outcomes in the context of complex challenges? This question emerged through dialogue with national community resilience policy actors and from the findings of chapter 2, which included a need to examine how formal actors and institutions (policies and programmes) can develop and work through a social capital lens that goes beyond a traditional top down approach to enhancing community resilience. This next study therefore focuses on three policy areas which encompass social (inclusive) and environmental policy goals for shaping outcomes on the ground at the community level. Within this, social relationships are found to be a key entry point for enhancing synergistic policy environments in the future.

This chapter will be submitted for peer review in the scientific journal Environmental Science & Policy once the word count has been reduced (600 words) and formal approval received from the Scottish Government policy internship programme.

5. Synergistic policy in practice: Resilience, climate change and community empowerment in Scotland

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Abstract

This study sought to understand how synergies between policy areas can be enhanced in practice. Recognising the dynamic, complex nature of policy processes this study explicitly defines policy synergy from a process-orientated perspective that leads to outcomes that are greater than the sum of individual parts both for policy and in terms of impact on the ground. Applying a pragmatic research approach and semi-structured interviews with policy actors across three policy areas in Scotland, three broad entry points within policy landscapes are identified for enhancing the potential for policy synergies. These are; 1) build on existing policy architecture supporting integrated approaches; 2) capitalise on existing and emergent local decision-making spaces; and 3) co-develop integrative capacity. Each of these entry points includes different opportunity areas and challenges to inform strategies for enhancing policy synergies across different socio-political settings. Such strategies must however have a clear synergistic intent, focus on both tangible and less tangible dimensions, and how these interact and recognise policy practice as critical for shaping if and how this emerges across temporal and spatial scales. Building social relationships between policy actors and across policy areas can support and shape spaces for dialogue, learning and discovery. This can support negotiation and strengthen if and how policy synergies are actively pursued to develop more enabling policy environments for engaging with complex policy challenges and to better support change at the community level. Whilst understanding the need for policy synergies is critical for complex interconnected challenges, such as climate change and social justice, deliberative and wide reaching action is needed to bring this about in practice.

Key words: Synergy, climate change, resilience, policy, community

5.1. Introduction

Challenges such as climate change, food security and poverty are highly complex and interconnected. Driven by multiple factors they defy single, conclusive solutions, requiring action across societies that involves going beyond linear thinking and traditional technological fixes (Boyd, 2017). Traditional approaches that do not take into account the interconnected nature of such challenges are no longer adequate. New systemic ways of working are needed across sectors, supporting collective action across different actors and contexts (Scoones et al., 2020).

Governing such complex challenges requires integrated decision making and integrated policy (Head and Alford, 2015, Burch et al., 2014) that bring together different perspectives, ideas and capacities for collectively shaping more sustainable and inclusive pathways (Eriksen et al., 2011). Attention has therefore turned towards understanding interactions between policy areas across levels of governance, within international frameworks such as the UN Sustainable Development Goals (Nilsson et al., 2016) or within national level policy landscapes that include greater institutional decision making capacity (Duguma et al., 2014). While there is growing emphasis on understanding interconnections between challenges (Reckien et al., 2017) and growing emphasis on the need for working with interconnections between policy areas (Patterson et al., 2018), there is a need for further conceptual development on what effective interconnection means and how to get there.

There are two primary aims of this paper. First, we introduce the concept of synergistic policy relationships, which we define as aspects within policy processes and across policy areas working together to produce combined impacts greater than the sum of their separate effects. Second, we explore the potential for enhancing likelihood of achieving more synergistic policy relationships in practice (Visseren-Hamakers, 2015, Klein et al., 2005) using a case study that focuses on the integrated challenges of working with community resilience, climate change and community empowerment policy in Scotland. Importantly, the goal is not to assess the extent to which synergy within policy[1] is achieved but rather to explore, based on the extensive expertise of participants, where opportunities for enhancing synergy might be found.

We first explain why interconnected policy is important and the ways this has been conceptualised and approached. We then explain the need specifically for policy synergy, drawing on insights from the concept of synergy more generally. We then present the methods, findings and discussion, concluding that not only is there a greater need for emphasis on synergy, but also that this will only emerge if synergistic working is viewed as an ongoing practice. Overall, the paper makes two important and novel contributions. First it conceptualises synergy related to interconnectedness of policy, with a specific

[1] The term 'policy' is used to refer to policy both as a complex process of interconnected decisions and in terms of policy area, which develop as policy processes are organised around and orientated towards specific societal needs. Policy landscapes therefore involve multiple policy areas and processes.

focus on synergistic policy relationships. Second, it shifts emphasis away from assessments of policy integration towards understanding how it can be achieved in practice.

5.1.1. Synergistic policy relationships: Purpose and conceptualisations

5.1.1.1. Why is policy interconnection important?

Policy is a dynamic, complex process that unfolds through a series of interrelated decisions shaped by networks of actors with different interests and perspectives across levels of governance (Keeley and Scoones, 2014, Smith and Katikireddi, 2013). As these processes unfold across scales, dimensions are reconfigured within which different issues are selected and problems are (re)constructed and some interests prioritised over others (Carmen et al., 2018b, Butler and Allen, 2008). This process often entails a focus on policy activities to develop workable solutions rather than a single, 'best' way forward (Eppel, 2017). Delivering policy goals is thus often messy, complex and uncertain (Butler and Allen, 2008).

As these policy processes unfold over time, policy landscapes can emerge with multiple approaches and layers across which fragmentation and power asymmetries develop (Nilsson and Weitz, 2019), with different expectations and approaches exacerbating fragmentation. Entrenched socio-political patterns and assumptions, such as tendencies to assume effectiveness of governance through command and control (Eppel and Rhodes, 2018) or that change is linear and causal (Braithwaite et al., 2018), can also exacerbate fragmentation. This can lead to duplication, absence of action and/ or contradictions between different policy processes (Weitz et al., 2017); limited understanding of blockages; hindered progress of goals (Eppel, 2017); and unintended or negative social, cultural and political consequences (Eriksen et al., 2011). An outcome is thus development of silos around specific issues and limited ability to take into account the holistic nature of contemporary challenges (Boulton, 2010).

Typically, as policy arenas develop, pockets of collaboration orientated around traditional policy clusters may exist across policy landscapes through which policy synergies can be developed, but these pockets are usually limited in being able to overcome the effects of fragmentation and engage with complex challenges (Weitz et al., 2017). This problem is reinforced by the way fragmentation further reduces opportunities for collective learning and flow of ideas across policy landscapes (Blackman et al., 2016). Overall, as the need for more effective responses to interconnections between social, environmental and economic challenges increases globally, so does the need for greater consideration of the holistic nature of the policy environment. New approaches are thus needed to work with policy interconnection which embrace plurality and shift focus from one size fits all solutions to more holistic ways of working.

5.1.1.2. How has policy interconnection already been conceptualised?

In this paper we use the overarching term 'policy interconnection' to encompass the different ways linkages between policy have been conceptualised. These have different emphases, such as policy integration, nexus approaches, coherence, mixes, and interplay (Table 5.1). These led to subtle but important differences in emphases around the aspects of policy (goals and objectives, instruments and tools, outcomes and impacts); domains and actors involved (private, public, policy, science); levels of governance (global, EU, national, local); and type and number of issues (single, multiple, same, different) (Visseren-Hamakers, 2015). Within the work on 'interconnection', a focus on a single issue or goal is not uncommon, such as on environmental outcomes. Policy actors may be considered in terms of levels of governance (vertical interplay) and/or policy areas (horizontal interplay), often in terms of inter-organisational linkages within policy communities with an increasing focus on connections between scientific and public sector actors also occurring.

The different ways policy interconnection has been understood includes an emphasis on wider governance dimensions. This involves various enabling factors such as importance of inclusiveness, sharing knowledge and information, learning and empowerment of weak actors in enhancing interconnection (Weitz et al., 2017), and strategies and financial mechanisms for integration (Duguma et al., 2014). Governance dimensions for policy interconnections often emphasise need for social engagement of community actors (MacIntyre et al., 2018) and incorporating a bottom up approach to capture wider and more grounded perspectives (Klein et al., 2005). Systems thinking is also considered core for working across policy areas (Duguma et al., 2014). Many studies also highlight the need for achieving mutually beneficial outcomes often termed as 'win-wins', frequently contrasted with trade-offs between policy goals, leading to a dichotomous understanding between interconnection and conflict (Weitz et al., 2017).

Table 5.1: Different approaches for examining policy interconnections

Conceptual approaches to policy interconnection		Example literature
(Environmental) Policy integration	Interconnection as reconciliation of social and economic priorities with the need to maintain and protect the environment	Adelle and Russel (2013), Jordan and Lenschow (2010), Lafferty and Hovden (2003)
Nexus approach	Interconnection as the coordination of activities across three policy sectors to improve efficient and equitable (natural) resource use	Pardoe et al. (2018), Artioli et al. (2017), Pittock et al. (2013)
Policy coherence	Interconnection as alignment through common sets of ideas and objectives across different dimensions of policy (issues, goals, tools, outcomes and/ or impacts)	Strambo et al. (2015), Nilsson et al. (2012), May et al. (2006)

Policy mixes	Interconnection as the ability of different (public and/ or private) policy instruments to address a single issue	Drews et al. (2020), Falcone et al. (2017), Rogge et al. (2017)
Policy interplay	Interconnection as vertical (across levels of governance) and horizontal (across policy issues) interactions and relationships within policy, or between policy and science for coordinating policy activities to increase effectiveness of an institution	Atela et al. (2016), Urwin and Jordan (2008), Lövbrand (2007)
Policy synergy	Explicit attempts to enhance interconnection so the whole is greater than the sum of its parts. This places emphasis on horizontal integration so actions in one enhance another, and vertical integration, so lower order goals in different policy areas together lead to higher order outcomes. Synergetic relationships between policy processes can be synchronic or diachronic	This paper

A focus on environmental objectives is particularly evident in some approaches to policy interconnections involving the integration of environmental goals into other policy areas (van der Voorn et al., 2020). Empirical studies, for example, often examine policy interconnection between two policy areas, such as climate adaptation and disaster management (Solecki et al., 2011), ecosystem services and economic development (Kirchner et al., 2015) or climate change and energy poverty (Ürge-Vorsatz and Herrero, 2012). Although some studies that adopt a nexus approach may examine interconnection across three policy areas, these often involve areas that already have a closely shared resource dimension, such as water, energy and food (Pardoe et al., 2018). This highlights a need to improve policy interconnection to include wider and diverse cross sectoral goals. Yet, while the importance of this may be widely recognised, very few studies of policy processes genuinely adopt a multidimensional process-orientated approach.

In terms of research to support interconnected policy, much of this has focused on examining policy interconnections through goals, instruments and incentives, and activities designed to shape outcomes on the ground. This has often included a rather narrow focus on specific, tangible dimensions or examinations through more linear, simplistic models of policy processes, leading to views of policy as static and fixed (Candel and Biesbroek, 2016). Excessive focus on goals, incentives and management regimes has also underplayed the role of normative factors such as ethics and values in shaping policy development, the way it is implemented and potential outcomes (Hammond, 2020, Drews et al., 2020). The generally limited consideration of the dynamic, complex and normative nature of policy processes means that opportunities for beneficial interconnections cross policy are likely to be overlooked. This has led some to call for a move away from technical and administrative perspectives for examining policy interconnection to adopting more process-based, politically orientated perspectives (Weitz et al., 2017).

Adopting a broader set of perspectives involves embracing policy as a dynamic process, and policy landscapes as multifaceted and complex. This shifts attention towards understanding interactions for sharing ideas and exploring overlaps, gaps, contentions and contradictions that shape if and how interconnections between policy processes (across policy areas) unfold (Somorin et al., 2016). The nature and quality of policy interconnection is therefore a negotiated and continual process (Thornton and Comberti, 2017) that unfolds through different power relations (Nilsson and Weitz, 2019), knowledge, values and practices, which in turn guide if and how groups of actors with different perspectives and preferences understand and respond to different policy challenges (Gorddard et al., 2016).

Finally, in addition to the need for understanding policy interconnection as a negotiated and continual process, there has been very limited understanding of how policy interconnection can be developed in practice. This requires a focus on the human social dimensions of policy development of the different actors involved as they seek to navigate complex policy landscapes and its politics. This includes enhancing understandings of how small wins are achieved as well as identifying existing areas of intersection between policy processes that provide opportunities for energising efforts rather than focusing on just the challenges, which tends to overwhelm and paralyse action (Termeer and Dewulf, 2019). Advancing understanding of policy interconnection thus needs a strong emphasis on how it can be achieved and not just where the interconnections occur or can be enhanced.

5.1.1.3. Moving towards synergistic policy relationships in practice

The previous section highlighted the need to move towards exploring policy interconnection as a process and practice. Yet there is also a need to advance the concept of interconnection *per se*. While there have already been diverse studies of different aspects and forms of policy interconnection, many have not fully considered their significance for complex contemporary and highly interconnected social and environmental challenges, such as climate change, obesity, or inequality. Such challenges have partly emerged because of silo based approaches to policy and action in the past, and thus cannot be addressed by highly fragmented or piecemeal policies and approaches (O'Brien, 2012). Instead, contemporary challenges require new ways of working that transcend past approaches and thinking (Fazey et al., Under review). Part of the challenge is also simply practical, given that the level of resourcing required to continue to service silos in an increasingly complex world is not achievable or sustainable (Fazey et al., Under review). As the effects of highly interconnected challenges increase, the returns from continuing with silo based approaches further diminish. Overcoming interconnected challenges then requires harnessing opportunities for shaping win-win outcomes across very diverse sectors. Importantly, just focusing on interconnection will not be enough: there is a need to find ways in which this can lead to impacts that produce reinforcing beneficial effects.

A useful way of thinking about this is to understand the goal of policy interconnection to be the development of synergistic relationships. The concept of synergy, and associated concepts of dysergy and isosergy, is outlined in Box 1. Essentially, synergistic relationships are where: "*interactions or co-operation of two or more organisations, substances, or other agents produce a combined effect greater than the sum of their separate effects" (English Oxford Living Dictionaries).* This is distinct from dysergies, where actions conflict with one impeding the goal of another, but in such a way that an overall goal may not be attainable (Cooper, 2019). Synergy is also different from to isosergy, where actions do not conflict but also do not reinforce each other (Box 1). Thus, while isosergy is not necessarily bad, it is also unlikely to significantly advance outcomes in ways that work across highly interconnected social and environmental challenges. Active focus on learning how to advance policy interconnection, defined as a synergistic relationship through understanding how to do this in practice, is thus critical for working with contemporary policy related challenges.

Box 1: Synergy, Dysergy and Isosergy

Synergistic relationships: is where the pursuit of one goal simultaneously increases the likelihood of reaching another goal. This can be considered to be *coherence*, or *goal alignment*, and where relationships are synonymous with *non-zero-sum*, *win-win*, or *co-operative* outcomes. The term synergy comes from Greek '*syn*' (together) and '*ergon'* (work) and is considered to be where "*interactions or co-operation of two or more organisations, substances, or other agents to produce a combined effect greater than the sum of their separate effects" (English Oxford Living Dictionaries)*. The outcome can thus be described as akin to *1 + 1 = 3*. Synergetic relationships can be *synchronic* (synergy happening at the same time) or *diachronic* (unfolding over time with actualisation of one direction helping another at a later point). For example, a policy to empower local communities may later enhance local action for climate change if it helps achieve more rapid and context relevant decisions. Research suggests that people are more positively motivated when they experience multiple positive outcomes and win-win relationships. When goals are aligned and working together, research also suggests people also seem to be more effective at working towards their own goals.

Dysergistic relationships: This occurs when goals and actions conflict, leading to *blocking*, *interfering* or *competing*, or to *win-lose*, *zero-sum* relationships between actions and goals. It occurs when no single act can advance others at the same time. The term comes from Greek '*dys*' (ill, bad, disordered) and '*ergon*' (work). Dysergy can lead to self-defeating outcomes, with one policy advance impeding the goal of another, but in such a way that an overall goal is not attainable. The whole is thus *less than the sum of the individual parts,* with outcomes akin to being *1 + 1 = 1, 0, or -1 0.* Dysergetic relationships can be *incidental* (not intentionally obstructive) or *deliberate* (where one set of actors may actively develop oppositional actions or goals). For policy, most are likely to be incidental, but deliberate ones may also exist (e.g. environmental policies from different nations intentionally impeding others).

Isosergistic relationships: This occurs when goals and actions combine, both leading to beneficial outcomes, but independently. Actions neither impede nor advance another. Here the effect is equal to the sum of the parts, with outcomes being akin to 1 + 1 = 2. The term is derived here by combining the Greek '*iso*' (equal, similar) with '*ergon*'. Isosergistic relationships highlight that, while actions may not impede the effects of another, important opportunities are also lost for mutual reinforcement, and thus synergy. Isosergy is not necessarily bad, but it is unlikely to significantly advance beneficial outcomes that work across highly interconnected social and environmental challenges. Avoiding dysergistic relationships is thus important, but so too is going beyond isosergy towards synergy if working with highly interconnected policy challenges is the goal.

Summary based on, and further developed from, Cooper, 2019 (p.106-116)

5.2. Methodology and methods

5.2.1. Approach

The aim of this study is to understand the potential for advancing synergistic policy relationships in practice, where the interaction of different policies (between different policy areas) produce outcomes greater than the sum of their effects. Ontologically, this study is founded in part on complex adaptive systems theory, where reality is (re)configured through dynamic interconnections between entities (Preiser et al., 2018) and where outcomes are non-linear and unpredictable (Boulton, 2010). Here a policy landscape is viewed as different policy (sub)systems involving networks of actors organised around different issues (McGee and Jones, 2019), overlapping and dynamically connecting with other systems (e.g. communities) in potentially beneficial or undesirable ways. Further, given that human social interaction and relations are core to understanding how policy interconnection comes about (Strambo et al., 2015), understanding potential for synergistic policy requires a focus on the policy processes themselves as much as the specific entities within different policies. As such, this study focuses on understanding the different way in which policy processes are experienced and the understanding different actors have of the opportunities for synergistic working. The research thus takes an interpretivist epistemological stance (Bryman, 2016b) to take into account both the complexity and different ways potential for synergy is understood. This has then led to an inductive, qualitative research approach (Yin, 1994) based primarily on in-depth qualitative interviews with experience policy professionals.

5.2.2. Case study

The case study was policy interconnections between three policy areas in Scotland: 1) Community (disaster) resilience (CR); 2) Climate change (adaptation and mitigation) (CC) and; 3) Community empowerment (CE) (Table 5.2). Scotland faces many challenges at the community level, encompassing diverse social and geo-physical settings. These challenges include a changing climate that increases the likelihood of more extreme and frequent shocks, such as flooding and heat, and the need to reduce greenhouse gas emissions to transition towards more sustainable pathways. Climate change impacts, consequences and remedial action are and will continue to be experienced differently across and within communities as this interacts with aspects of community life, shaping conditions on the ground and decisions about how to respond. Understanding and working with the interconnections between issues, and the underlying challenges they entail, is therefore critical to support more integrated action at the community level to maintain and build the resilience of communities going forward.

Alongside taking action to mitigate and adapt to climate change across society, a priority for the Scottish Government has been to build resilience to emergencies. At the same time, a core strategy for enhancing capacity to respond to complex challenges has been to decentralise power and increase legitimacy of community level actors. From this the three policy areas of CR, CC and CE have emerged and continue to evolve. While these policy areas sometimes include different emphases there is considerable overlap in their orientation towards the community level actors and desire to enhance capacity to respond to complex challenges. It is also difficult to see how each can be effectively implemented, given challenges from limited budgets and while the scale of the task each policy area is meant to address is increasing. Both the potential overlap and the need to find reinforcing and beneficial outcomes means that together these policy areas provide considerable scope for synergistic effects.

Table 5.2: Aims and key actors in case study policy areas

	Community Resilience	**Climate Change**	**Community Empowerment**
Core aim	Communities and individuals harnessing resources and expertise to help themselves prepare for, respond to and recover from emergencies, in a way that complements the work of the emergency responders	Adjust to and reduce risks associated with climate change across society	More voice and choice of community actors to enable them to become active agents in formal decision making process to have more control of their lives.
Main actors	Local level first responders (public sector organisations e.g. local authority, fire, police, NHS) Community groups (e.g. community councils)	All types of actors across levels of governance	Public sector (e.g. local authority) Community actors (all types)

	Non-Government Organisations focusing on disaster response (e.g. Red Cross)		
Primary national legislation	Civil Contingencies Act (Scotland) 2004	Climate Change (Scotland) Act 2009	Community Empowerment Act (Scotland) 2015

5.3. Methods and materials

The research design involved the researcher being embedded in a policy team as an intern for 3 months, hosted by a national policy team (the community resilience team) and built on an existing professional relationship with a key policy actor (see figure 5.1). The role of the researcher as a policy intern supported a co-design approach for identifying a policy relevant research question of interest across the policy landscapes (and therefore of interest to different policy actors, often with busy schedules), whilst also drawing on the researchers' systems thinking and expertise in policy processes. The primary data collection method was in-depth semi-structured interviews (Mason, 2002). A referral strategy was with the host policy team to select and access interviewees from across different policy areas. These were lengthy face-to-face interviews (1.5hrs) with different policy actors actively involved in national level decision-making in relation to a particular issue (or policy area). Eight senior and mid-level policy experts from the three policy teams were interviewed, selected based on their experience within a particular policy area (e.g. developed through 10 years or more in a specific role and/ or multiple roles relating to related to a specific policy area). The researchers' conceptual and contextual understandings of the policy landscape also enabled a conversational style within interviews, which were guided by an interview guide (Arksey and Knight, 1999). Informed consent was obtained and audio recording used to accurately capture views. Verbatim transcriptions were produced to compliment the level of analysis required (McLellan et al., 2003). Interview data was also supplemented by key policy documents, involving strategies, guidance, consultation documents, assessments and evaluations and a ministerial speech (14 documents). Analysis of policy documents focused on segments of text which complemented or contradicted interview data. This increased validity by supporting the development of a clear chain of evidence and by highlighting where additional probing and exploration was necessary (Yin, 1994, May, 1993). Therefore data from policy documents was included to add depth to the data for analysis.

Data analysis involved coding using NVIVO software involved holistic coding, lumping data (from interview transcripts and policy documents) according to broad aspects of policy processes, and axial coding to spilt these codes further to develop more refined analytical categories (Saldana, 2016). Analytical memos supported this iterative process that used constant comparison techniques for openness to alternative meanings (Glaser, 1965). Patterns across policy areas were examined using analytical matrices (Richards, 2014, Gibbs, 2002) alongside memos to explore conceptual ideas within

the data (Ryan and Bernard, 2003). From this themes and sub themes were developed to conceptually convey aspects of policy processes where policy synergies could be pursued (Braun and Clarke, 2006).

Within the analytical process validation of data and emerging themes and subthemes was enhanced through analysis of key policy documents, contextual understandings of researcher and review of an initial draft of the case study report by key science-policy interface informants (Yin, 1994). Overall, the research process was also iterative, involving moving back and forth between interviews and developing contextual understandings from within the policy environment, leading to multiple and unfolding insights about how policy synergies could be developed from different sources and perspectives. Researcher reflexivity, where the researcher regularly stepped out from the embedded context to more critically reflect on emerging findings and on how their own involvement may have been influencing interpretations was thus an important and explicit part of the research.

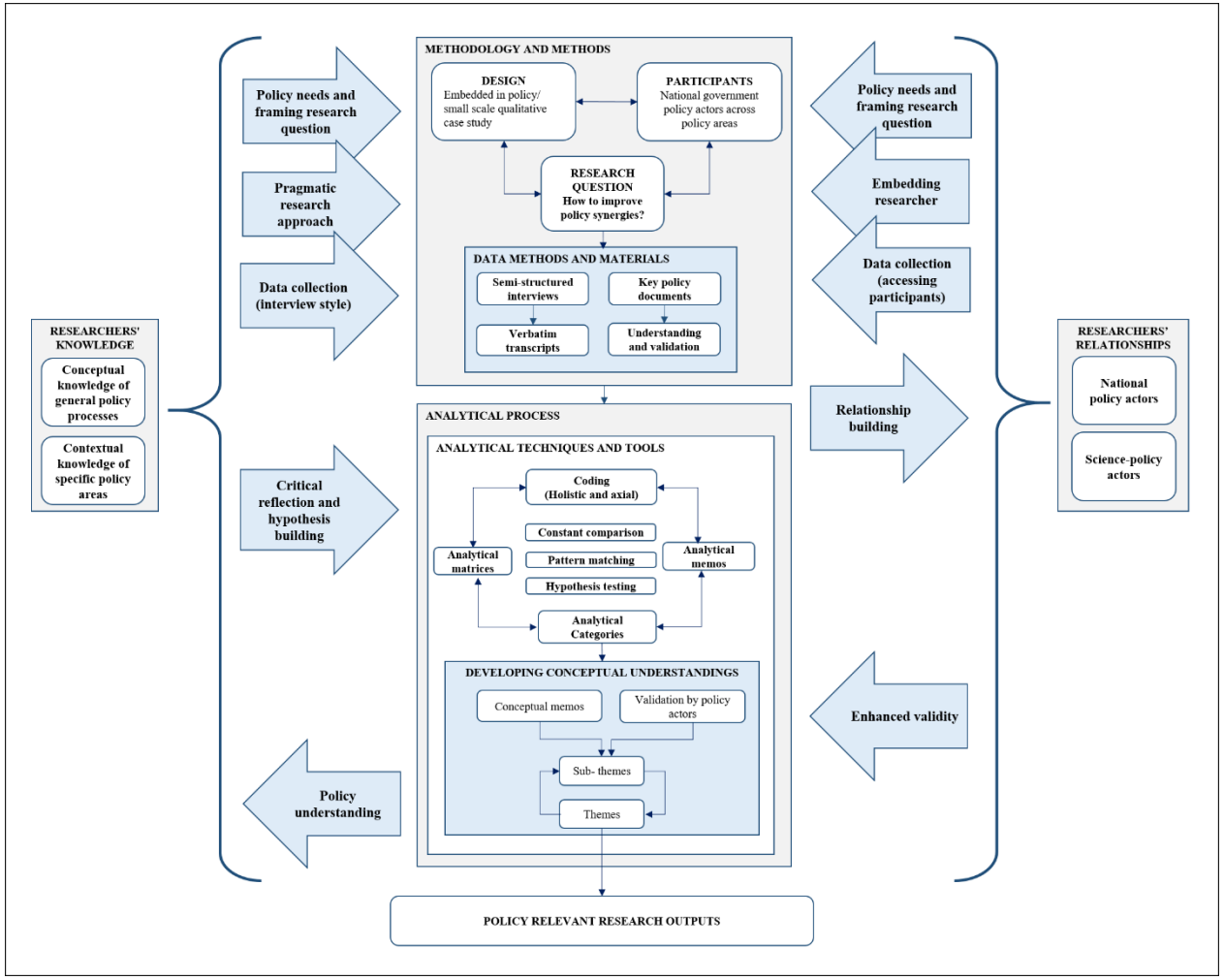

Figure 5.1: Method of data collection and analysis: Semi-structured interviewing, supplemented by analysis of key policy documents

5.4. Findings

To understand how policy synergies may be enhanced the analysis examined overlaps, gaps and potential contradictions across three policy areas, identifying three opportunity areas across policies to help develop synergistic policy. The three main areas of opportunity were: 1) build on existing policy architecture supporting integrated approaches; 2) capitalise on local decision-making spaces; and 3) co-develop integrative capacity.

5.4.1. Build on existing policy architecture supporting integrated approaches

The first broad opportunity was to build on existing policy architecture (ideas, frameworks and concepts) orientated towards identifying and developing integrated approaches between different policy areas. This included a need to: (1) build on existing awareness of the need for integrated approaches; 2) utilise shared established frameworks; and 3) develop understandings of shared concepts such as resilience, vulnerability, empowerment, emergency and climate justice (table 5.3).

5.4.1.1. Building on existing awareness of the need for integrated approaches

Opportunities for enhancing synergies between policies involve an existing awareness of the importance of integrated approaches emphasised by interviewees. Interviewees recognised that that given the nature of the challenges to which policy were oriented towards, integration was "*really complicated*" (CC2), "*multidimensional*" (CR1), and systemic. The challenge of a current gap between awareness and practice often with a narrow focus on delivering policy specific activities was however highlighted, as one interviewee commented "*we do get myopic .... often you kind of close down the shutters and go let's just get on with delivering*" (CR2). Furthermore interviewees highlighted that existing practice to develop synergies between policy has traditionally been focused around shared issues e.g. a central environmental concern with the need to find ways to move beyond traditional policy issue constellations. This was considered difficult however by interviewees in part due to the different emphasis between policy areas on different aspects of governance. For example, while community level action was identified by interviewees and in policy documents as central to community empowerment and community resilience policy, the latter focuses on preparing and responding to shocks (civil contingencies) whereas the former has evolved with a focus on multiple issues in terms of "*really challenging socio-economic challenges related to poverty*" (CE1). On the other hand climate change policy has a much broader focus on "*socio-ecological systems*" (CC2) and action by a wider range of actors and context, including but not limited to the community level, leading one interviewee to highlight the national teams role as being "*relatively high level*" (CC2). These different system perspectives reflect the diversity and complexity of different policy challenges. Therefore whilst

awareness of the need to apply more integrated approaches across policy areas exist, different framings across policy areas may hinder efforts to enhance policy synergy in practice. This suggests a need to identify and work through alternative ways of understandings interconnections between policy beyond the traditional issue-based framing to help develop opportunities in practice for enhancing policy synergies.

5.4.1.2. Utilising shared frameworks

Opportunities to enhance policy synergy also related to existing shared frameworks. This includes the overarching a national framework (the Scottish Government National Performance Framework), emphasised as important by interviewees and across policy documents. Interviewees stressed the importance of such shared frameworks for helping to organise and align activities between some policy sectors through the focus on shared outcomes. Different organising frameworks, however, have been adopted within policy areas, e.g. a framework also directly linked to the UN Sustainable Development Goals in climate change adaptation policy and the 'Integrated Emergency Management' model (involving assessment, prevention, preparation, response and recovery as five stages for the management of disasters) identified by interviewees, and within community resilience policy documents. Such sector specific frameworks were highlighted as helpful to conceptualise how activities across other policy areas contributed to achieving a particular policy goal, e.g. as complimentary activities within other policy areas or as influencing structural changes in other policy areas to better account for climate change. However, different approaches and underlying assumptions within these frameworks highlighted by interviewees may also create challenges for enhancing synergistic policies, influencing how and why policy synergies may be pursued in practice. For example, while community empowerment and climate change interviewees strongly emphasised an outcomes approach in community resilience, a risk reduction approach was also identified with activities focusing on "*a particular risk and an area*" (CR2). One interviewee identified a recent shift in climate change policy away from a risk approach to a more explicit outcomes approach, emphasising that this shift required "*a different mind-set*" (CC3) and potentially also the need for new practices for shaping policy activities in the future. To utilise potential opportunities to enhance synergies embedded within and across different existing policy frameworks it will be necessary to clarify different approaches and surface underlying assumptions. This will/can help illustrate if and how different policy frameworks can support the development of synergistic working between policy areas in practice. The potential to enhance synergistic working across policy can be further supported by connecting with, and strengthen the use of, shared outcomes frameworks.

5.4.1.3. Developing understandings of shared concepts

Potential opportunities for shaping more synergetic policy can also be found in the shared concepts used between policy areas. Specifically the concepts of resilience, empowerment, vulnerability and emergency were identified by interviewees and within policy documents. However, variation in meanings attached to some of these concepts was revealed that could create challenges for enhancing policy synergies. In terms of the concept of resilience understandings included; 1) an emphasis on resilience as a process for coping with civil contingencies (specified resilience) (Scottish Government Resilience Division, 2019); 2) "*a broader definition of resilience*" (CE1) as system properties and "*community capacity*" (CE2) (generalised resilience); 3) or both resilience and adaptation understood as "*being climate ready*" (CC1) to multiple future challenges. In terms of empowerment, interviewees from community empowerment policy explained empowerment as a multifaceted process, "*enabling people's voice to be heard and enabling people to have control of their lives to the extent that they wish*" (CE1) with an emphasis by interviewees and in policy documents on meaningful engagement as critical but insufficient for empowerment. Understandings of empowerment in other policy areas differed however, with a focus on information (e.g. of risks), consultation and broadly "*doing things with people rather than doing things to people*" (CR1). Community empowerment interviewees emphasised however a key difference between engagement and empowerment is that "*you take a risk when you empower people, when you give that power over to them*" (CE2) with empowerment involving being open to a wider range of ideas, decisions and actions. Other policy concepts were specifically identified by interviewees as potential bridging concepts. These included the concept of emergency, that, whilst core with community resilience policy, has recently entered climate policy debates with its uptake and meaning within climate policy as yet unclear. There is potential to better understand and develop synergy through joint meaning-making processes across these policy areas. Furthermore, overlapping meanings attached to the concepts of justice and vulnerability were also emphasised as helpful for enhancing synergy in terms of a focus on underlying socio-economic conditions leading to unequal outcomes. Some interviewees highlighted particular potential within the hybrid concept "*climate justice*" (CC1), which has emerged from within climate change policy. This suggests that a focus on overlaps and gaps in the underlying meanings of shared concepts between policy areas can help understand how shared concepts and different meaning-making processes may help or potentially hinder efforts to shape policy synergies.

Table 5.3: Build on existing architecture across policy supporting integrated approaches: Current challenges and future needs to support efforts to enhance policy synergies

Opportunity areas for enhancing policy synergies	Current challenges for shaping policy synergies	Needs for enhancing policy synergies in the future

Building on awareness of the need for integrated approaches Importance recognised across policy areas	Practice predominantly prioritises the rapid delivery of policy specific activities and goals. Moving beyond traditional pockets of synergistic practice framed around perceptions of shared issues (e.g. environmental resources/ concerns).	Identify and work through alternative ways of understanding interconnections that go beyond issue-based framings to uncover and develop further potential for enhancing policy synergies more generally.
Utilising shared frameworks National framework setting out shared outcomes (or vision) to work towards.	Varying system perspectives and policy specific framework that may entail different underlying assumptions about if and how policy synergies may be organised.	Clarify different approaches and surface underlying assumptions within policy frameworks to identify how these frameworks can help (or hinder) efforts to organise and shape synergies across policy areas to connect with and strengthen the use of shared outcomes frameworks.
Developing understandings of shared concepts Common language in use across policy areas (e.g. resilience, empowerment, vulnerability, emergency and justice).	Difference in underlying meanings attached to policy concepts across policy areas.	Understand that meanings can and do shift in ways that can help or hinder shared understandings for enhancing policy synergy. Draw on shared meanings and attend to bringing about collective meaning making processes for hybrid and/ or emerging concepts.

5.4.2. Capitalise on local decision-making and action spaces

The second opportunity area relates to capitalizing on local/ community multi-stakeholder decision making spaces to enhance the potential for synergy across policy. This involves three aspects; 1) focusing on involving community actors; 2) drawing on existing decision-making spaces; and 3) shaping new and emerging decision making spaces (table 5.4).

5.4.2.1. Involving community level actors

A key dimension across policy areas identified in the data related to a focus on involving community actors in shaping and/ or undertaking action. This potential opportunity was identified through a common emphasis by interviewees and within policy documents of community as multifaceted, relating to "*place*" (CE2), "*interest*" (CR2) and/ or in terms of (socio-economic and/ or physical) vulnerability. A key challenge identified in the analysis however were possible differences in underlying expectations of the role of community actors in policy processes. For example, for community resilience policy interviewees and documents highlighted this role as aligning with and complementing the work of emergency responders, expanding the scope of emergency planning structures and processes and orientating this role towards their participation in policy. Within climate change policy documents the role of communities is more diffuse and delineated predominantly in terms of a national community level funding programme for supporting bottom up community action framed by in large around climate

mitigation. In climate policy the role of community actors therefore focuses on driving forward action at the community level as activists supplementing other policy activities. On the other hand interviewees emphasised the aim of community empowerment policy to expand the role of community actors to "*getting them involved in decision making….to shape (public) services more to people's needs"* (CE1). The expectation ultimately therefore is for the role of community actors to encompass decision-making to (re)configure aspects of policy locally to strengthen the community level. Interviewees and policy documents highlighted multiple challenges that need to be overcome to enable this role of community actors to develop in this way in practice, which is the core of this policy area. Thus whilst a focus on involving community actors in policy is a potential area for building policy synergy, different underlying expectations shape how community actors are expected (and thus encouraged) to contribute to policy represents a potential challenge for doing this in practice. There is thus a need therefore to better understand if and how these different expectations (and thus interactions with formal policy actors) influence the involvement of community actors and subsequent outcomes in practice.

5.4.2.2. Drawing on existing local decision-making spaces

Opportunities identified to enhance policy synergies also relate to existing local multi-actor decision-making spaces with a focus on shaping experiences and action within and across communities. In particular interviewees highlighted "*the local authority community planning partnership/ community council type route….has been the most accessible, established route to access communities*" (CR2), which are also highlighted as key decision-making spaces within community resilience and community empowerment policy documents. Such established spaces have unfolded with a focus on the involvement of specific constellations of actors and/ or issues that may represent a challenge for shaping and expanding these spaces for improving policy synergies more broadly (e.g. to strengthen social-environmental perspectives). To illustrate this challenge, whilst "*increasing expectations"* (CE1) to better involve community-based and third sector actors, undertake more preventive action and to demonstrate outcomes from working in partnership (as opposed to aligning actor specific activities) was highlighted by interviewees and within policy documents, in some contexts (and shaped by multiple factors) existing practice does always match such expectations. Notwithstanding this, despite a strong orientating towards responding to socio-economic challenges, interviewees suggested that the recent climate emergency declaration by public bodies and the drive to involve community actors more in these spaces may help to expand the scope of issues considered and therefore the type of decisions and actions undertaken. Overall therefore existing local multi-actor decision spaces in theory entail potential for enhancing policy synergy, particularly in response to broader political shifts in how problems are defined, however many limitations many hinder this in practice. In a context of finite resources the potential across existing decision spaces to shift to enhance policy synergy in practice therefore needs careful consideration in developing strategies on the ground.

5.4.2.3. Shaping new and emergent local decision making spaces

Further opportunities to enhance policy synergies were identified through different new and emerging local collective action spaces. Interviewees identified a number of these spaces that had potential for enhancing policy synergies on the ground. This included community participatory budgeting processes intended to put "*the power into local communities' hands to make decision for themselves because the government feels strongly that they know best about what is needed in the local community*" (CE2). Furthermore the idea to create "*citizen assemblies*" (CE2) or "*community assemblies*" (CC1) were also emphasised by interviewees as new spaces with policy synergy potential, as were temporary multi-actor spaces created to examine and evaluate action post disaster. The importance of capacity for guiding the development of these spaces was emphasised by interviewees and within policy documents as a key challenge, for example different perceptions on local relevance of various policy issues. However interviewees did suggest some ideas and approaches to help guide these spaces for enhancing policy synergies. This included a focus on a sense of "*pride*" (CE1) and strengthening shared identities within communities to encourage more joined up perspectives to emerge within these new spaces. A "*place-based approach*" (CC1) was also highlighted as a way to potentially help develop policy synergies at the community level. Furthermore the focus "*on learning to do things better*" (CR1) after emergency situations was identified as helpful for improving the potential for policy synergies within these temporary collective spaces of reflection and action post disaster, with interviewees emphasising these learning opportunities "*as the route in*" (CC1) to explore connections between different policy issues (e.g. natural hazards and climate change) to inform the process of developing collective actions on the ground. Thus newly emerging and temporary collective decision-making spaces are potentially important for helping to enhance policy synergies and some existing ideas and approaches can help guide these processes to enhance this potential further. There is however a need to understand how to apply and embed these (and other) ideas and approaches within these spaces to help guide and develop this synergistic potential in practice.

Table 5.4: Capitalise on local decision making and action spaces: Current challenges and future needs to support efforts to enhance policy synergies

Opportunity areas for enhancing policy synergies	Current challenges for shaping policy synergies	Needs for enhancing policy synergies in the future
Involving community level actors Shared focus on involving community actors in policy activities and shaping outcomes on the ground.	Different expectations on level and type of involvement of community actors in policy processes across policy areas.	Understand if and how different expectations (and thus interactions with formal policy actors) across policies influence the involvement of community actors and subsequent outcomes in practice, particularly in relation to goals relating to deeper levels of involvement.

Drawing on existing local decision making spaces Established collective decision making already focusing on complex challenges.	Traditional specific focus and existing pressures may make it difficult to expand and develop these spaces for improving policy synergies more broadly (e.g. beyond traditional constellations of policy issues).	Raises questions about if and how decision making spaces could and should be reshaped towards more systemic approaches to enhance the potential for policy synergies.
Developing new and emergent local decision making spaces Flexibility of emerging collective decision making at the community level and reflective learning spaces.	Capacity of actors involved in these new spaces may not be orientated towards the need to develop these spaces to enhance synergistic working across different (diverse) policy areas.	Identify and understand how to apply and embed ideas and approaches to support exploration, discovery and learning about different issues and links between them to shift towards more synergistic perspectives in practice.

5.4.3. Co-develop integrative capacity

The third opportunity area relates to capacities to collectively explore and develop policy synergies across policy processes. Three dimensions involved in developing capacity were identified as entry points towards this. These are; 1) building underlying social relationships; 2) developing know-how to bring together actors and perspectives; and 3) bringing together different sources of knowledge (table 5.5).

5.4.3.1. Building underlying social relationships

Social relationships were emphasised by interviewees as an important underlying dimension influencing understanding across policy issues and areas. This related to "*internal relationships*" (CC2) within national level organisations as "*it is the relationship building which is just as important as the formal words written into their policy*" (CR2). Social relationships are therefore an important aspects of policy processes more generally for helping to enhance policy synergies in the future. Some interviewees explicitly recognised social relationships as developing through multiple social interactions between actors' overtime to improve the potential for sharing knowledge and developing understanding and this included the importance of relationships within communities for shaping different types of actions and outcomes, as one interviewee highlighted "*the community council can do one thing but there may be other things that other community groups want to, but we definitely want to encourage them to talk with each other" (CR2).* The importance of "*trust….and…recognis[ing] that it is worth [getting involved]…that actually there is something in return*" (CE1) was emphasised, particularly for building relationships beyond traditional groups of policy actors (e.g. the public sector) and for involving community actors within policy processes. This led one interviewee to comment "*you get down to relationships and that is all very tricky" (CR2).* A key challenge identified however was

that informal individual networks were often the primary factor shaping if relationships contributed to enhancing policy synergies and how, although interviewees also explicitly recognised that as policy areas *"continue to evolve"* (CE1), there is a need to develop new relationships with other policy areas and this could help enhance policy synergies more broadly. Thus underlying social relationships help bring policy actors together to shape different types of actions and outcomes (and bringing actors together can also help develop relationships) and represent an important dimension of policy processes to help improve policy synergies. There is, however, a need to identify how to develop social relationships between diverse policy actors and how these can be sustained and improved over time to help develop this synergistic potential in practice.

5.4.3.2. Developing know-how to bring together actors and perspectives

A focus on developing capacities of different policy actors, either through formal skills training and/ or experiential learning is an opportunity for developing know-how to bring together actors with different perspectives to improve the potential for synergy across policy. This was highlighted as particularly important by interviewees from community empowerment and resilience policy areas and included a focus on the skills of formal actors (e.g. local authorities and emergency responders) for improving "*leadership*" (CE1) and consolidate and share experiential learning, leading interviewee to comment "*a lot of the lessons that come out [after events] are to do with behaviours, soft skills ….. it is all about how people work better in terms of their partnerships….and how they assess risk and identify capabilities*" (CR2). A focus on know-how of formal actors was emphasised as critical to "*create the long term culture that we need [across policy]"* (CE1), e.g. to help embed community actors in shaping these processes and to create conditions where involvement is viewed as "*a [beneficial] choice*" (CE1) rather than a burden. Furthermore, "*building the capacity within communities….to engage with what is happening locall*y" (CE2) was also emphasised with community empowerment policy which also entails potential for shaping conditions that support more synergistic working. A challenge however relates to existing structures and processes that prioritises specific types of policy actors and skills and not others, for example skills development for community resilience policy doesn't "*work with communities, they work with the responders*" (CR2). Furthermore interviewees emphasised that "*[despite] good intentions, the challenge that a lot of public authorities face, the same as government, is reduced funding, reduced number of staff, lots of pressures*" (CE2) that can hinder if and how efforts to develop know-how of different policy emerge in practice. Therefore the emphasis on know-how development across policy areas, particularly in relation to the involvement of community actors is a potential opportunity for efforts to enhance synergies across policy, however existing ways of approaching this have limited potential in practice to help bring this about. There is a need to examine potential overlaps (in content and intent) across different know-how efforts, particularly at the local/

community level and identify how to work with and develop these in ways that can improve the development of synergistic perspectives.

5.4.3.3. Bringing together different sources of knowledge

The emphasis on the importance of knowledge to inform policy activities was also identified as important by interviewees and represents an opportunity to support the development of policy synergies. Specifically this was emphasised by interviewees as important for shaping perceived relevance of policy issues across social settings. For example one community empowerment interviewee commented "*[climate change] is less to do with actually how to improve wellbeing for localities….. [climate action] is about local politics*" (CE1). Creating and providing knowledge about specific risks was highlighted as critical for shaping policy action in climate change (adaptation) and community resilience policy, although at a national level climate change interviewees emphasised the importance of this knowledge framed "*in a wider context of other economic, social and environmental issues*" (CC2) to help influence activities in other policy areas whereas in community resilience policy the focus was much more on knowledge for local/ community level actors. An assets-based approach, that involves understanding communities and framing actions positively in terms of strengths (including the importance of local knowledge and experience) and benefits, was also identified as important within community empowerment and community resilience policy areas for shaping outcomes on the ground, which also included a recognition of the importance of local knowledge in shaping such outcomes. These different ways of framing (either as risks or as benefits) could therefore present a challenge in how knowledge is produced and the understandings and subsequent actions that may emerge. This led one interviewee to comment that some outcomes (particularly in relation to climate change) "*may not lend itself towards community empowerment [policy processes] …. And it may be that actually a more directive [top down] approach is needed*" (CE1). Thus the focus on developing and bringing together different knowledge sources has the potential to support understandings for enhancing policy synergies. However if and how different sources of knowledge are brought together (e.g. local and national/ informal and formal knowledge) may be hindered by a perceived or real dichotomy between different approaches (e.g. risk versus assets and/ or top down versus bottom up) across policy areas. There is therefore a need to understand how these different approaches to knowledge development and use may or may not align in practice and how to guide this process to support synergistic perspectives and practice. Co-creating synergetic policy narratives could help further support how knowledge is applied in policy processes for improving the potential for policy synergy.

Table 5.5: Co-develop integrative capacity: Current challenges and future needs to support efforts to enhance policy synergies

Opportunity areas for enhancing policy synergies	Current challenges for shaping policy synergies	Needs for enhancing policy synergies in the future
Building underlying social relationships Understanding that social relationships are multifaceted and are important for understanding entry points for enhancing policy synergy.	Relationships orientated around individual informal networks with limited understanding about how to develop relationships more generally.	Identify how to better guide the development of social relationships between diverse policy actors and how these can be sustained and improved over time to support the potential for policy synergies to unfold.
Developing know-how to bring together actors and perspectives A focus on experiential learning and skills development to improve practice.	Learning contexts, type of learning (for what) and support to enable different actors to learn (for who) differs, particularly in terms of skills to involve community level actors in policy activities.	Examine potential overlaps (in content and intent) across different know-how efforts, particularly at the local/ community level and identity how to work with and develop these in ways that can improve the development of synergistic perspectives.
Bringing together different sources of knowledge A focus on producing, providing and integrating different types of knowledge within policy areas to shape action.	Different framings in and perceptions about the relevance of different type of knowledge that may limit knowledge integration efforts across policy areas for supporting the development of synergistic policy actions and outcomes.	Understand how different approaches to knowledge development and use may or may not align in practice and how guide the flow and integration of knowledge to support synergistic perspectives and practice. Co-creating synergetic policy narratives could help further support how knowledge is applied in policy processes for improving the potential for policy synergy.

5.5. Discussion

This study aimed to understand how policy synergies could be developed in practical ways across community resilience, community empowerment and climate change policy areas in Scotland. The work focused on the in-depth expertise of established and experienced policy actors embedded within and contributing to different policy areas. This enabled elicitation of important insights relevant for both science and policy to understand how policy synergies could be enhanced across policy landscapes more broadly. The findings indicate some potential quick wins (e.g. to shape locally emergent decision making spaces) for enhancing synergistic potential in the shorter term, alongside more strategic longer term action for enhancing policy synergies. There were three main findings about how work to enhance policy synergy could be enhanced.

First, at a national level, there are important opportunities to build on existing policy architecture orientated towards integrated approaches and outcomes. These opportunities consist of shared ideas, frameworks and concepts that shape current understandings of areas of overlapping nature between

different policy areas. However, current practice tends to favour policy specific activities; policy frameworks may include different underlying assumptions about cross sector activities; and multiple meanings of concepts may exist, potentially hindering policy synergies. It will therefore be important to draw on this policy architecture to bring together different national policy actors to explore if and how these common dimensions may be developed to help better organise activities to enhance policy synergies in practice.

Second, there are significant opportunities to enhance synergies through existing and emergent local/ community level decision making spaces, including spaces linked to those community actors already involved in policy activities. A challenge, however, is that path dependence may hinder efforts to expand existing spaces and alter expectations of the role of community actors across policy areas. Whilst emerging spaces (e.g. community assemblies and collective post-disaster discussions) could provide more practical opportunities for actors to collectively explore interconnections and underlying drivers from more systemic perspectives, consideration will be required of how to achieve this in practice if synergistic potential is to be realised.

Third, there are opportunities to enhance synergistic capacity by bringing together the existing recognition that social relationships are important, and the skills of different types of policy actors and shaping the development, integration and flow of knowledge to inform decision making across different socio-political settings (e.g. for policy development and for organising action on the ground). The less obvious or tangible aspects of policy processes are in part already orientated towards developing and working through connections between different actors and helping to conceptualise links between policy issues and areas. The contribution towards enhancing policy synergies and especially in terms of complex policy challenges, however, may in practice be patchy at best. There is thus much potential to explore how these important process-based dimensions can be strengthened beyond existing, traditional pockets to more explicitly support enhancing policy synergies more generally.

This in-depth study, despite a focus a specific policy setting in Scotland, also provides three key insights about how we understand and can work to enhance policy synergies in practice. First, whilst the findings highlight opportunity areas, it highlights key challenges to realising them that will need to be overcome. The most important is the need for policy to be understood, approached and practiced as if it were indeed a continued negotiation and multidimensional social process. Policy processes involve multiple different actors (and preferences and perspectives), decision-making and action spaces, situations, settings and potential outcomes. However, many of the challenges for enhancing policy synergies highlighted in this study relate to less tangible factors (approaches, assumptions, meanings and expectations) and their connections with more tangible dimensions that have often been the focus of past studies and for understanding policy (e.g. goals, instruments, roles, types of actors) and traditionally solutions have been orientated towards more knowledge, information and tools. Recognising the importance of such multiple less tangible dimensions in shaping policy synergy

through time speaks to the complex nature of policy challenges and policy landscapes (Boulton, 2010) and how these may develop in ways that create and reinforce silos (Artioli et al., 2017), layers of potentially contradictory approaches (Rayner and Howlett, 2009) and with limited potential for pockets of synergistic potential to unfold in more inclusive and innovative ways (Baehler and Biddle, 2018, van Popering-Verkerk and van Buuren, 2017). Thus, although dynamic process orientated understanding and ways of working to shape policy activities is important, deliberate strategies for enhancing synergistic working across policy landscapes need to be particularly orientated towards engaging with the role of and interplay between less tangible dimensions within and between policy processes.

Second, this study highlights that, in addition to the need to view policy as a process, this approach will specifically need to be guided by synergistic intent. In this study, while opportunities were often recognised, it was also clear that synergy in itself was not an explicit goal. For example, there is often a focus on undertaking policy activities to deliver sector specific goals in a timely manner. Such intent is essential for developing creative approaches that enhance synergy, such as by creating opportunities for different policy actors to explore and discover new ideas and ways of working in particular settings and situations and across multiple time frames that could help inform policy activities more broadly. Synergistic intent is also critical for stimulating consideration of the wider barriers, and how policy development processes themselves might need to change to enable synergistic outcomes to emerge. For example, it may stimulate the need for new thinking about how government policy departments are structured and supported, which naturally create silo based thinking, reinforced by continued recruitment of staff with particular perspectives. Thus there is a need to go beyond just asking how to change existing practices to support synergy to asking what new ways of organising or approaching policy development would be required. Without explicit intention for synergy, such higher order conceptual development and new approaches that overcome structural and systemic barriers are unlikely to come about.

Third, the study highlights how social relationships within policy processes are themselves important for enhancing relationships between policies and to enable synergistic outcomes. As highlighted by study participants and in other studies, social relationships are often the bedrock to enabling interconnections to be explored and changed. Social relationships are multifaceted, developing over time though interaction between different actors and can qualitatively vary (see *chapter 3*)(Bernhard, 2018). Social relationships and their role in shaping collective action is therefore not static, emerging through the type of predefined spaces for exploring ideas and issues through which meanings are configured and reconfigured (see *chapter 4*) and for supporting individual and collective learning (Goldstein et al., 2017). Whilst informal networks of social relationships are important in organisational settings (Pelling et al., 2008) some can also hinder learning by excluding certain actors and ideas or in the way shared social identities and values are reinforced (Bakker et al., 2019, Smith et al., 2012b) (see *chapter 4*). To enhance the practice of policy synergy, which occur through complex social processes,

it will therefore be important to focus on the social relationships involved. This would, for example, help move focus from working with existing pockets of social relationships to those focused on relationships between policy areas, such as how relationships grouped around how to collectively generate higher order goals for greater impact rather than traditional commonalities, such as a shared issue or resource. Developing know-how to bring actors together to help shape social relationships is therefore key to enhancing synergistic policy relations.

Together, these three more general insights show how important it will be for viewing policy as a practice, to enhance research that specifically focuses on how such practice can be advanced. Practice entails configurations of different actions, norms and knowledge, often unfolding through interactions (Freeman et al., 2011). Yet, while there is a strong focus on research on capacities of different policy actors and for different goals (e.g. collaborative capacity) the tendency is to focus on identifying different elements to bring about goals, such as social relations, skills and knowledge (as highlighted in what practitioners have so far focused on in this study) and on other factors such as visions, goals and rules (van der Molen, 2018, van Popering-Verkerk and van Buuren, 2017). How these different factors interact over time to shape negotiating and decision making processes, and the underlying power dynamics involved, is often underplayed and thus misses opportunities to better understand how to guide change. Understanding practice as a relational process and how such practice can be enhanced will in turn lead to a more nuanced understanding of how policy occurs, and how synergistic outcomes may come about. A focus on policy as practice shifts attention from change through policy (e.g. policy being a factor in shaping change at the community level) to change in policy (e.g. to shape structures, processes and spaces to enable change to emerge across social settings). Thus, a renewed focus on policy as a practice is key for helping shift orientations and support further attempts to generate effects greater than the sum of the parts.

5.6. Conclusions

In conclusion this study sought to understand how synergies between policy areas can be enhanced in practice. Recognising the dynamic, complex nature of policy processes, this study explicitly defines policy synergy from a process-orientated perspective that leads to outcomes that are greater than the sum of individual parts for policy and in terms of impact on the ground. Three broad entry points within policy landscapes are identified for enhancing the potential for policy synergies. These are; 1) Build on existing policy architecture supporting integrated approaches; 2) Capitalise on existing and emergent local decision-making spaces; and 3) Co-develop integrative capacity. Each of these include different opportunity areas and challenges to inform strategies for enhancing policy synergies across different socio-political settings. Such strategies must however have a clear synergistic intent, focus on both tangible and less tangible dimensions, and how these interact and recognise policy practice as critical

for shaping if and how this emerges across temporal and spatial scales. Building social relationships between policy actors and across policy areas can support and shape spaces for dialogue, learning and discovery to negotiate and strengthen if and how policy synergies are actively pursued to developing more enabling policy environments to engage with complex policy challenges, and to better support change at the community level. Whilst understanding the need for policy synergies is critical for complex interconnected challenges such as climate change and social justice deliberative and wide reaching action is needed to bring this about in practice.

Chapter 6

The previous chapter (chapter 5) addressed the question: How can synergistic enabling environments (e.g. policy environments) be created for generating more effective outcomes in the context of complex challenges? The findings showed that, amongst other opportunities, a focus on social relationships could be a useful entry point for enhancing policy synergies. Currently, however, relationships between policy actors are often organised informally around traditional perceptions of shared concern (e.g. environmental resources). The findings also revealed potential challenges for developing these opportunities to enhance policy synergies in practice. Therefore, explicit strategies with a clear synergistic intention are needed for developing and iteratively working through social relations across policy communities that focuses on shaping synergistic policy practice.

The next chapter (chapter 6) is a synthesis of the key findings from the previous chapters (chapters 2 - 5) and draws out the key research insights to address the overarching aim of this thesis: To examine how social relationships, amongst other factors shape community change in the context of complex challenges such as climate change. This identities four key insights for more nuanced understandings about how social relationships interact with community change initiatives. Lastly, three implications for practice to navigate and work with social relationships to engage with complex climate change challenges are presented.

6. Synthesis

6.1. Research aims and summary of key findings

This thesis aimed to examine how social relationships amongst diverse other factors shape complex community change processes with a focus on implications for practice in the context of climate change. This included addressing the following specific questions;

1. What do past studies tell us about how social capital enhances resilience? (*chapter 2*)
2. How does the quality of social relationships influence community change initiatives? (*chapter 3*)
3. How do social relationships interact with other complex dynamics to help bring about meaningful change within communities? (*chapter 4*)
4. How can synergistic enabling environments (e.g. policy environments) be created for generating more effective outcomes in the context of complex challenges? (*chapter 5*)

In order to address these questions a diverse range of methods were used. This included a qualitative synthesis to broadly interrogate, both conceptually and empirically, a diversity of literature and draw out implications for climate research and community resilience practice (*chapter 2*). In the empirical chapters qualitative data methods and sources involved; semi-structured interviews (*chapter 3 - 5*); relationship mapping (*chapter 3*); participant observation (*chapter 4);* and policy documents (*chapter 5*). Across these studies inductive analysis was supported through memo writing, visual mapping and framework development to identify and explore ideas and connections between these within the data and to construct conceptual accounts from each study.

Chapter 2 addressed the first question: *What do past studies tell us about how social capital enhances resilience?* It involved a qualitative synthesis of literature relating to social capital and resilience (187 studies). While there were many different empirical and practical findings from the study, overall this study found that most previous studies focused on structural dimensions of social capital (quantity of connections and/ or type of actors involved) and resilience implicitly framed as maintaining the status quo. Some normative factors were identified as important for directly shaping social capital within different types of community change processes. However, the role of such factors was often underplayed, both conceptually and empirically. For more nuanced understandings of social capital within community change processes in the context of climate change, there is a need to better examine how different socio-cultural factors (e.g. social norms, values and identities) are involved in shaping social capital and for supporting meaningful collective change. From this study, four important areas for future research identified were taken forward further in this thesis. These were;

1. Move beyond simplistic, binary approaches that focus on the type of actors and structural connections involved in social relationships.
2. Take more dynamic perspectives on the shifting role of social capital and interactions with other factors across resilience processes framed around different goals and challenges.
3. Take into account a more socio-cultural perspective to social capital to examine and better understand the role of different normative factors in the form and function of social capital for enhancing resilience.
4. Examine how formal actors and institutions (policies and programmes) can develop and work through a social capital lens that goes beyond a traditional top down approach to enhancing community resilience.

Chapter 3 addressed the question: *How does the quality of social relationships influence community change initiatives?* This question emerged following the review that had identified that while there was extensive research on relationships (e.g. quantity or type) there was very limited research on their qualities. Drawing on diverse community-based initiatives three distinct types of relationship qualities were identified; supportive qualities, pragmatic qualities, and tense qualities. These qualities unfold, consolidate and potentially change through time. For engaging with complex climate change challenges,

supportive relationship qualities with their diverse contributions were found to be particularly important in terms of their flexibility and generative potential for enabling a diversity of different problem solving strategies. Whilst explicit relationship building approaches were important, some practitioners adopted a learning-through-relationships approach to develop more sophisticated ways of navigating through and working with social relationships to enhance the quality and role of relationships through time within community change processes.

Chapter 4 addressed the question: *How do social relationships interact with other complex factors to enable meaningful change within communities?* This question emerged through dialogue with community practitioners and from the review which suggested that despite a recognition of the multidimensional nature of community initiatives there is limited research on social relationships for meaningful collective change and that adopts a dynamic and socio-cultural perspective. Drawing on a specific case of the development of a novel community climate action initiative this study found that social relationships interconnected with multiple normative factors (different social norms and social identities) to initially shape diverging interpretations of this initiative, increasing tension and misunderstanding. As these interconnections were explored, the role of social relationships as interpretative spaces diminished. Surfacing the social (inclusive) intentions of the initiative within social relationships created regenerative opportunities for shared understandings and intentions to emerge that shaped collaboration, through which social relationships were strengthened and collective agency for the future was enhanced.

Chapter 5 addressed the question: *How can synergistic enabling environments (e.g. policy environments) be created for generating more effective outcomes in the context of complex challenges?* This question emerged in part through dialogue with climate change and resilience science-policy interface actors on integration within policy and from the review, which identified limited research beyond simplistic linear and/ or top down perspectives on policy for developing social relationships to support community resilience in the context of complex challenges. Examining actual and potential synergies between three national policy areas in Scotland, numerous opportunities and challenges were found for enhancing synergistic policy practice. Whilst this included social relationships, less tangible aspects of policy processes (ideas, meanings, assumptions and expectations) were found to be particularly important as key factors that could hinder this in practice. Ultimately these findings showed that nurturing synergy across policy communities hinges on developing and working through connections between shared synergistic intention and efforts to shape policy practice.

6.2. How do social relationships, amongst diverse factors, shape community change in the context of climate change?

Taken together, the chapters provided four key insights about how social relationships, amongst other factors shape community change in the context of complex challenges such as climate change. These include: (1) quality of relationships; (2) multiple intersecting normative factors; (3) how particular ideas and initiatives are interpreted; and (4) the intentions guiding the development of collective change processes as a whole (figure 6.1).

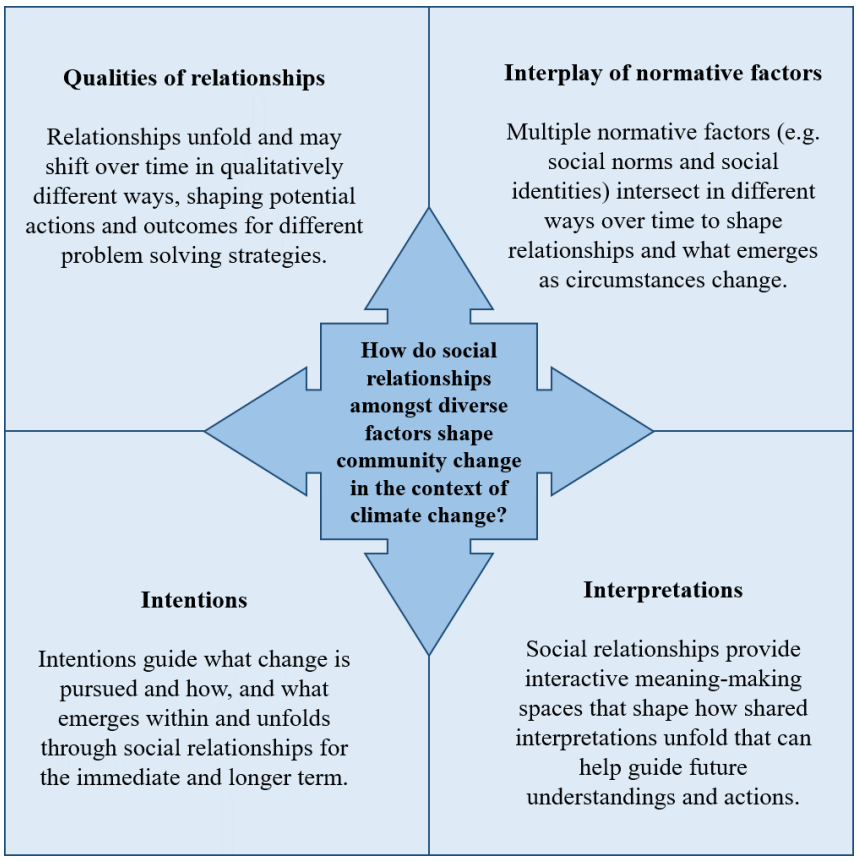

Figure 6.1: Four insights on how social relationships shape community change initiatives

First, social relationships entail qualitatively different interactions that can vary within and between socials settings and through time to shape potential actions and outcomes. The qualities of relationships therefore matter for crafting different types of change on the ground, from initiatives aiming to collectively react to specific climate threats, respond to aspects of climate change by adapting individual actions and behaviours, or to proactively work to shift collective ways of thinking and approaching climate change challenges (*chapter 2*). Through time as initiatives develop working through relationships can lead to opportunities that also enhance the quality of key social relations for the future

(*chapter 4*). Relationships shaped around supportive qualities (based on the supportive qualities of respect, integrity and honesty to openly share, explore and challenge ideas) are particularly important for engaging with complex challenges by the flexibility and generative potential of what may emerge. Understanding the multiple factors across individual-initiative-institutional scales shaping relationship qualities and learning through social relationships can help initiatives to navigate, harness and enhance their potential role (*chapter 3*). Working through social relationships in this way can shape interactive space for negotiating new, shared understandings and to guide collective actions and outcomes for the future (*chapter 5*). Therefore, whilst the quality of social relationships matters, these qualities are potentially dynamic and can be actively nurtured to enhance their potential to shape initiatives over time.

Second, normative factors interact in different ways to shape both the nature of relationships and their role within community initiatives. An important factor in the development of social relationships is shared social identities. These involve perceptions of common concerns and needs (e.g. concern for environmental resources) and may be expressed as shared threats (e.g. threats to livelihoods of small business owners) (*chapters 4 & 5*). Underlying social identities are therefore important in shaping why some relationships develop (*chapter 2*) and what phenomena are considered potentially relevant to discuss within these interactive spaces (*chapters 4*). How interactions unfold in practice within particular situations through social relationships is, however, shaped by different social norms, guiding how discussions about phenomena unfold that shapes subsequent meanings and actions, including action to engage more or less actively in processes (*chapter 4*). Whilst some relationships provide opportunities to explore new ideas (*chapter 3*), if underlying assumptions are examined and challenged is influenced by the different social norms within these relationship-based spaces (*chapter 4*). Norms of solidarity are not only key in shaping how ideas are explored within these spaces but also if this leads to organised collective action. As these social change processes unfold other normative factors may also be increasingly perceived as important (e.g. wider shared social identities) and this can alter how different actors respond to and engage in collective action within these processes (*chapter 4*). Therefore an interplay of multiple normative factors helps shape how these interactive relationship-based spaces develop, if/ how actors engage in community change processes through relationships, and if/how this role changes as processes unfold. Thus the role of social relationships is not static, instead this is situationally guided by multiple normative factors.

Third, social relationships help shape how unfolding circumstances through community change initiatives are interpreted. The interactive spaces created by, and shaped through, social relationships provide shared opportunities for exploring disruptive events (*chapter 2*), new situations, potential problems and future consequences (*chapter 4*). Existing ideas, concepts and underlying meanings and assumptions, such as soup kitchen/ food bank (*chapter 4*) or resilience (*chapter 2 & 5*), help guide these deliberations that unfold through these relationship-based spaces. Through these interactions, meanings

are then configured and tested against existing interpretations. If collectively accepted, shared interpretations may then emerge and consolidate (e.g. as shared narratives) to help guide how future experiences in similar situations are broadly interpreted and acted on. Whilst shared narratives (e.g. shared narratives on the importance of integrated approaches across policy) on their own may be insufficient for action (*chapter 5*), through social relationships multiple divergent interpretations can emerge that may increase tension within initiatives (*chapter 4*) and/ or potential for fragmentation more broadly (*chapter 5*). Working through social relationships can support convergence in this interpretive process for shared understandings that help re-configure social boundaries, support collective action and strengthen social relationships for the future (*chapter 4*). Thus, through social relationships, less tangible social dimensions are combined to explore different meanings which helps guide how problems are defined and different actions considered more or less relevant in current and for future situations to shape community initiatives.

Fourth, the type of intentions guiding community change initiatives shape what emerges through social relationships and how social relationships develop through these processes. The intentions guiding initiatives will influence what actions and outcomes are explored and developed through social relationships, for example environmental actions and outcomes or synergistic socio-environmental actions and outcomes (*chapter 5*). Whilst intentions are important to focus efforts on the type of impact being pursued on the ground, social (inclusive) intentions are particularly important for guiding how these processes unfold and if and how relationships are able to help initiatives gain momentum and strengthen opportunities for more meaningful change. Such social intentions can shape interactions in ways that can nurture space for new understandings and discovery of shared intentions that builds support and engagement in initiatives through relationships (*chapter 4*). In turn, relationships can be improved through such experiences, and learning enhanced, to help guide future practice (*chapter 4 & 5*). Therefore, initiative intentions shape how the role of relationships is approached and if, and how, in practice social relationships are developed in ways to help support more meaningful collective change in the future.

Different research strategies, questions and methodological approaches could have been applied to examine social relationships in the context of community change initiatives. A quantitative research approach would have led to a stronger focus on measuring and thus differentiating the relative importance of social relationships and other key factors involved in these processes (Bryman, 2016a). Also, a deductive research strategy would have involved the selection of a distinct theoretical framework through which to examine if and how social relationships shape collective change processes. Whilst this is valuable for the development of knowledge, a qualitative, inductive approach, drawing on multiple methods, enabled multiple dimensions of social relationships and the actual or potential interplay with other diverse factors within change processes to be examined in detail. This provided

new insights about how such factors connect to help shape these complex social processes, and importantly led to new insights about how to better guide these processes in practice.

This thesis examines how different factors directly interact with and shape the nature and role of social relationships within deliberate collective change processes. However, other (indirect) factors are also likely to play a role, such as individual psychological factors and/ or local socio-political settings (Wilson et al., 2020, Castán Broto et al., 2019). Whilst examining such broader factors was not the focus of this thesis, the findings have provided some insights about how some cross scale factors interconnect with and through social relationships (e.g. different dimensions of policy processes, social identities, and assumptions and emotions). Thus, future research could build on these findings to better understand cross scales dynamics involved in shaping the nature and role of social relationships within change processes in the context of climate change.

Furthermore, contestation is a key feature of complex challenges (Voss et al., 2007) and social change in the context of such challenges is an ongoing process (Fazey et al., 2018a). Whilst there was broad acceptance of the need to respond to such challenges, particularly in relation to climate change, these initiatives often encompassed actors with different goals (including participants focusing on other goals such as maintaining livelihoods or community empowerment) and understandings about how to respond in practice. This emphasises the need to view community change in the context of complex challenges as a process of ongoing negotiation as circumstances unfold. Whilst the findings of studies provide insights about the social dimensions in developing community initiatives, future research could contribute further by examining how these negotiated social processes continue to shape engagement with complex challenges and create meaningful change over longer time frames.

Overall, the findings of this thesis show how developing relationship-based approaches is critical for initiatives seeking to engage with complex challenges and to support opportunities for meaningful change on the ground. Indeed, the role of social relationships within different community change processes is widely recognised as important (Castán Broto et al., 2019, Berkes and Ross, 2013, Westley et al., 2013). This thesis has found that multiple socio-cultural dimensions at play within the domains of social relationships, initiatives and wider contexts, combine in different ways over time to guide how social relationships shape initiatives and how relationships and their role unfolds through initiatives. This shifts attention away from simplistic approaches to social relationships with a focus on what type of actors are involved, which has been critiqued as potentially hindering more dynamic and nuanced understandings of the nature and role of social relationships in collective climate action initiatives (Rockenbauch et al., 2019, MacGillivray, 2018, Rockenbauch and Sakdapolrak, 2017). The findings of this thesis show that some socio-cultural configurations may enable new understandings to emerge and thus create more space for alternative action and outcomes. Other configurations however may hinder this and potentially reinforce social/ socio-political boundaries within and between different communities that may support only limited opportunities for improving relationships and their role in

shaping change through time. There is an urgent need to develop understandings about how different approaches can be applied to help guide change, how collective initiatives dynamically unfold and how to guide these complex social processes in practice (Fazey et al., 2021, Mancilla García et al., 2020, Scoones et al., 2020, Köhler et al., 2019, Nightingale et al., 2019, Fazey et al., 2018c). What this thesis reveals is that relationship-based practice in the context of complex challenges not only requires a focus on and understanding of different dimensions of relationships, but also entails the need to actively guide the development of interconnections between different socio-cultural dimensions across these different domains over time.

6.3. Implications for future research

To continue to take forward these more nuanced understandings, more attention to the multiscale dynamics of social relationships within collective change processes is also necessary. To support this, two specific areas for future research stand out. First, how social relationships (in terms of the interactive spaces they create through the process of relating by and between actors involved) intersect with multiple interconnecting normative factors to influence the qualities that develop and their role through time in community initiatives can also be examined through a social power lens, exploring not only how but also why relationships and their role emerges and may change. Whilst traditional, top-down approaches, particularly through policy processes, are increasingly recognised as insufficient for engaging with complex challenges (Scoones et al., 2020), this thesis raises questions about how, working through social relationships, community-based practitioners can create, sustain, strengthen and expand opportunities for guiding deliberate change from within, and across different social/ socio-political settings. Whilst social power is a complex concept (Hayward and Lukes, 2008), it is widely understood as relational, dynamic and multi-scalar (Marquardt, 2017), and can be explored as a process of (dis)empowerment (Avelino, 2017). A social power lens therefore could enhance understandings about how, through social relationships, engagement of diverse actors can be nurtured across temporal and spatial scales and the emergence of different meanings and actions guided through these processes in ways that support meaningful collective change.

Second, this thesis shows that working through social relationships is not just a matter of action, but involves interactive spaces within and through which interconnections between wider social contexts, different meanings and actions are explored and tested. The shared interpretations that unfold may reinforce, challenge and/ or create space to support alternative ways of thinking and acting for the future as shared narratives consolidate through this process. Narratives entail the development of coherent, interconnected meanings attached to, and embedded within, different elements that make up these storylines e.g. the type and role of actors and challenges, actions and visions for the future considered relevant. Narratives are therefore important for shaping change (Luederitz et al., 2017). Whilst change

initiatives are increasingly understood as meaning-making processes (Riedy et al., 2019) and the importance of shared narratives in shaping action across settings is recognised (Bushell et al., 2017, Paschen and Ison, 2014), exploring the interpretive role of social relationships through a narrative lens could help understand how working through social relationships can shape this process more broadly, in terms of both opportunities and challenges.

6.4. Implications for practice

Overall this thesis provides three overarching practical implications for working through social relationships for shaping collective change initiatives.

The first practical implication is the need to create explicit generative relationship-based strategies to support community change initiatives, particularly complex ones. Relationships have the potential to contribute to community change initiatives in multiple ways, however, this is influenced by the quality of relationships. To harness the generative potential of social relationships in practice, explicit relationship based strategies are needed that focus on building and learning through supportive relationships over time.

The second practical implication is the importance of hold and express synergistic socio-environmental intentions for regeneratively shaping change processes. The intentions within change initiatives are important for how social relationships are approached and for guiding what potential actions and outcomes are explored within these interactive spaces. Synergistic intentions can steer processes and interactions in ways that create space to explore different perspectives and for shared understandings and collaboration across social/ socio-political boundaries. This can lead to an experience-based regenerative dynamic that improves learning and the quality of relationships for the future whilst shaping and strengthening opportunities in practice for socio-environmental outcomes and impacts on the ground that are greater than the sum of their parts.

A final implication for practice is to craft and harness the meaning-making dimensions of social relationships for guiding how shared interpretations develop. Social relationships and what emerges are closely tied to pre-established meanings, social identities and social norms. How new ideas are explored and meanings constructed through these interactive spaces is therefore not a neutral process and can unfold in ways that lead to diverging, potentially contradictory interpretations that may increase tensions within change processes and that may over time reinforce understandings of social/ socio-political boundaries. Engaging with and guiding this meaning-making dimension of social relationships can therefore help limit the potential for contradictory interpretations between groups of actors in the process to unfold.

6.5. Final conclusions

In conclusion, social relationships are so much more than structural patterns of connections between actors. They entail the development of qualitatively different interactive opportunity spaces shaped by different social identities and social norms. These factors not only guide why and how relationships develop but also how relationships shape interpretations and any actions that unfold. Social relationships are clearly important within community initiatives. Yet, they do not emerge through a static dynamic and their nature shifts over time, resulting also in changes in the way they influence how actors interpret and engage with different situations and initiatives and then what emerges through and from these complex social processes. If actors then seek to strategically work through relationships, they will need more nuanced understandings of what social relationships entail and which recognise the multiple different normative dimensions involved in shaping how they develop. This nuance is critical for working with complex social processes more widely and for shaping opportunities for the emergence of meaningful change over time.

7. References

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8. Appendix

8.1. Appendix 1: Co-authored publications produced

During the development of this thesis I have also been actively involved as a co-author in a number of other research publications.

These are;

1. Fazey, I., **Carmen, E**., Ross, H., Roa-Williams, J., Hodgson, A., Searle, B., Kenter, J., Knox, K., Butlet, J., Murray, K., Smith, F., Stringer, L., Thankappan, S., (under review) Social dynamics of community resilience in the face of climate change. *Sustinability Science*.
2. Cazzolla Gatti R., Menéndez L. P., Laciny A., Bobadilla Rodríguez H., Bravo Morante G., **Carmen E.,** Dorninger C., Fabris F., Grunstra N.D.S., Schnorr S. L., Stuhlträger J., Luis Villanueva Hernandez A., Jakab M., Sarto-Jackson I., Caniglia G., (2020). Diversity lost: COVID-19 as a phenomenon of the total environment. *Science of The Total Environment*, 144014 https://doi.org/10.1016/j.scitotenv.2020.144014
3. Fazey, I., Schäpke, N., Caniglia, G., **et al** (2020), Transforming knowledge systems for life on earth: Visions of future systems and how to get there. *Energy Research and Social Science*, 70, 101724. https://doi.org/10.1016/j.erss.2020.101724
4. McClymont, K., Morroson, D., **Carmen, E**., Beevers, L., (2019) Flood resilience: A systematic review. *Journal of Environmental Planning and Management*. 63:7, 115-1176. https://doi.org/10.1080/09640568.2019.1641474
5. Fazey, I., **Carmen, E.**, Chapin, F. S., Ross, H., Rao-Williams, J., Lyon, C., Connon, I. L. C., Searle, B. A. & Knox, K. (2018a) Community resilience for a 1.5° C world. *Current Opinion in Environmental Sustainability*, 31. https://doi.org/10.1016/j.cosust.2017.12.006
6. Fazey, I., Schäpke, N., Caniglia, G., Patterson, J. & **et al**. (2018b) Ten essentials for action-oriented and second order energy transitions, transformations and climate change research. *Energy research & social science*, 40**,** 54-70. https://doi.org/10.1016/j.erss.2017.11.026
7. **Carmen, E**., Watt, A., Carvalho, L., Dick, J., Fazey, I., Garcia-Blanco, G., Grizzetti, B., Hauck, J., Izakovicova, Z., Kopperoinen, L. & Liquete, C. (2018) Knowledge needs for the operationalisation of the concept of ecosystem services. *Ecosystem Services,* 29. https://doi.org/10.1016/j.ecoser.2017.10.012

I also have also co-authored a number of practice-orientated publications during this time.

These are;

1. Searle, B., **Carmen, E.,** (2020). The Nature of Communities Project Report, University of Dundee.
2. **Carmen, E**., Bedinger, M., (2020) *Using narratives for social change*. Scottish Universities Insight Institute/ University of Dundee/ Heriot Watt University.

3. Wolstenholme, R., Barrett, F., Baxter, H. , **Carmen, E.**, Currie, M., Fazey, I., Irving, D., Mabon, L., Revell, P. and Yates, G. (2018) *Community Resilience and Climate Justice - Key Messages for Policy and Practice*. Sniffer.
4. **Carmen, E**., Gunell, J., (2018) *Collaborative Power for Societal Transformation in Rapidly Changing World: Conference series report for Facing the Future 2017*. Centre for Environmental Change and Human Resilience, University of Dundee. Scotland.

8.2. Appendix 2: Co-authorship statements of contribution

Chapter 2: Building community resilience in a context of climate change: The role of social capital

Esther Carmen designed and undertook this research, gathering and analysing all data and writing 90% of this chapter.

Other contributions came from the following;

Professor Ioan Fazey (PhD supervisor) who provided guidance on the aspects of the research design (refining research questions and analytical approach) intellectual input (on the concept of resilience) and editing of multiple drafts.

Signed…… ……. Date…22/02/2021……...

Professor Helen Ross (School of Agriculture and Food Sciences, University of Queensland, Australia) provided intellectual guidance for the later stages of the analytical process and editing of drafts of this chapter.

Signed…… ……. Date……23/02/2021…..

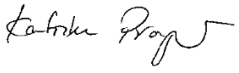
Dr Melissa Bedinger (School of Energy, Geoscience, Infrastructure and Society, Heriot Watt University, UK) helped edit later drafts of this chapter.

Signed…… ……. Date……22/02/2021……...

Dr Fiona Smith (Department of Geography, University of Dundee) provided early supervisory input with guidance on the structure and content of initial drafts of this chapter.

Signed…… ……. Date……22/02/2021……..

Dr Katrin Prager (School of Geosciences, University of Aberdeen) provided early supervisory input with guidance on the structure and content of initial drafts of this chapter

Signed…  ……. Date……22/02/2021……..

Ms Kerry McClymont (PhD candidate, School of Energy, Geoscience, Infrastructure and Society) helped edit early drafts of this chapter.

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Mr David Morrison (PhD candidate, School of Energy, Geoscience, Infrastructure and Society) helped edit early drafts of this chapter.

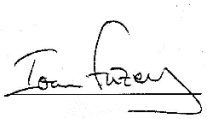
Signed…  ……. Date……22/02/2021……..

Chapter 3: Relationship qualities and their role within community change initiatives in the context of complex climate change challenges

Esther Carmen designed and undertook this research, gathering and analysing all data and writing 90% of this chapter.

Other contributions came from the following;

Professor Ioan Fazey (PhD supervisor) contributed supervisory guidance at key points during analysis, the structure of this chapter and editing input.

Signed……  ……. Date……22/02/2021……...

Dr Richard Friend (Department of Geography and Environment, University of York) provided advice on and edited a late draft of this chapter.

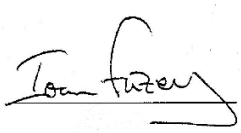
Signed……Richard Friend……. Date…22/02/2021……...

Chapter 4: The nature and role of social relations and dynamics in complex community climate change initiatives: The development of a community fridge in Scotland

Esther Carmen designed and undertook this research, gathering and analysing all data and writing 90% of this chapter.

Other contributions came from the following;

Professor Ioan Fazey (PhD supervisor) contributed supervisory guidance at key points during analysis, the structure of this chapter and editing input.



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Dr Guido Caniglia (Konrad Lorenz Institute for Evolution and Cognition Research, Austria) provided support by guiding me towards scientific literature and for exploring different disciplinary perspectives and editing of earlier drafts of this chapter.

Signed…… ……. Date……22/02/2021……...

Mr James Anthony (Gate Church Carbon Saving Project, Dundee, Scotland) was instrumental in creating the opportunity to engage and observe the development of the community fridge in Dundee, openly sharing insights and validating initial findings.

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Ms Lynsey Penny (Gate Church Carbon Saving Project, Dundee, Scotland) was instrumental in creating the opportunity to engage and observe the development of the community fridge in Dundee, openly sharing insights and validating initial findings.

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