



UNIVERSITY OF DERBY

Reimagining how organisations can
design, build, and maintain effective
net zero Multi-Stakeholder Partnerships:
embracing the enabling Mechanisms
to help the UK accelerate to its
net zero by 2050 Grand Challenge

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Abstract

The *net zero by 2050* policy Grand Challenge is a complex, multifaceted change project that impacts every aspect of society. As of 2024, the UK is behind its intended net zero policy trajectory; accelerated decarbonisation is now crucial and organisations play a key role. Prior research has highlighted the significance of organisational Multi-Stakeholder Partnerships (MSPs) in addressing society's Grand Challenges, including net zero. MSPs share resources, risks, and benefits, and their scale facilitates the necessary levels of change to deliver impact. This study builds upon this thinking, advancing it by reimagining how organisations can design, build, and maintain MSPs more easily, ultimately decarbonising faster. The study adopts a realist-based philosophy and employs a **C**ontext, **M**echanism, and **O**utcome approach as its central framework. By understanding the UK's net zero **C**ontext and the **M**echanisms that shape the net zero logic, the study identifies important organisational barriers and enabling **M**echanisms that can encourage organisational collaboration and more effective MSPs. Employing a mixed methods approach, this research delves into the organisational reality of sustainability leaders and their decarbonisation challenges. By employing a range of theories and concepts, including stakeholder and institutional theory, Grand Challenge and Boundary Spanners, the study uncovers four key themes providing a comprehensive understanding of how to design, build, and maintain stronger MSPs, ultimately enabling the outcome of faster decarbonisation. The study reveals that while net zero MSPs are ideally suited to this societal Grand Challenge, only 22% of organisations in the UK are engaged in them. Instead, simpler Dyadic-Stakeholder Partnerships (DSPs) are more common. To address this reality and lead organisations to successful net zero outcomes, the study provides three novel contributions. Firstly, it designs a net zero MSP framework plus a transition pathway organisations can follow to convert DSPs to MSPs. These use a range of enabling **M**echanisms including the power derived from aligning the key attributes from stakeholder and institutional theory. Secondly, the study reframes net zero as a Grand Challenge brand. This is also an MSP enabling mechanism. Sorting and resolving net zero is unrealistic, but by being flexible, agile and recognising that obstacles need to be overcome, organisations can navigate net zero's complexity by embracing the cross-functional enabling power of the Grand Challenge brand. The third contribution reinvents the Boundary Spanner as a net zero MSP designer, builder, and maintainer with enabling agency power. Furthermore, adding practical value to this contribution, the study details the role, responsibilities and behaviours of the net zero MSP Boundary Spanner and proposes the 'Six Characteristics of a net zero MSP Boundary Spanner'. These contributions, as net zero MSP enabling mechanisms, have causal power to effect organisational change, giving organisations of all sizes the potential to participate in net zero MSPs and help accelerate the UK to *net zero by 2050*.

Author's Declaration: I declare that this research and writing contained in this thesis is all my own work and has been ethically approved.

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Abbreviations

Term	Definition
B Lab	Non-profit B Corp certificate benefitting people and planet.
CCC	UK Climate Change Committee. Legally mandated governance institution. Advise and monitor progress on greenhouse gas (GHG) emissions
CMO	C ontext + M echanism = O utcome
COP	Conference of the Parties. UN decision-making body
CQ	Core question
CSO	Chief sustainability officer
CSRD	European Union corporate sustainability reporting directive
CSR	Corporate social responsibility
DSPs	Dyadic-Stakeholder Partnerships. A partnership or arrangement between an individual buyer and seller
EBPM	Evidence-based policymaking
GHG	Greenhouse gas emissions. Comprises mostly of CO ₂ but also CH ₄ and NO ₂
IPCC	Intergovernmental panel on climate change. UN body assess climate change science
LEPs	Local enterprise partnerships
LG	Local Government. Second tier of Government. Deliver local services
NDC	National determined contribution. Nation states emissions plans
NGO	Non-governmental organisation. Independent, typically nonprofit, organisation. Operates outside government control. Often focus on humanitarian or social issues.
MSPs	Multi-Stakeholder Partnerships. A partnership or arrangement between three or more stakeholders
NAO	National Audit Office. UK's public spending watchdog
Net zero	<i>Net zero by 2050</i> policy target
RO RQ	Research objective(s), Research question(s)
SBTi	Science Based Targets initiative. Independent body used to set emissions reduction pathways
SMEs	Small and medium sized enterprises
UK	United Kingdom
UN	United Nations
UNFCCC	UN Framework Convention on Climate Change Secretariate. Responsible for the global response to climate change

Definition of key Ideas

Idea	Definition	Experts
Boundary Spanner	Operates at the interface between organisations. Proactively scans the organisational environment, negotiating the interactions, information flow, and co-ordination between organisations.	(Williams, 2002) (van Meerkerk, 2014) (van Meerkerk and Edelenbos, 2018) (Goodrich et al., 2020)
CMO	Realist, causal, explanation-based perspective. Understand C ontext. Apply M echanisms. Drive O utcome	(Pawson, 2006)
Climate change	Long-term warming changes in the Earth's climate.	(UN Development Programme, 2023)
Concept	Academic idea, theory, or framework that is developed, discussed, or studied	(Clark et al., 2021)
Decarbonisation	Process of reducing societal GHG emissions as well as increasing the amount that is being absorbed.	(UN Development Programme, 2023)
Dyadic-Stakeholder Partnership	Simple buyer seller partnership between two parties.	(Wren & Simpson, 1996)
Environmental State	The administrative and functional entity that shapes and directs the state's environmental agenda.	(Duit, 2016) (Duit et al., 2016) (Hatzisavvidou, 2020)
Evidence-based policymaking	How policymakers collect and assess evidence. Can be rational or irrational.	(Cairney, 2015, 2020)
Grand Challenge	Realist based complex social challenge. Requires robust action. Involves avoiding obstacles. Moves beyond the linearity of problem, diagnoses, solution.	(Ferraro et al., 2015) (Dorado et al., 2022) (Seelos et al., 2023) (Carton et al., 2023) (Brammer et al., 2019) (Colquitt & George, 2011)
Institutional theory	Organisational theory based on the idea that organisations and process within the firm are founded on social rather than economic forces including coercive pressure, cognitive habit-forming and learning. Key attributes: coercive, normative, and mimetic.	(Dimaggio & Powell, 1983) (Jennings et al., 2016) (Lawrence, 1999) (Hoffman & Devereaux, 2015) (Dacin et al., 2002)
Multi-Stakeholder Partnership	A collaborative form of governance involving three or more organisations. They share resources, risks and benefits and work in a web of relationships to find a common approach and delivery faster solutions.	(Gray & Purdy, 2018) (Dentoni et al., 2018) (Mena & Palazzo, 2012) (Bryson et al., 2006)
<i>Net zero by 2050</i>	A policy target. Net position between anthropogenic GHG emissions and their removal extracted through natural or technological sequestration. UK targeting 100% reduction in GHG by 2050 vs.1990.	(Climate Change Committee, 2020b) (SBTi Glossary, 2024)

Organisational barrier	An obstacle that inhibits progress. Overcoming the barrier will improve the organisation's chances of achieving their objective.	(Caldera et al., 2019)
Organisational boundary condition	Condition that exerts a pressure on the organisation's boundary and creates a response.	(Bendickson et al., 2016)
Organisational drivers	Key role in shaping the organisation's strategic direction, or operation. Related to the stakeholder and institutional forces applied to organisational boundaries.	(Freeman et al., 2020) (Dimaggio & Powell, 1983) (Caldera et al., 2019)
Organisational enabler	Mechanism that plays a positive role by providing the necessary conditions for successful outcomes.	(Caldera et al., 2019)
Realism	Objective reality exists independent of human perceptions. The reality can provide a representation of the world, but it can be difficult to establish complete truth. Dependent on beliefs and expectations. Causal Mechanisms have power to effect change.	(Pawson, 2006) (Bunge, 1993) (Madill et al., 2000) (Pawson & Tilley, 1997) (D. A. Gray, 2014)
Stakeholder theory	Every organisational stakeholder is important, not just those with economic interests. Key attributes: power, legitimacy, and urgency.	(Freeman, 1984) (Donaldson & Preston, 1995) (R. K. Mitchell et al., 1997)
Sustainability	Meeting the needs of the present without compromising the ability of future generations to meet their own needs.	UN, Brundtland Commission (UN, 1987)

Chapter 1 Introduction

‘Urgent action is needed to get on track for the UK’s net zero target’
(Climate Change Committee, 2024, p. 8)

The chapter offers a brief synopsis of the thesis. It starts by discussing the thesis’s context, rationale, central theories and concepts. This is followed by the research objectives and the research questions that guide the study and how they are aligned to each other. The chapter concludes by explaining the thesis’s structure.

1.1 Study context

Understanding context, and how agents interact and adapt to changes in policies and the external environment is critical to synthesising an understanding about complex social problems (Pawson et al., 2004, p. iii).

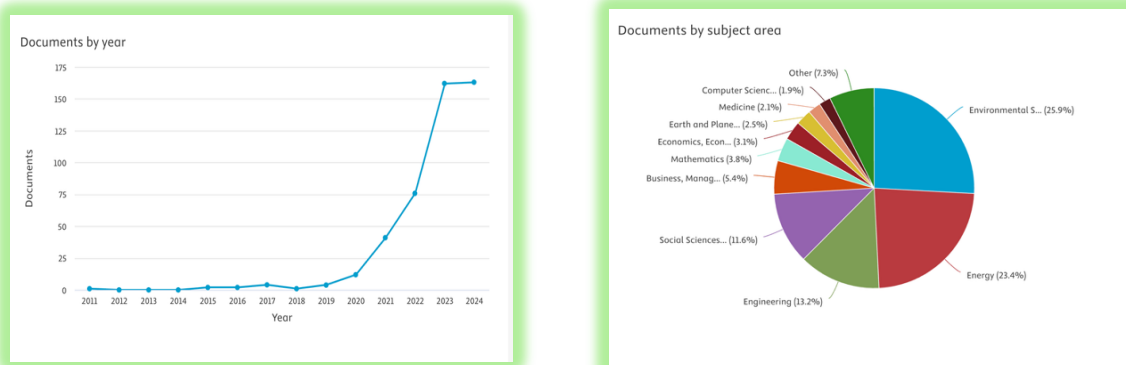
Decarbonising the United Kingdom (UK) economy and achieving *net zero by 2050* is a complex Grand Challenge. To reduce greenhouse gas (GHG) emissions by one hundred percent compared to 1990 levels is a difficult policy target and as of 2024 the UK is behind its net zero delivery trajectory and is ‘off track for net zero’ (Climate Change Committee, 2024, p. 9) so acceleration to net zero is now required (The Carbon Trust, 2024). To deliver net zero will require coordinated and sustained effort from multiple stakeholders, involve meaningful change, and is fundamentally an organisational problem. Surprisingly, net zero has received limited academic organisational scrutiny. An analysis of the Scopus database, searching for journal articles and book chapters with ‘net zero’ in the title only, by subject area (economics, business, social sciences, engineering, energy and environmental science) returned only 468 documents: business accounted for only 33 of those. When ‘net zero policy’ was analysed from a business management and social science perspective the Scopus search returned only 95 documents. Figures 1.1 and 1.2 present those results graphically. However, since 2020 academic interest has significantly accelerated. In 2024, with a need to accelerate to *net zero by 2050*, there is an organisational and policy need for further academic investigation.

Whether the net zero Grand Challenge can be achieved is currently debatable. By unpacking net zero as a Grand Challenge, net zero as a Multi-Stakeholder Partnership (MSP) collaborative opportunity, and net zero as an organisational problem requiring cross-boundary agency, net zero organisational academic contribution will be advanced.

Figure 1.1 Scopus database search: 2011-2024, term ‘net zero’, trend and by subject area



Figure 1.2 Scopus database search: 2011-2024, term ‘net zero policy’, trend and by subject area



Ferraro et al. (2015) characterise Grand Challenges as complex, uncertain, and evaluative. They require robust action, and obstacles need to be identified and overcome (Dorado et al., 2022). Net zero’s uncertainty is noticeably clear across society. It presents organisations with dilemmas about what to do, how fast to decarbonise and who should pay and the consequences of not achieving net zero are uncertain for everybody. Net zero is scientifically factual but also elusive and ambiguous. Grand Challenges also require substantial effort and resources from multiple stakeholders and frequently involve changes to behaviour. From an organisational perspective Grand Challenges require significant innovation, agility and flexibility to accommodate the macro, meso and micro pressures and the Grand Challenge can be described as a ‘managerial, organisational and scientific problem’ (George et al., 2016, p.1881).

Net zero is ideally suited to collaboration and MSPs. The scale of the problem is beyond the abilities and resources of any one state or organisation, therefore a collaborative approach to decarbonisation and addressing climate change is key. The

problem is that MSPs 'are governed by power dynamics that affect and are affected by the structure, processes, and relationships of the partnership' (Gray & Purdy, 2018, p. 117). Stakeholder and actor-based power relationships are key to effective and sustainable MSPs, and power is complicated, sometimes hidden, and unclear (Lukes, 2005). Applying an institutional theory lens, power 'bestows legitimacy upon actors' (Gray & Purdy, 2018, p. 117). Power negotiates what is acceptable and possible between stakeholder groups, and actor legitimacy enables them to define what is manageable based on organisational beliefs and norms; power defines an actor's ability to act and deliver. With net zero and climate change, power dynamics are complicated and often directed by stakeholders' economic interests and benefits (Hörisch et al., 2014; Schaltegger et al., 2019). MSPs can be challenging to form and maintain because of power relationships and competing priorities as this research will later demonstrate. The challenge for net zero MSPs is how multiple stakeholders, who have different agendas and priorities, collaborate in partnerships and work together to address the urgency of net zero. This thesis will propose a range of enabling **Mechanisms** that can facilitate effective net zero MSPs.

As the key decarbonisation delivery unit, organisations are central to the net zero conundrum. They are responsible for both producing GHG emissions and limiting them; but organisations are faced with many competing challenges and have limited resources. As George et al. (2016) describe, Grand Challenges are a managerial challenge, but managers are caught between what they need to do and what they ought to do. They need to satisfy their stakeholders and shareholders; how they balance delivering shareholder value and financial return with protecting planet Earth is difficult. Some progressive organisations have embraced this challenge by committing to voluntary standards including Science Based Targets initiative (SBTi) and International Organisation for Standardisation (ISO) 14001; those organisations have recognised why sustainability, decarbonisation and net zero are important topics, how to make them a strategic priority and part of their social purpose. Increasingly, large organisations are mandated to report on their sustainability key performance indicators to national and global institutions. This both normalises the subject and makes it visible to activists and shareholders, who can view decarbonisation as a governance and risk issue.

George et al. (2016) discuss the need to clearly articulate the Grand Challenge problem and solve it. The definition of net zero as a problem is clear, it can be quantified and tracked over time, but solving the net zero Grand Challenge is a lot harder or even impossible because there are many unknowns. The process is led by the Environmental State (Duit, 2016) and operationalised by organisations. It is critical how organisations legitimise decarbonisation, giving permission and agency to every stakeholder, including colleagues, to participate in decarbonisation as a strategic organisational priority. Legitimising decarbonisation as a social purpose led agenda is increasingly important for a growing number of progressive organisations as this thesis will identify. The capability for organisational actors to design, build and maintain

strong approaches to decarbonisation through MSPs can be a key organisation priority. The thesis will identify and develop the enabling role of the Boundary Spanner as a powerful MSP designer, builder, and maintainer.

1.2 Study rationale and motivations

In 2021, when this study was proposed, its creators had identified there were limited studies exploring inter-organisational collaboration in the context of net zero MSPs; advancing the subject could benefit how net zero was organisationally addressed.

Gray and Purdy are eminent MSP scholars. Their work highlights that MSPs are the gold standard collaborative arrangement but can be ‘messy and confusing’ (Gray & Purdy, 2018, p. 199). Net zero doubles the problem because it is a subjective subject, dependent on one’s observational perspective. When organisations are faced with two messy problems there could be a temptation to avoid them.

Several authors have called for further research to help address the net zero Grand Challenge. These are related to MSPs and the search for practical tools, termed ‘enabling **Mechanisms**’ in this thesis, to help organisations achieve their decarbonisation goals. As a long-term problem, net zero can readily be avoided in the short-term. The temporality of climate change (Nyberg et al., 2022) requires academic research to assist practitioners in their thinking. Gray et al. (2022) further support the case for this research. They call for a better understanding of how to manage power imbalances because it is a ‘fundamental barrier to progress Grand Challenges’ (2022, p.16). In the context of net zero, sustainability and organisations’ practical challenges, Caldera et al. (2019) called for ‘future research to investigate specific practical lean and green tools for optimising sustainable business practice’ (2019, p. 586). Canal Vieira et al., (2024, p. 28) suggested that further work could aid the ‘development of operational elements...with the potential to advance sustainability transitions and build decarbonisation strategies’. Each of these demands support the case for this research and the advancement of enabling **Mechanisms** to help organisations reimagine the net zero MSP landscape.

Agency is also key to net zero. ‘Human agency refers to intentional, purposive, and meaningful actions, and the intended and unintended consequences of such actions’ (Grillitsch & Sotarauta, 2020, p. 707). Decarbonisation will only be affected through the actions of actors and practitioners operating within institutions and business. Agency and agents are also key to the development of MSPs. Agents have a capacity to act and shape the space or the place in MSPs (Gray et al., 2022, p.173). Equally, ‘agency works within and is shaped by structure whilst influencing it in return’ (Giddens, 1984; Hammant, 2018, p. 22). From these perspectives, researching how agents can assist the net zero Grand Challenge through effective MSPs is beneficial. By understanding the barriers and enablers of MSPs; and proposing enabling **Mechanisms**, including the net zero Grand Challenge brand, that facilitate

stakeholders and institutions to align their agendas, and by modernising the agency concept of the Boundary Spanner (van Meerkerk, 2014; Williams, 2002) as a powerful designer, builder, and maintainer of MSPs, the net zero MSP agenda can be advanced.

The motivations for the study were constantly reinforced over the three-year period. Attending several practitioner conferences, listening to and reading expert opinion, and hearing first hand from organisational leaders, made the importance of the study ever more apparent, as a way to help organisations understand how to decarbonise faster when faced with multiple other competing priorities. Organisational leaders are faced with multiple competing logics, choices and trade-offs. They do not have unlimited resources. Therefore, for the author it was motivating to try to help organisations reimagine and unlock a new way of thinking about how to decarbonise faster and integrate the subject into their corporate strategy.

1.3 Central theories and concepts

This study is primarily an organisational one. Choices had to be made about how to deliver the research objectives (ROs) and the research questions (RQs) by using appropriate organisational theories and concepts. Chapters two and three will explain how those choices were made and the theories in detail, but as an introduction, this section will explain why stakeholder theory, institutional theory and the **Context Mechanism and Outcome** model (Pawson, 2006) were applied to the study and how they helped to unlock the puzzle and potentially reimagine how organisations can design, build, and maintain net zero MSPs.

Whether an organisation determines to actively engage in sustainability, decarbonisation and net zero is a crucial decision and a full understanding about how stakeholders and institutions engage with the subject is important. Stakeholder theory, as redefined by Freeman (1984), is a way of managing how business strategy, value creation and decision-making engages with every stakeholder, not just shareholders. Sustainability has multiple and complex stakeholder implications. By understanding the stakeholder pressures faced by the organisation, based on the three key stakeholder attributes of power, urgency, and legitimacy (Mitchell et al., 1997), it is possible to think about how those potential barriers could be overcome to deliver stakeholder alignment. Net zero is an institutionally enforced policy, therefore understanding how the organisation can engage with the institutional pressures from net zero is also important. The organisation fits into the wider social system or society (Parsons, 1956, p. 228) and has inter-organisational relationships including those with the state and other partner organisations. Those relationships shape organisational actions and responses. Therefore, it is critical to be clear about how institutional theory and its three key attribute pressures - coercive, normative and mimetic - engage with decarbonisation and net zero.

A philosophical approach was needed for the study that integrated the **C**ontext of net zero with the theories in ways that deliver the RO's. Decarbonisation is a scientific and technical challenge. Rigorous scientific investigation over many years has validated GHG science and the need for net zero. Therefore, net zero is a natural fit with realism which begins from the position that the picture that science paints of the world is a true and accurate one (Chia, 2002). 'Realism is a methodological orientation, or a broad logic of inquiry that is grounded in the philosophy of science and social science' (Pawson, 2006, p. 18). It perceives social change to be neither linear nor haphazard but transformational (Archer, 1995). However, at the same time, some of those facts may be merely illusions that are open to interpretation (D. A. Gray, 2014, p. 74). Additionally, the complete truth may be hard to come by because of the diverse ways that the actors perceive the world, making the truth open to varying beliefs and expectations (Bunge, 1993). Net zero aligns well with each of these perspectives.

This messiness of net zero means that although the study is predominantly at the scientific end of the realist spectrum and builds on the work of Pawson (2006), and Pawson & Tilley (1997), some other aspects towards the more critical end of the realism spectrum are relevant and explore how causal **M**echanisms can affect other structures (Bhaskar, 2008; Jagosh, 2020), and 'how they impinge on the stakeholders' reasoning' (Pawson, 2013, p. 26). This approach enabled other concepts to be applied including thinking of net zero as a Grand Challenge which is based on realism, evidence-based policymaking (EBPM); and the **C**ontext, **M**echanism and **O**utcome (**CMO**) model, developed by Pawson (2006). Additionally, as part of this causal based approach, agency is considered a causal **M**echanism that can affect other structures including partnerships. From this, the role of the Boundary Spanner was identified and applied to the study. The Boundary Spanner as developed by Williams (2002), and advanced by van Meerkerk (2014), is an important enabler and a key contributor to effective collaboration.

When combined and applied to the study these theories and concepts play an important part in helping to reimagine how organisations can design, build, and maintain effective net zero MSPs.

1.4 Research objectives

The study aims to understand the empirical and observable manifestations of the *net zero by 2050* policy agenda from the perspective of the perceptions, expectations and actions of multiple stakeholders and organisations contributing to the decarbonisation agenda. It adds to both academic conceptualisation and understanding of net zero MSPs and how organisations can develop more effective and resilient MSPs. It will seek to understand the form of organisational net zero partnerships, 'what is it about them that matters' (Jagosh, 2020, p. 121), as organisations engage with the challenges of decarbonisation.

The study identifies how organisations can design, build and maintain effective net zero MSPs. The study also aims to identify the barriers and enablers to effective net zero MSPs and develops a net zero MSP conceptual framework focussing on the **Mechanisms** that shape the net zero logic. Finally, it proposes a range of recommendations for both organisations and policy makers.

Research objectives (ROs):

- RO1 Establish the importance or otherwise of net zero partnerships and how far those partnerships fulfil the characterisation of MSPs as described by experts including Gray & Purdy (2018).
- RO2 Use the insights from the research in combination with appropriate academic theories and concepts to identify the barriers and enabling **Mechanisms** of net zero MSPs. This will advance net zero MSP academic and practical contribution.
- RO3 Construct a net zero MSP conceptual framework that advances academic understanding about net zero MSPs, making them less ‘messy and confusing’ (Gray & Purdy, 2018, p. 199), to contribute to accelerating the UK to net zero.
- RO4 Understand how agency can help to build stronger net zero MSPs by overcoming barriers to accelerate decarbonisation.
- RO5 Identify how organisations are engaging with decarbonisation and net zero and develop policy and practice recommendations to help them decarbonise faster.

1.5 Research questions

These questions have been designed to uncover the activating powers necessary for effective net zero MSPs and understand their observable and hidden features. They are informed by ‘retroduction’ thinking and ‘activity of theorising and testing for hidden causal mechanisms responsible for manifesting the empirical, observable world’ (Jagosh, 2020, p. 121) and have been designed based on realistic evaluation; ‘what works for whom in what circumstances’ (Tilley, 2000, p. 4) and ‘what matters’ (Jagosh, 2020, p. 121).

The core question (CQ) is:

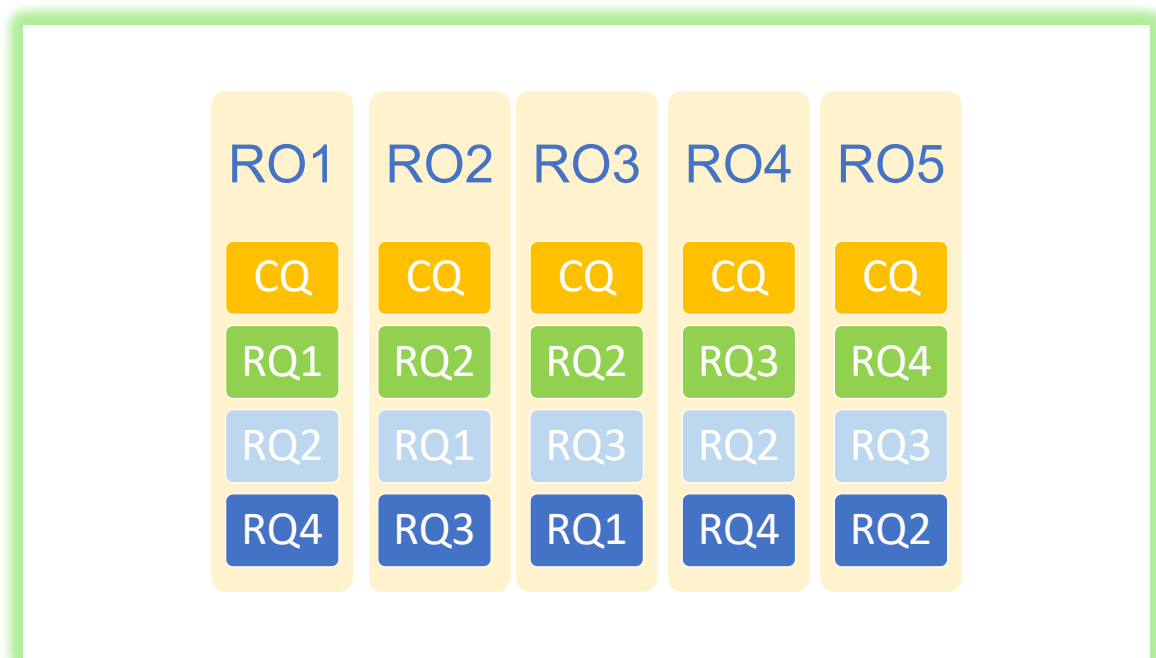
How do the enabling **Mechanisms** of effective net zero Multi-Stakeholder Partnerships shape the net zero organisational logic, why do they matter, and how can they be used to respond to the *net zero by 2050* policy Grand Challenge?

The four supporting research questions (RQs) are:

- RQ1 How can organisational MSPs tackle the net zero Grand Challenge and its policy ambitions?
- RQ2 How can the real and perceived structural organisational barriers of net zero MSPs be overcome and be used as enablers to build more effective net zero MSPs?
- RQ3 How is agency important, and how can the change agent role, as a key organisational enabler, be legitimised and contribute to effective net zero MSPs?
- RQ4 How can organisations reconfigure themselves to adapt to the ambiguity of net zero, and participate in effective net zero MSPs?

Figure 1.3 below presents how the ROs are aligned to the CQ and the four RQs. Each RO has multiple RQs that help to deliver it and are shown in descending order of importance.

Figure 1.3 Alignment between ROs and RQs
(descending priority order)



1.6 Thesis structure

The thesis comprises seven chapters. Following this introduction, Chapters two and

three are literature and **Context** based chapters. **Chapter two** starts by explaining how the literature search method, underpinning chapters two and three, was undertaken. Chapter two is specifically interested in understanding the net zero Grand Challenge, net zero policy and its stakeholders. It describes and critiques the Grand Challenge concept and applies it to net zero. The chapter then details the UK's net zero policy landscape between 2008 and 2024 and in support of this it presents evidence collated from multiple UK institutional policy documents, before describing and explaining the role of the key net zero stakeholder groups.

Chapter three is concerned with MSPs. It proposes a net zero MSP theoretical and conceptual framework as a way of understanding net zero MSPs. The concept of the Boundary Spanner as an MSP designer, builder and maintainer is proposed. Chapter three concludes by identifying three literature gaps that have emerged from the literature searches reported in chapters two and three.

Chapter four is concerned with methodology and methods. It explains the relevance of realism and how it informed the research questions. Furthermore, the chapter explains why the mixed methods approach was chosen, how the data analysis and coding were approached, and how the thematic development process unlocked four core themes. Finally, the chapter discusses the thesis's ethical approach, its reliability, replicability and validity as well as the thesis's limitations.

Chapter five presents the findings. It presents the data from the quantitative survey and the key outputs from the semi-structured qualitative interviews. Using the key research themes that emerged from Chapter four, the chapter builds the evidence base about net zero policy, net zero as a Grand Challenge, the enabling **Mechanisms** of MSPs and the role of the Boundary Spanner.

Chapter six is concerned with meaning. This discussion chapter blends Chapters two and three with five. Using the four themes and the **CMO** structure the chapter explains what needs to happen to enable MSPs and the role of two causal **Mechanisms**, the Grand Challenge brand and the Boundary Spanner acting as an MSP designer, builder, and maintainer.

Chapter seven presents the overall conclusions organised again by the four key themes. This includes the detailed net zero MSP conceptual framework, followed by a review of the ROs and RQs to ensure they have been fully addressed. The chapter concludes by presenting the thesis's recommendations, academic contributions, and suggestions for future academic research.

The appendices detail extensive supporting evidence including literature tables, policy tables, contributor coding and details, the research questionnaires, and an example coded interview.

Chapter 2 The net zero Grand Challenge

2.1 Introduction

This chapter explores the net zero Grand Challenge from multiple perspectives. It blends academic insights about the subject with a description about the UK's public policy journey between 2008 and 2024 as well as detailing the UK's key net zero stakeholder groups.

Firstly, the literature search approach and method is described, and that is used to inform both Chapters two and three. Then this chapter argues that net zero is a Grand Challenge. It firstly explains and critiques the Grand Challenge concept; its key literature is detailed in Appendix one. As detailed earlier Grand Challenge is based on realism and many Grand Challenge theorists support this position (Dorado et al., 2022; Ferraro et al., 2015; Seelos et al., 2023). Seelos et al. (2023) advocate that by adopting a realist approach scholars would 'create important momentum' (2023, p. 265) for the subject. Net zero will be described as an institutional logic (Ansari et al., 2013; P. H. Thornton & Ocasio, 2013) whose underlying principles, values, and beliefs guide the behaviours and decision-making of individuals and organisations. The chapter then pivots to discuss climate change and its growing academic interest since 1990. It explains what net zero is and whether globally progress is being made, why organisations are important in the decarbonisation process and finally the urgency of the challenge and the need to take bolder approaches (Ferraro et al., 2015; Nyberg et al., 2022).

The UK's twenty-year net zero decarbonisation public policy journey is detailed, highlighting successes and failures. By using multiple public policy documents, a full analysis of the UK's public policy between 2008 and 2023 is undertaken. The chapter explains net zero's key stakeholder groups, their role, how they are interconnected and the challenges they face. The chapter concludes by taking an organisational perspective on net zero constructed from evidence assembled by attending the 8th and 9th Economist Sustainability Summits held in London in 2023 and 2024. The supporting evidence adds to a fuller understanding about the Context of net zero as a Grand Challenge. This data is worthy of inclusion because it adds to the depth of knowledge from multiple situations. It is both temporal, offering views about the future, and spatial, detailing system, firm and individual challenges from multiple sectors.

Chapter two complements Chapter three which discusses the significant role MSPs (Bäckstrand, 2006; Dentoni et al., 2018; Eweje et al., 2021; Gray & Purdy, 2018; MacDonald et al., 2019; Waddell & Khagram, 2007) have in net zero, the relevance of stakeholder (Freeman, 1984) and institutional theory (DiMaggio & Powell, 1983) to the subject and the agency role of the Boundary Spanner (Williams, 2002). Together,

Chapters two and three provide a full literature and contextual review about net zero and how organisations can adapt to the net zero Grand Challenge by embracing MSPs. Prior to discussing the details of the net zero Grand Challenge it is important to explain how the literature search that underpins the next two chapters was undertaken.

2.2 Literature search method

Conducting a literature review is a science. It is about focusing on a subject, understanding how it works, based on evidence gathering, experimentation, and finally developing testable ideas that can be supported. Multiple experts (Chigbu et al., 2023; Cooper, 1998; Curtis et al., 2020; Fisch & Block, 2018; Truong et al., 2024) talk about 'synthesising' knowledge, information, papers and research and providing new insights, whilst Chigbu et al. (2023) describes it as an evaluative process designed to assemble knowledge on a subject and identify gaps for future research (2023, p. 6). A literature review can take many forms and is a critical step in any study, including narrative, systematic, interpretive, meta-analysis based and bibliometric. For this study an integrative review (IR) approach was taken. The objective was to provide a robust perspective on the 'current state of research' (Cronin & George, 2023, p. 168), build a 'new knowledge based on existing body of literature' (2023, p. 5), and bring together different 'conversations' (Huff, 2009, p. 5). In this way it was possible to look at the subject from different perspectives. Faced with the size of the macro subjects of sustainability, climate change and net zero and their fragmented nature across multiple domains, the IR method was ideal for this study.

The remainder of this section details the specifics of the IR method used to inform chapters two and three. The details of the search strategy and its transparency allows others to reproduce the findings and develop them further. It details the databases where the searches took place, the key words used to isolate appropriate literature, the period used, and how the articles were de-duplicated and then refined to a workable population. The academic databases were supplemented by UK institutional sources.

Table 2.1 provides a summary of the journal key words and secondary words used during the search process, whilst Table 2.2 details the core subject key words, the initial raw search quantities, the refined search numbers and the final word or phrase. The initial period was 1980 – 2024, and the refined frame was 2000-2024. Table 2.3 provides a summary of the secondary data abstracted primarily from UK Government institutional sources. Figure 2.1 schematically demonstrates the overall approach.

Table 2.1 Journal word search

Core subject	Keywords and combinations of keywords	Secondary words or those that were identified as being relevant
1. Net zero	Net zero, Decarbonisation, Climate change, Sustainability	Ethics/morals, realism, Industrial strategy, green strategy
2. Wicked problems	Wicked, Tragedy, Metaproblems, Social problems	Grand Challenge, Realism
3. Public policy	Public policy development, Public policy frameworks	CMO / Realism Evidence-based policymaking
4. Partnerships	Multi-stakeholder partnerships Multistakeholder partnerships	Dyadic, Collaboration, Co-ordination, Co-operation
5. Organisations	Organisational theory and theories	Boundary and boundaries, Path dependency
6. Stakeholder	Stakeholder(s), Stakeholder theory	Stakeholder power
7. Institutional	Institutions, Institutional theory,	Legitimacy, Logics, Fields
8. Agency	Agency theory, power	Boundary Spanner

Table 2.2 Integrative literature review overview

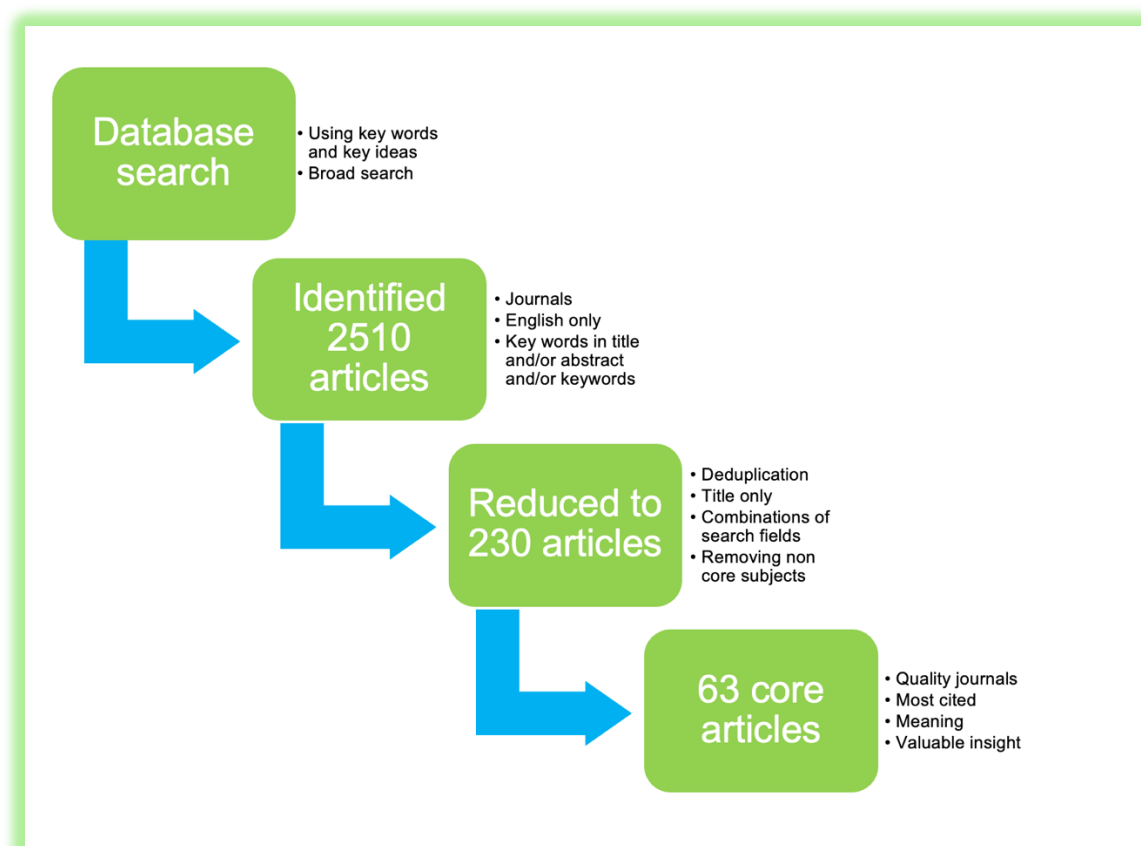
Core subject key words	1 st raw search	1 st reduction Deduplication and search combinations	2 nd reduction	Final word/phrase
Net zero	1250	63	5	Net zero or decarbonisation
Wicked problems	15	15	9	Grand Challenge
Public policy	493	24	3	EBPM
Partnerships	448	25	11	MSPs
Organisations	38	14	4	Organisations
Stakeholder	93	31	11	Stakeholder theory
Institutional	88	34	11	Institutional theory
Agency	85	24	9	Boundary Spanner
Total	2510	230	63	
Electronic databases: JSTOR, Scopus, SAGE, Taylor & Francis				

Table 2.3 Secondary data

Core subject	Key words	Final number of key sources
1. Net zero	Net zero, decarbonisation, climate change, CCC	14
2. Public policy	Public policy development, governance, Industrial policy, green policy, NAO	10
3. Governance	UK Government, UN, IFCC	6

Figure 2.1 Schematic approach to the integrative review

Source: Author's work



The IR method is based on the six-step process advocated by Fisch & Block (2018). The study title informed the starting point; net zero, organisations and MSPs. Then a combination of an electronic database and a hand search of journals and books was undertaken. Business and management organisational journals were the core focus subjects. However, it was important to consider subjects beyond this because net zero and decarbonisation is a multi-faceted cross-functional challenge. Therefore, additional knowledge from adjacent subjects such as politics and environmental science were also considered. Multiple electronic databases were searched – JSTOR, Scopus, SAGE, Taylor & Francis. Approximately two hundred and fifty journals were accessed in this search. An initial raw search of keywords as detailed in Table 2.1 was then narrowed down by combining words and by inspecting article titles. The review process was in line with step two of the Fisch & Block (2018) approach. When a highly relevant article was located it was read and summarised and included in an excel database. The appendices include a range of literature tables for the key areas which have been extracted from the excel database. This was followed by a narrowing down process which endeavoured to isolate high quality sources and articles that had valuable insights. This approach also highlighted gaps in the literature which will be detailed in section 3.10. For example, it became clear that there was a gap between the context of net zero and its characterisation as a Grand Challenge. Similarly, the

role of the Boundary Spanner in the context of net zero and MSPs deserved further investigation. Manual searching was also important and to help this process Connected Papers (Connected Papers - Explore and Visualise, 2024) was a helpful online resource. It identified highly cited papers that were connected to others that had been identified from the electronic databases. Their system analyses 50,000 papers and visually represents cited articles connected to the core article. Book searching was also valuable. Subject breadth versus depth was a challenge. The author would agree that getting the right balance is 'often difficult to solve' (Fisch & Block, 2018, p. 104). Their guidance about concentrating on concepts was helpful; for example, the underlying concept behind agency in partnerships indicated that it was reasonable to investigate and critique the secondary concept of the Boundary Spanner which appeared through this method.

The author's knowledge and judgement was critical based on assembling meaningful conclusions based on 'what do we learn' (2018, p. 105) from the article or using the idea of 'insight' (Cronin & George, 2023). As the list was reduced, the final group of sixty-three articles were assessed in depth and used as the basis for Chapters two and three. Finally, in addition to the peer reviewed, high quality journal articles, it was important to support the contextual examination with secondary source material. Again, this is integrated into mainly Chapter two to provide more robust context especially regarding net zero. The UK Government databases and Google were used to identify Climate Change Committee, National Audit Office, and UK Legislative papers that assisted the contextual development of the period 2008 – 2024.

2.3 Net zero as a Grand Challenge

Climate change, net zero and decarbonisation are long-term societal Grand Challenge problems which are pressingly urgent and complex in nature and meet the test set out by Ferraro et al. (2015). Grand Challenge is a powerful multi-disciplinary organisational enabler grounded in realism which has the potential to help organisations accelerate to net zero. The concept is highly relevant to net zero MSPs but has not been used as an MSP enabler, which this thesis will propose. Although the concept has recently incurred some academic criticism (Carton et al., 2023; Seelos et al., 2023), this thesis will contest that criticism and advance its use.

2.3.1 *What is a Grand Challenge?*

Grand Challenge is a concept concerned with the resolution of complex social problems and therefore fits naturally into the realist principles concerned with a mutual understanding about how social reality works and how social systems can change (Pawson, 2006, p. 18). It was originally conceived in mathematics and from this the term entered the mainstream as a label for society's greatest needs. 'This

conceptualisation of Grand Challenges provides a crucible for melding discussions of theoretical usefulness and the broader perspective that individual and societal benefit can accrue' (Colquitt & George, 2011, p. 432). Organisational scholars were attracted to the term as it both addressed their need for 'problem-orientated and impact-focussed approaches to organisational studies' (Ferraro et al., 2015, p. 364) and allowed them to understand how organisations could mobilise and contribute to these Grand Challenges, including climate change (Ansari et al., 2013).

Grand Challenge sits within the family of other complex social problems: Wicked Problems (Rittel & Webber, 1973), Tragedy of the Commons (Hardin, 1998), Social Problems (Blumner, 1971), Metaproblems (Trist, 1983), and Mess Management (Ackoff, 1981). Each have different ontologies and from these Dorado et al., (2022) created a 'knowledge map' which navigates a route between ideation and action.

Grand Challenge, (2022), is a strategic term that can provide clear direction for businesses. It provides different connections between ideation, action and outcomes that are cumulative in nature. This multidimensional approach neither begins nor ends with tackling because that is too simplistic: Grand Challenges cannot be tackled: they are too complex; they need to be creatively reimaged. It is necessary for businesses to develop a range of discerning ways that allow their actions to 'frame, reinforce, modify, or alleviate the Grand Challenge obstacle' (2022, p. 22), allowing them to understand the challenge from different perspectives. This advances work by George et al. (2016), which associates Grand Challenges with 'specific barriers that if removed would help solve important societal problems' (2016, p. 1881). It could be a positive objective for businesses to think about using a four-obstacle framework; helping them move beyond the 'linear process of problem, diagnosis and resolution' (2022, p. 23).

1. Curation obstacles are concerned with the framing process based on why, who and when. By reorientating 'collective attention to an alternative formulation' (Dorado et al., 2022, p.16) through storytellers and storytelling, it may be possible to reframe the narrative in ways that persuade, educate, and inform.
2. Governance obstacles are concerned with reframing the interests of shareholders. Technical rationality has centred on market-based structures and shared value and the neoliberal understanding of why businesses would engage with Grand Challenges. By searching for common ground between principles and shareholders, win-win strategies may be achievable. A more pragmatic approach can reveal and repair divisions between actors and form collaborative partnerships.
3. Sensemaking obstacles are intertwined with governance. By reconsidering governance norms and by lengthening their time horizons, social change may be possible. Bold innovative approaches that were previously thought

unpalatable may become accepted through patience and willingness to think differently.

4. Adaptation obstacles focus on ‘how efforts align with multiple overlapping systems over time’ (2022, p.22). Historical duration must be factored in as every change process takes time. This idea has been developed as social innovation. ‘Social innovations are urgently needed as we confront complex social problems ... developing and implementing innovative solutions involves the re-negotiating of settled institutions or the building of new ones (van Wijk et al., 2019, p.888).

Ferraro et al (2015) describe three facets of a Grand Challenge. They are complex and present actors with a range of issues they need to contend with. Usually, the complexity stems from multiple actors being involved working across multiple domains, locations, or time zones. Those involved are generally unable to glimpse the entire system, but instead are ‘limited to discerning the local actions of a few disaggregated individuals’ (Ferraro et al., 2015, p. 365; Stacey, 2011). The circumstances are also highly fluid, open to interpretation, dynamic and fast changing. Grand Challenges also present organisations with radical uncertainty. Although science can play its part in quantifying outcomes, the probabilities are challenging so involved actors find it hard to ‘enumerate what the possible future states of the world may be’ (2015, p. 366). Although facts may be clearly identified, they do not always provide a solid foundation on which to secure a safer future. Finally, Grand Challenges are evaluative and can have multiple interpretations. Different actors, depending on their experiences, beliefs, and context, may have different views about the problem. These Grand Challenge component attributes are summarised in Table 2.4 below.

Table 2.4 Grand Challenge component attributes

Grand Challenge component attributes	Academic owner	MSP benefit
Curation obstacle	(Dorado et al., 2022)	Having a collective story
Governance obstacle	(Dorado et al., 2022)	Develop win-win strategies
Sensemaking obstacle	(Dorado et al., 2022)	Work together to think differently
Adaptation obstacle	(Dorado et al., 2022)	Break path dependencies and innovate
Complexity	(Ferraro et al., 2015)	Working on the problem together with a shared understanding
Radical uncertainty	(Ferraro et al., 2015)	Fact driven agenda
Evaluative with multiple interpretations	(Ferraro et al., 2015)	Shared understanding

To explain and tackle Grand Challenges, Ferraro et al. (2015) detailed two areas of study: the philosophical tradition of American Pragmatism and Robust Action.

American Pragmatism has provided social scientists with 'alternative theories of action' (Ferraro et al., 2015, p. 369). Actors may have to adapt, be flexible, change their path and change their end rather than thinking that a means and an end are clearly defined prior to action. This experimentation allows them to adjust their actions as the outcomes are generated, 'humans are problem solvers, and the function of thought is to guide action in the service of solving practical problems' (Gross, 2009, p. 366). Robust Action (Ferraro et al., 2015, p. 370) was originally used to describe chess strategies that would accommodate opponents' moves. It 'accomplishes short-term objectives while preserving long-term flexibility. Because future problems and opportunities are always uncertain, present actions should not constrict a manager's ability to adapt to new situations as they evolve' (Eccles, 1992, p.11). It is also not limited to the innovative approaches of one individual and is well suited to 'distributive effort' and 'collective action'. This approach has been shown to reap benefits when trying to crack difficult technical challenges such as the design of Electric Light by Edison (Hargadon & Douglas, 2001).

One contemporary example of how Grand Challenge is being used as a central pillar of organisational effort is at The Gates Foundation. They describe their large projects as Grand Challenges, 'a family of initiatives fostering innovation to solve key global health and development problems' (The Gates Foundation, 2024). This good example demonstrates how a global organisation is using Grand Challenge as an overarching brand communication tool to articulate the scale of the challenge that they face and their determination to fight and succeed.

To conclude, Grand Challenge as detailed by Ferraro et al. (2015) and Dorado et al. (2022) is an elegant concept that is ideally placed to help accelerate organisations to net zero. By accepting that Grand Challenges are urgent and ambiguous, and organisations should embrace, and re-evaluate existing strategies and overcome obstacles it is possible to develop new ways of thinking and facilitate organisational change. For these reasons Grand Challenge is an ideal net zero MSP enabling **Mechanism** that has causal power to facilitate social change and be transformational (Archer, 1995). However, Grand Challenge does have its critics, as will now be explained and critiqued.

2.3.2 The criticism of Grand Challenge

Grand Challenge has experienced academic scrutiny over the last two years with some criticising its use and advocating its retirement as 'a hopeful concept' (Carton et al., 2023). They dismiss Grand Challenge as an overused, academically fashionable

hygiene factor, there to provide legitimacy. It has become an 'empty signifier' that has driven superficial and marginal research (2023, pp. 2–3).

Firstly, the author would agree that Grand Challenge must not just be a virtue signaller, and a term used without valid reason. However, the author would contend that their analysis adds little. What Grand Challenge requires is a more complete definition and for it to be introduced into organisations as mainstream and relevant thinking that can make a clear operational difference. By defining the Grand Challenge as a brand, which will be developed in Chapter 6 section 6.3, Grand Challenge does have significant contribution to make to the challenges of net zero. It can add practical relevance, urgency and pragmatism, identify real obstacles that organisations do need to overcome, and help curate stories that will inspire actors inter- and intra-organisations. Each of these are essential, powerful levers that can build a shared organisational purpose and provide a powerful catalyst for the development of MSPs.

Seelos et al. (2023) advocate reinventing Grand Challenge by redefining its epistemological and ontological roots. By adopting realism, Grand Challenge can 'validate theories in terms of their practical adequacy' (2023, p. 265), focus on the practicalities of action, and construct 'actionability' (Colquitt & George, 2011, p. 434). The narrative by Seelos et al. (2023), is helpful to the advancement of the concept and they are constructive and ambitious about Grand Challenge's usefulness. They assemble a strong realism-based argument for Grand Challenge because they recognise that most of societies' challenges are not value-neutral, including net zero. They propose a neo-Grand Challenge approach which is modern and endorses the view that Grand Challenge requires an 'epistemic shift' (Touboulis & McCarthy, 2020, p. 12), that moves it away from its positivist roots. If this is done, it can unearth social **Mechanisms**, frames and meaning structures 'that cannot be unearthed as an unbiased neutral observer' (Seelos et al., 2023, p. 265). They propose a new, differentiated architecture for Grand Challenge based on a constellation of approaches (2023, p. 254). This includes broadening stakeholder engagement, embracing Grand Challenge's complexity, and identifying obstacles. This process will improve both the theory and the practices. This means working closely with other disciplines and redefining the boundaries of the subject to build a multi-disciplinary team and collaborative approach. Overall, Seelos et al. (2023) are positive about the use of Grand Challenge as a modern, realist grounded, approach with a variety of novel approaches; it 'has the potential to inform and contribute...and make knowledge more accessible to decision makers' (2023, p. 266).

This thesis builds on that positive sentiment. The research undertaken for this thesis has approached the net zero Grand Challenge from a variety of stances and has proposed ways of overcoming obstacles. It will further argue that by developing the Grand Challenge brand the concept can better contribute to the organisational challenges of net zero. It has the potential to help organisations locate net zero as a social purpose-led strategic priority and recalibrate the way they think about net zero

as a multidimensional, cross-functional, team-orientated subject. Thus, Grand Challenge has the potential to help accelerate organisations to their net zero target.

2.4 Net zero as an institutional logic

This section will construct net zero as an institutional logic and explain why the organisation can experience a clash of logics when faced with the challenges of net zero and other competing logics. Over time this can be beneficial as new organisational structures and business models emerge as the obstacles are overcome (Olesson et al., 2023).

Institutional logics are a set of belief systems or 'taken for granted social prescriptions that represent shared understandings of what constitutes legitimate goals and how things may be pursued' (Battilana & Dorado, 2010, p. 1420; W. R. Scott, 1994). They fundamentally shape the organisational beliefs and operational practices and can be used to track the development of the organisation in the specific logic. An understanding about beliefs and expectations is quite fundamental to try and gain an understanding about what the truth means. The complete truth is hard to come by but directly affects how the logics are deployed and interpreted (Bunge, 1993).

Net zero as an institutional logic conveys a shared understanding based on a set of overarching principles and rules. It prescribes how to interpret 'organizational reality and what constitutes appropriate behaviour' (P. Thornton, 2004, p. 70) and ideally it should represent a shared understanding of what constitutes legitimate goals and how they may be pursued (W. R. Scott, 1994, pp. 55–80). It has been constructed within a set of social and organisational contexts to guide the beliefs, views, opinions and behaviours of those immersed in net zero. The result is a pattern of meanings, practices and actions that demonstrate whether progress is being made against the *net zero by 2050* target by measuring emissions (P. H. Thornton & Ocasio, 2013). This policy agenda has dictated that *net zero by 2050* is the target and every organisation has a role to play in that agenda. However, for many this creates a clash of logics between normal commercial activity and the need for decarbonisation. There is a conflict between emitting carbon as a normal output and consequence of production and trying to decarbonise because it is either legally mandated or just 'the right thing to do'. Therefore, the challenge is how to integrate the inherent beliefs, values, norms, and rules of the net zero logic with the many other logics that will be present in the organisation such that the barriers are minimised, and the enablers maximised. Every organisation is different, and it is impossible to be formulaic and positivist in the approach. It requires a clear understanding about the conditions under which the logics are interacting and how the net zero logic will slot into the operating model. This will require intimacy, patience, and learnings from others' successes and failures. Building on the realism approach, having a clear view about the real, actual and

empirical would be a good start, and a precise assessment of the causal powers and structures that are observable intra- and inter-organisation would also be helpful.

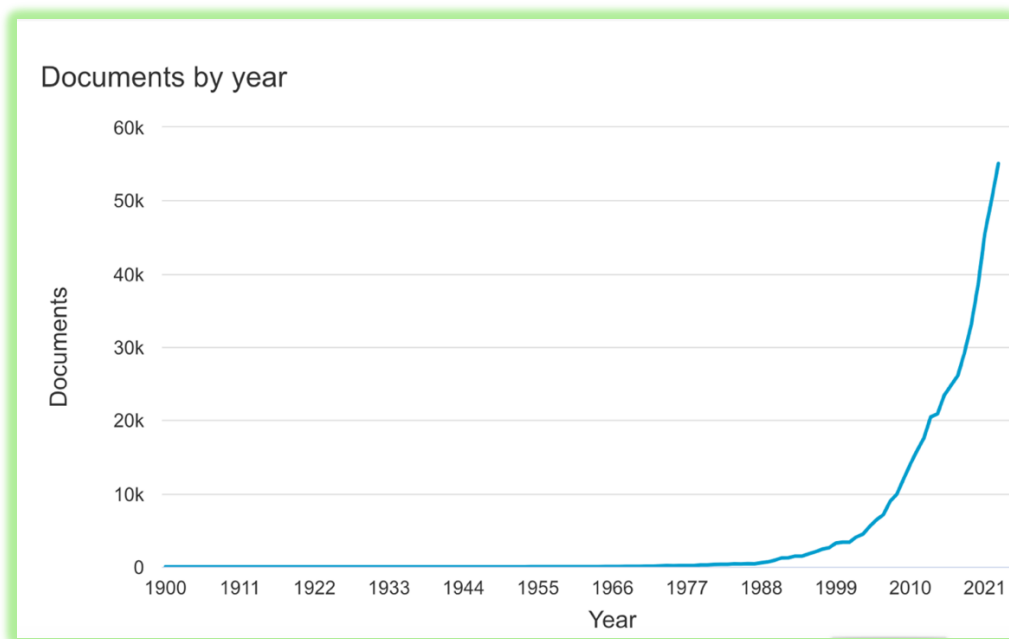
One of the hardest tasks for any organisation or stakeholder group targeting net zero is how to integrate this legitimate challenge into the organisation. It exposes economic benefit and cost tensions, how net zero is prioritised versus other important challenges, stakeholder engagement issues and a wider ethical position; these barriers need to be overcome. Integrating sustainability into existing business models is hard. It does not follow predefined patterns and may only have limited success unless certain practices are followed (Battilana & Dorado, 2010; Pinkse et al., 2023; Stål & Corvellec, 2018). The sustainability challenge is that there is an inherent tension between the need to drive shareholder return and being diverted into activities such as net zero that potentially amplify the risk profile of the organisation and dilute shareholder return. Their insights suggest that how the logics are expressed can directly impact the acceptance of the business model modification and more sustainable and environmental practices. In addition, there is initially a need to search for compatible components from the competing logics and then modify how they work together. This may have limited initial impact, but over time it will build organisational confidence which can then be used to accelerate the complex challenges (2023, pp. 19–21). There is therefore a potential need to create innovative hybrid business models to combine institutional logics. However, that does not always seem a possibility. Exploring this in more detail will help locate net zero as an institutional logic and identify some of the tensions that emerge as decarbonisation becomes both an economic and an ethical normative requirement. Oleson et al. (2023), have shown how enablers and barriers are created as different institutional logics interact. When they are aligned, they create enablers, and when in competition, they create barriers.

2.5 Climate change

Scientific interest in climate change commenced in the early 1900s and by the end of that century there was a suspicion that GHG emissions could be altering the earth's natural equilibrium. In the 1960's climate change, although still a niche, peripheral and activist-led movement, had gained more credibility through scientific evidence (Baines & Folland, 2007). Climate experts had acquired significant quantities of data enabling them to draw robust conclusions about the significance of CO₂ emissions and other atmospheric pollutants, including CFCs. Their hypothesis was that increasing levels of human-caused GHG emissions were contributing to an acceleration in global heating and changes to the planet's health; the Anthropogenic climate change narrative had started. This value-laden narrative is core to a realist perspective about net zero and climate change and reasonably shapes how research about the subject both scientifically and socially can be viewed (Saunders et al., 2009, p. 119).

In 2024, climate change has now become a mainstream global subject. Academic scrutiny of 'climate change' peer-reviewed journal articles and book chapters since 1990 has accelerated significantly; Figure 2.2 details that trend. Furthermore, climate scientists have been able to develop accurate climate models underpinned by significant quantities of data and faster computing power. This is the reference point for policy makers and society more generally about the climate trajectory over the next thirty years.

Figure 2.2 Scopus database search: 1900-2023, term 'climate change'



Arguably, politicians have an impossible task with climate change. Faced with multiple competing and expensive logics they, like every organisation, must compromise. The fundamental political problem is that whilst discussing climate change does not win elections because it is a highly polarising subject, politicians do have a core duty to protect citizens. Its temporal nature is central to their policy choices. They are driven by a short-term political cycle and are rarely interested in policies that extend beyond the next election, but climate change is a multi-decade challenge. The work of Carter (2018), and Lieven (2020) examine in detail the politics of climate change and the responses of the nation state; both experts present the tensions and the tough choices that inevitably will have to be made.

For organisations, climate change affects every aspect of the value and supply chain and has the potential to disrupt business models and increase shareholder risk. It is an economic challenge but also potentially a commercial opportunity; embracing decarbonisation technologies can be a driver of economic growth. However, it can also be viewed as an unaffordable policy that no-one is willing to pay for and one that creates competitive disadvantage (Blundel & Hampton, 2021; Gangadhari et al., 2023;

McKinsey, 2022; Radenovic, 2022). Organisations are grappling with its contradictions and challenges. The urgency of the climate change time horizon has the potential to create a 'form of predatory delay, serving to push much-needed decarbonisation into a distant future' (Nyberg et al., 2022b, pp. 3–4). Furthermore, as Slawinski and Bansal (2012) illustrate, short-termism coupled with uncertainty and avoidance, results 'in persistent organisational inaction towards climate change'. There is a need for new forms of business and society structures that accept and engage with the new realities that emerge from net zero. Nyberg et al. (2022) strongly argue that 'Given the urgency and the catastrophic impacts of climate change, there is a need to take a bolder approach to theorising the intersection between business, society, and climate change' (2022, p.3).

The need for organisational change is an incontrovertible feature of climate change, decarbonisation and the transition to net zero. As organisations strive to decarbonise the change process will be multidimensional. It is likely to impact the behaviours of citizens and of organisations, and the development of technologies. It will involve significant compromises, choices, and sacrifices. This change, or social innovation, can operate at a macro, meso, or micro level and the management of that complexity is the management of the mesh of interdependencies of multiple actors and 'involves the re-negotiating of settled institutions or the building of new ones' (van Wijk et al., 2019, p.887). Agential change is also an important aspect of net zero. This will be discussed later in the thesis in the context of the Boundary Spanner who can act as an MSP designer, builder and maintainer and drive the change process. The temporal urgency and pace of the change process is highly dependent on breaking previous path dependencies and challenging organisational inaction in ways that accelerate the reconfiguration of the collective beliefs and behaviours of every actor (Slawinski et al., 2017; Waddell et al., 2015; Dacin et al., 2002; Nyberg et al., 2022). Additionally, there could be, or should be, a moral, ethical, and normative strand woven into the change process, but it is highly dependent on context.

Finally, climate change is a highly contentious subject that highlights tensions between the global north and global south and engages in probably every key public policy area from migration and social justice, through economic prosperity to the nation state's very survival. However it is framed, climate change and the need to decarbonise and achieve net zero is hard to ignore, but the harder question is what to do about it and how to deliver it?

2.6 What is net zero and why are organisations important?

Net zero is a policy target and climate goal, whereas decarbonisation is the process by which net zero will be achieved. Net zero emissions are strictly defined as being achieved when anthropogenic emissions of GHG to the atmosphere are balanced by anthropogenic removals over a specified period (IPCC, 2022, p. 555; SBTi Glossary,

2024, p. 58). At a nation state level net zero measures emissions from within a state's territorial boundary. Decarbonisation means reducing the amount of GHG emissions society produces as well as increasing the amount being absorbed through natural means or innovative technologies (United Nations, 2022, p. 33). The combination of decarbonising and achieving the net zero target requires fundamental changes to the global economy including how energy is generated, how goods and services are produced and delivered, buildings are built, lands are managed, and global transportation is fuelled. It is a wide-ranging change process that involves the re-engineering and rewiring of the global economy: structurally, socially, and attitudinally.

Organisations are key to the decarbonisation process and play a significant role in whether net zero will be achieved. They have direct power over their inputs (energy, raw materials, facilities, supply chain and labour) and outputs (products and services) and can make conscious choices regarding how to reduce their emissions. However, it is not straightforward. Scope one (emissions that the organisation produces directly) and scope two (indirect emissions from the energy it buys) are both easier to manage and reduce because the organisation has significant control. They can take appropriate management decisions to impact emissions reduction. Scope three (other indirect emissions that occur in the upstream and downstream activities of an organisation) is a lot harder. Those emissions are frequently hard to quantify and reduce because they are external to the organisation and outside their direct control (Elliott et al., 2023). Scope three emission reduction strategies can be hard and take time to implement, as well as expensive to manage and resource intensive. To overcome these challenges, it is important develop external stakeholder partnerships, align decarbonisation objectives between the stakeholders and share the costs of the decarbonisation programme. Increasingly, previously voluntary approaches to decarbonisation are becoming institutionally enforced through national or trans-national legislation, for example the European Union Corporate Sustainability Reporting Directive (CSRD). This approach does add cost for the organisation because they must accurately measure and report on their performance, but for the internal managers of the decarbonisation process this fiduciary responsibility does provide them with power and legitimacy to act. Finally, there is a need to look beyond the technical rationality approach offered by von Hippel and von Krogh, (2016), where an organisational problem can be diagnosed and then resolved. The author contests that is a wholly unrealistic net zero objective because the organisational problem is non-linear with multiple and conflicting social, business and nature-based dependencies; in the end compromises need to be considered. As explained by Rittel & Webber (1973), addressing wicked problems is infrequently a binary decision between good and bad and frequently requires least bad options to be considered. However, there is no doubt that only the organisation can deliver decarbonisation, and to deliver this they need to consider its risks costs and manage the situation effectively and efficiently.

2.7 Net zero globally

In 2015 the Paris Agreement was adopted as a legally binding international treaty by one hundred and ninety-six countries. The ambition was to achieve *net zero by 2050* and in so doing prevent the earth's temperature from exceeding the 1.5°C limit (UNFCCC, 2015). Scientific models estimate that to deliver this 1.5°C target requires a 42% reduction in GHG emissions by 2030 versus 2010 and a 57% reduction by 2035 (Olhoff et al., 2024, p. XI). For comparison, emissions during the 2020 pandemic declined by 7% when 50% of the global economy was in lockdown (Carbon Brief, 2020). The scale of the challenge was elegantly articulated by Professor Sir Dieter Helm who is the UK's leading energy economist. His global net zero view is startling: 'there is no chance of us achieving the 1.5°C target...because our economies are soaked in carbon...net zero is way out of reach' (The Brutal Truth about Net Zero, 2024). The International Energy Agency forecast that, even with the significant increase in renewable energy deployment in recent years which has reduced global warming by around one degree Celsius, the projected temperature rise by 2100 will still be approximately 2.4°C (IEA, 2023). This still exceeds the 2015 Paris target of 1.5°C and is serious because the global warming will have significant social and economic consequences. Progress is being made, and there are some good examples where nation states are radically altering systems and structures.

Global spending on renewables has tripled over the last five years and in 2024 is double that spent on oil and gas (IEA, 2023). India, the world's fourth-largest polluter, has also embraced renewables and by 2030 will produce 50% of its energy from those sources. Norway has transformed its domestic transportation network and in 2022 80% of all cars sold were electric. Costa Rica has decoupled and insulated its long-term net zero ambitions from short-term political interference to ensure long-term confidence. Chile has followed the UK by establishing an independent and legally empowered commission to hold government to account. In addition, it has acknowledged that net zero delivery is more powerful when delegated to local communities and has devolved net zero responsibility to regional authorities (World Research Institute, 2022).

From a policy perspective, net zero policy and the wider challenges of climate change 'exhibit every known problem in policy and policymaking' (Cairney, 2023, p. 1) and they identify the gaps between promises and action. The challenge leads to policy change that is insubstantial compared to the size of the problem, 'especially when ambitious strategies lack follow-through' (2023, p. 2). It is an ambitious, demanding and technically difficult policy and one that requires commitments, often on a voluntary basis, from multiple stakeholders. It has been described as a 'systemic transition in how people live and do business in different local areas and regions within nations' (Turner et al., 2020, p. 627). Net zero also appears to be a pluralist policy: a policy in which two principles can co-exist simultaneously. On the one hand, society and

organisations operate within a neoliberal, economically global economy that is predicated on growth and consumption, which drives carbon emissions. Yet on the other, net zero demands decarbonisation to protect planet Earth through technological innovation and changes to everyday behaviours. The duality of generating carbon and reducing carbon means that net zero policy and its operational requirements create significant tensions that require compromise and trade-offs.

Net zero and decarbonisation is also expensive. Somebody needs to finance the investment and justify an acceptable return on that investment, and this is proving to be a major barrier as evidenced by a recent global survey (Bain & Co, 2024). 62% thought net zero would not be achieved until 2060 or later, with the biggest barrier to delivery being justifying the spend and delivering a suitable return on the investment. Furthermore, in the context of a post-covid economy and an increase in geopolitical tensions, disrupted supply chains and increased raw material inputs, stakeholders are under significant financial pressure. It is estimated that the net zero transition plan could cost an additional \$3.5 trillion per annum (+50%) on physical asset replacement (McKinsey, 2022, p. Xi) and accessing this level of capital spend is incredibly challenging in the current economic climate.

However, net zero faces a deeper global and systemic malaise: an unstable geopolitical environment and the decline in global co-operation and partnerships. Net zero will only be achieved through global co-operation yet that is being constantly undermined. With the demise in the post-World War Two global order and a retreat from globalisation driven by issues associated with democratic backsliding and the rise of authoritarian regimes and populist leaders, nation states and global institutions have significantly retreated from co-operation. The UN has become less effective, the USA more insular, China more powerful, the global north and south have politically and attitudinally become more remote, and other states have adopted policies centric to their own needs (Acharya, 2018; Freedom House, 2023; Kupchan, 2012; Stuenkel, 2015). This global trend undermines confidence in, and the benefits of, working together in partnerships. This could create a significant net zero barrier. Overall, the sentiment and sense of global co-operation that was present in Paris in 2015 appears to be significantly reduced in 2024. This is understandable in the face of many other serious issues and political distractions; however, it does have consequences when trying to address a global problem like net zero.

2.8 The UK's net zero journey

Net zero policy in the UK was introduced in the 2008 *Climate Change Act* and then refined in a 2019 amendment (Climate Change Act 2008, 2008; Climate Change Act 2008 Amendment (2019), 2019). The revised policy is a bold and ambitious transition agenda and aims to reduce GHG emissions by 100% from their 1990 level. Furthermore, the 2008 legislation established The Climate Change Committee (CCC)

and over the last sixteen years they have acted as an independent governance and policy advice institution with statutory legal powers. Their role is to advise and hold governments to account on emissions targets and report annually to parliament (Climate Change Committee, 2024).

Although the UK is responsible for only 2% of global emissions and approximately 5% of historical emissions (Statista, 2023a), since 2008 it has been an important policy agenda for every administration and one that is in 2024 positioned as ‘the economic opportunity of the 21st Century’ (Skidmore, 2023, p. 20). Its individual action plans have been subject to varying degrees of success, criticism, and praise and is ‘a colossal challenge’ (NAO, 2020, p. 7). The development of the UK’s renewable energy market since 2010 has been transformational, however multiple changes in Government policy and a lack of delivery more broadly in the energy transformation and reduction sector have created uncertainty and inconsistency which have undermined organisational and investor confidence. This political and institutional flux supports the case made by the UK’s net zero detractors. Their argument is frequently motivated by economics and political ideology supported by the fact that the UK is such a small emitter of carbon. They assess that net zero is a drain on the economy and the UK has more pressing priorities that need addressing (Pickering, 2024).

Notwithstanding this criticism, and despite being approximately halfway to the net zero target, more progress is needed (IFG, 2023; Skidmore, 2023; Warner et al., 2021, p. 322) and this will require further systemic and organisational change. This change process is led by government through the process of governance. Governance certainly involves both politics and policy, but it must also recognise the changing nature of the public policy process. The modern state relies on a multiplicity of national, subnational, private sector, third sector and civil society stakeholders each of whom are engaged in the policymaking process and its delivery (Richards & Smith, 2002).

Net zero is a subject where multiple disciplines engage and often offer views that are contingent on expertise and experience and are sometimes highly contradictory. As an example, environmental engineers are confident that carbon capture and storage (CCUS) will work and small-scale trials have proved this, but there are no commercial scale plants in the UK and global capacity is limited (IEA, 2022). CCUS has been central to the UK Government’s decarbonisation strategy since 2007 and continues to be so, yet the NAO and the CCC are not convinced that it will be commercially viable. Hence, the evidence is highly conflicting (Halsey A, 2020; Climate Change Committee, 2023).

Since 2010 UK policy versus delivery outcomes have been disappointing; the UK is behind its net zero delivery trajectory and requires a further 60% reduction in carbon emissions (Climate Change Committee, 2024, 2023, 2022, 2021). Critically the consensus from experts (CBI, 2020; Climate Change Committee, 2024; Jordan & Huiltema, 2018; NFU, 2021; Skidmore, 2023; Stark, 2019) is that net zero requires:

- 1) Strategic cross-department leadership from Government
- 2) A long-term perspective
- 3) An acceleration of policy and practice
- 4) Integrated policy design with business
- 5) Strong public engagement

This is not encouraging from a climate perspective, but it is useful academically. It creates an opportunity to reimagine how organisations can help to deliver decarbonisation and accelerate to net zero. This study is well-placed to capitalise on this opportunity. It is against this present-day context that the next section details the five key stages of the UK net zero policy journey. Section 2.10 develops that further by discussing relevant key institutional policy reports. This information helps to build a fuller picture of how the UK net zero policy in 2024 has been shaped by government and critiqued by its supporting governance institutions. Appendices two and three detail the key policy and governance reports between 2008 and 2024 from the UK Government, the Climate Change Committee (CCC) and the National Audit Office (NAO), whilst Appendix four provides a summary of the macro, meso and micro UK net zero evidence used in this thesis.

2.9 UK net zero policy timeline: 2008 - 2024

Over the last two decades the UK has experienced successes and failures in climate change policy and its delivery outcomes. A major success has been the development of the renewables market. Technological advancements have reduced its costs, enabling the acceleration of solar and wind as mass-market energy production sources. However, political instability has led to multiple changes in policy direction. For most of this period political direction has been dictated by the Conservative party. They have won three general elections under five prime ministers. This has resulted in inconsistency in climate change, environmental protection and decarbonisation policies which has undermined institutional and organisational confidence.

2.9.1 *Pre-2008: Climate change enlightenment*

1988 was an important year. The United Nations (UN) Intergovernmental Panel on Climate Change (IPCC) was established and were made responsible for assessing the science related to climate change. Their first Assessment Report published in 1990 'underlined the importance of climate change as a challenge with global consequences and requiring international cooperation' (IPCC, 2024). The third annual IPCC Conference of the Parties (COP) event was held in Kyoto in 1997 at which national emissions targets were adopted and the UK committed to reduce its GHG emissions based on scientific consensus that global warming was occurring, and human-made CO₂ emissions were driving it. In the same year the Labour government came to power

and over the three terms their environmental policy became increasingly important. In 2008 the first *Climate Change Act* was published which committed to ensuring that the UK carbon account for the year 2050 'is at least lower than the 1990 baseline' (Climate Change Act 2008, 2008, p. 2). This was a critical landmark in UK policy and was the first clear signal to business that change was necessary. It also established the independent Committee for Climate Change which was given a statutory duty to hold government to account on its climate pledges and plans. In December 2020 their name was changed to the Climate Change Committee (CCC).

2.9.2 2008 to 2010: First steps

Between 2008 and 2010, when the Labour government lost the general election to the Conservative / Liberal Democrat coalition, the detail of what decarbonisation meant for organisations and stakeholders started to emerge. Broadly, the Labour plan was adopted as ongoing policy by the coalition. Under the banner of 'Freedom, Fairness and Responsibility' Energy and Climate Change was headlined as 'one of the gravest threats we face' (H M Government, 2010, p. 16) resulting in a wide-ranging plan that signalled serious intent to cut GHG emissions, decarbonise the economy, and support green jobs and modern technologies. However, the programme was unaffordable and the following six years demonstrated a fundamental ideological and political dislocation between economic and net zero policy.

2.9.3 2010 to 2016: Austerity

The financial legacy from the 2008/9 banking crisis was a UK economy that was broken. In 2010 the fiscal deficit was not affordable nor tenable; between 2011 and 2016, £110 billion was required to reduce the financial deficit through a combination of aggressive public spending reductions and tax increases. A key implication of this was that government department budgets were cut by up to 30% which directly impacted net zero (Institute for Fiscal Studies, 2018). Programmes including the Green Deal never really started and although renewables were a success its subsidies were quickly reduced. This rapidly undermined business confidence and raised fundamental questions about how serious the 2010 – 2016 government was about net zero. This austerity programme is a much-debated subject. Ignoring the ideology and concentrating on the implications for net zero, both the CCC and NAO governance reports, as detailed in Appendix three, indicate they had significant concerns about the strategy, the spending reduction decisions, the net zero plan and its ability to deliver value for money. They highlighted multiple deficiencies in both policy and practice and questioned the likelihood of achieving net zero.

In December 2011, The Carbon Plan was published giving the first clear signal to organisations how decarbonisation was going to be tackled and what would be

required (Department of Energy and Climate Change & Change, 2011). This plan laid out the easy wins. Its principal policies were centred on creating a renewables market based on domestic solar installations, onshore and offshore wind, and the development of modern technologies including carbon capture and storage. There was a strategy to re-engineer the national energy grid system by phasing out coal-fired power stations and shifting the focus to renewables, gas and nuclear. The Green Deal was a flagship energy-efficiency initiative to reduce energy usage by insulating buildings and installing smart energy meters. The report was heavy on how and actions and was costed to the extent that the initiatives were detailed. With hindsight, The Treasury could not afford the plan, nor every other plan that had been detailed under the Coalition work programme.

2.9.4 2016 to 2024: Disruptive years

In 2016 the UK ratified the 2015 Paris Agreement. Paris was a landmark event. For the first time in climate change negotiations, an international legally binding treaty was agreed to limit global heating, by reducing GHG emissions, to between 1.5 and 2°C compared to preindustrial levels.

Post Britain voting to leave the EU in 2016 through to 2024, the UK experienced significant turmoil. Five prime ministers and eight net zero cabinet ministers meant little stability or continuity. The progress made between 2010 and 2016 was somewhat diluted by changes in strategy and multiple announcements on new initiatives and changes in direction. Appendix two details the range of policy documents that support this claim and can be summarised as follows. In 2019 the net zero decarbonisation ambition by 2050 was increased from 80% to 100% as compared to preindustrial levels which was significant. In 2020 a ten-point plan for the Green Revolution was published by Prime Minister Johnson, which on the face of it was a big boost to net zero (HM Government, 2020). It was a substantial change, but it did not last and was superseded by a post Covid-19 plan to Build Back Greener (Net Zero Strategy: Build Back Greener, 2021; HM Government. Treasury., 2021). Although this was not radically different in direction, it was in tone, and signalled to business yet more inconsistency, undermining long-term confidence in net zero. This is most clearly evidenced by still more flux in 2023; when Prime Minister Sunak decided that certain policies were unaffordable and pushed back elements of the net zero timetable by five years (The Guardian, 2023). The CCC were again critical and encouraged the UK 2023 government to be more ambitious.

2.9.5 Post-2024: Time is short

In July 2024 a new Labour government was overwhelmingly elected. However, as in

2010, the UK's financial position is incredibly challenging. An initial £28billion decarbonisation investment fund was scaled back because of concerns over the public finances (The Guardian, 2024a). However, the Paris Agreement is still legally binding requiring the UK to continue to decarbonise in line with its previous commitments. Independent assessment from the CCC continues to demand more progress (Climate Change Committee, 2024). With only twenty-five years to go until 2050, there is increasing scepticism by many influential stakeholders that net zero can be delivered.

To conclude, this timeline illustrates three key themes that are worthwhile highlighting; inconsistency, economic affordability, and delivery. The critical policy phase between 2016 and 2024 highlighted massive political upheaval and associated net zero policy changes have been very unsettling for organisations. So much so that the outgoing head of the UK's CCC, Chris Stark, stated that although significant progress has been made since 2010, net zero has not been prioritised by government recently and Prime Minister Sunak sent a message to the world that the UK is less ambitious than it once was (BBC, 2024). In a separate interview, Mr Stark argued that the rollback on net zero targets, and the failure of the UK to respond to large green investment programmes by the USA and the EU, has made the UK not exciting when it comes to green energy (FT, 2024). The result of this is that investors will choose other countries, and the UK will lose out, which will affect the UK's net zero ambitions. Perhaps that sentiment will change following the landslide election of the Labour Government in July 2024? They have a mandate for change and have strongly committed to net zero. Their net zero policy and delivery agenda is ambitious and returns to the sentiment from the early 2010's (Pickard, 2024; HM Government, 2024). However, the tough UK economic environment may well limit that ambition and certainly they will need to improve the connection between policy and delivery.

2.10 UK Government evidence and institutional reports

In addition to the chronology of the UK's net zero journey since 2008, it is also beneficial to provide more detail on a select set of key institutional reports. They are detailed in Table 2.5 and focus on 2020 - 2024. The UK Government's 2023 policy document presents an ambitious but yet undelivered set of decarbonisation policies, market signals and levers, whilst the NAO, the CCC, and the Skidmore Report provide objective expert validity. The reports form part of the policy and institutional data sources detailed in Appendices two and three. These were used to build a complete understanding about the UK's net zero **Context**.

Table 2.5 Selected net zero policy documents and reports

Document	Author	Published
Achieving Net Zero	National Audit Office	2020
Powering up Britain. The Net Zero Growth Plan	HM Government	2023
Mission Zero – Independent Review of Net Zero	Rt Hon Chris Skidmore MP	2023
The Power of Partnerships	CCC	2023
Progress in Reducing Emissions	CCC	2024

2.10.1 Achieving Net Zero

The NAO are an independent assessor of UK Government spending and policy commitments and measure both value for money and policy progress. This report sets the scene for the reframing of net zero policy presented in section 2.10.2.

Following the more ambitious 2019 net zero commitment, this report critiqued the scale of the challenge, how successful the UK Government had been and what they needed to address to improve (NAO, 2020). They assessed that there was little room for delay, the task was urgent, and the Government needed a wide-ranging strategy which they did not have at present (2020, p. 11); in some sectors there were plans but in others less so (2020, p.6). Furthermore, organisationally they were concerned about how government operated and activated cross-department working. ‘Government needs to consider carefully for its net zero arrangements to be effective’ (2020, p.8). The NAO assessed that there is a need to integrate wider government policy with net zero and really understand how the complexities of net zero impact other priorities (2020, P12). This was also true for public bodies outside of central departments; the Government need to clearly set out the role of LG (2020, P9). Finally, Government also needs to actively engage with industry and citizens and ‘inject the necessary momentum’ (2020, p. 15). Overall, the NAO felt that Government had not done enough to embed net zero into wider policy and society, nor quantify the costs and benefits of the policy.

2.10.2 Powering up Britain

Following the significant political flux between 2016 and 2023, this report was an attempt to reset the net zero narrative and detail how net zero could be used as a driver of economic growth (HM Government, 2023a). It was supported by a second report that detailed energy as a security issue (HM Government, 2023b). In the view of the Government ‘Energy security and net zero are two sides of the same coin’ (2023a, p. 5).

The Sunak led Conservative Government's narrative was based on committing to innovative technologies and expanding established ones. Their view was that committing to a green and sustainable future would grow the UK economy supporting hundreds of thousands of UK jobs whilst also accelerating decarbonisation and helping to secure net zero. Nuclear expansion was key; new nuclear plants would be built, and small modular reactor technology research would be funded. More challenging technologies, CCUS and Hydrogen power, were seen as key to the future of decarbonisation and would be seed funded. Offshore wind and solar were going to be expanded with a collective ambition of increasing generative power fivefold. To deliver this, private sector funding was critical and, supported by government funding, it was hoped to activate the green economy and secure the UK as a leading global green economic power. Finally, policy and legislative changes would be made to enable this plan to be delivered, especially in infrastructure, planning, and transportation. In the context of the 2024 geopolitical and domestic political situation, this policy report was seen as a stabilising statement and a commitment to the future of a new green industrial future in the UK.

2.10.3 Mission Zero

During 2022, the UK High Court assessed that the UK Government was not meeting its net zero strategy and ordered a review and that a new strategy was required (edie, 2022). One result was the Skidmore report (Skidmore, 2023). This was a wide-ranging stakeholder engagement review and aimed to 'engage, listen, and learn from businesses, organisations, industries, and communities from across the UK' (2023, p. 3). The review sought to make recommendations on how the UK could create a big bang moment for net zero and a delivery ecosystem (2023, p. 4). 'We must grab this opportunity, there is no future economy but a green economy (2023, p. 8). The Government promised to consider the recommendations and amend policy accordingly.

The review highlighted the significant opportunity and benefits to the UK economy and emphasised that the UK must go further and faster to realise them. It explained that net zero and economic growth were intertwined as were the downside risks from the effects of climate change and economic insecurity. It presented a full plan about how the economic benefits could be achieved and made recommendations across six key pillars including the key industrial sectors, enhancing the role of LG and the power of individual contribution. The review was pro-business, pro-renewables infrastructure and pro local action. It included twenty-five key actions necessary for 2025 and required government and industry to work in partnership (2023, p. 14). The review was well received and built stakeholder net zero confidence. One of the actions that followed was a CCC report on the Power of Partnerships.

2.10.4 The Power of Partnerships

In 2023 the CCC published the 'The Power of Partnerships' report (Advisory Business Group for the UK's Climate Change Committee, 2023). This is a good example of business and institutional alignment resulting in net zero policy best practice.

Comprised of senior business leaders, the Advisory Group's key report headline was that to achieve net zero required a 'change in all sectors' (2023, p. 7) and that it will create new opportunities. Its mantra was 'unlocking business action on net zero'. 'We will need to reconfigure our transport systems, homes, businesses, and land, to change how we move people and goods' (2023, p. 11). At the heart of the change is the need for transformative business and government partnerships. The report explored how this could be achieved and suggested a set of actions for policymakers. It advocated stronger investment, implementation and innovation and its core message was that partnerships could facilitate this. It cited several case studies to demonstrate the widescale benefits that can come from net zero focussed partnerships. These included: a Danish business and government partnership model to align net zero priorities; a partnership between DHL and Volvo to electrify their delivery fleet and advance other technologies including bio-methane; and Lloyds bank working in partnership with its customers to accelerate decarbonisation. The report was detailed and had over thirty key recommendations.

2.10.5 Progress in Reducing Emissions

The annual CCC report to parliament in 2024 was hard hitting. They said that the country was not on track to hit the 2050 net zero target and urgent action was needed across all sectors of the economy led by government (Climate Change Committee, 2024, p. 8). There was a hope that the new Government would embrace this challenge and not follow the inconsistent messages, cancellations, delays and exceptions to important policies that had been experienced under the previous administration. Their confidence that *net zero by 2050* could be achieved had undoubtedly been reduced, and it was crucial to restore it and 'avoid a vacuum of ambition in net zero' (2024a, p. 96). This report coincided with the election of the new Labour UK administration. It was designed to clearly identify the historical weaknesses in UK net zero policy and provide an ambitious agenda for the new government.

This chapter has so far presented a perspective about the macro issues associated with the net zero Grand Challenge. The remainder of the chapter will discuss the multiple stakeholder groups at the meso level who are engaged with net zero.

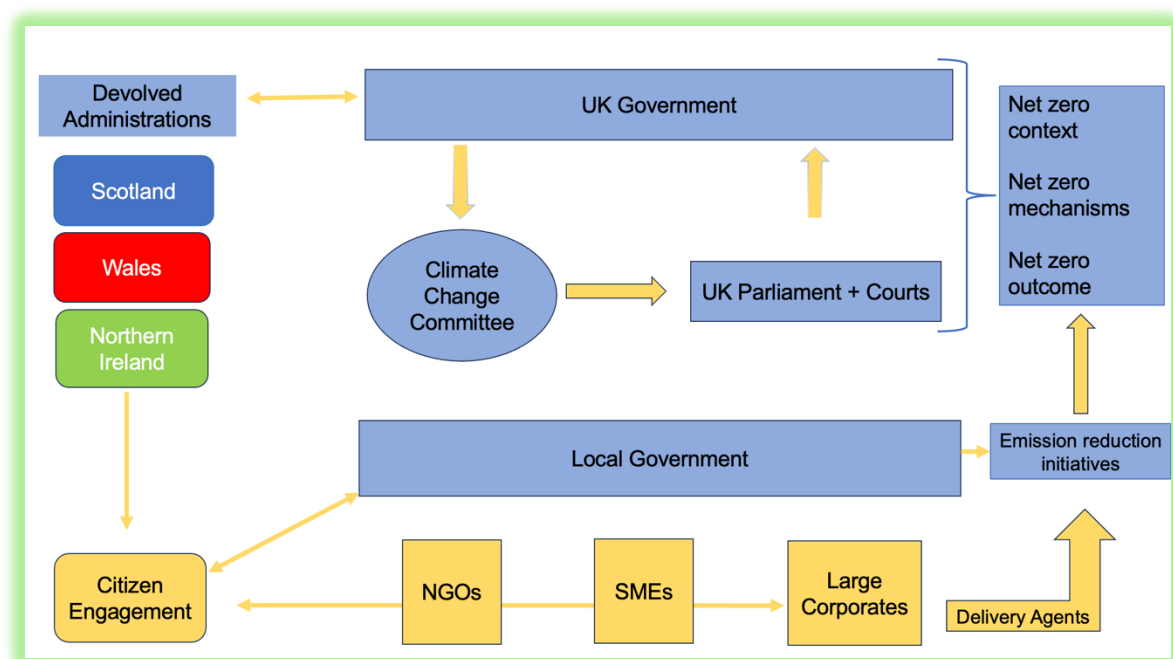
2.11 Net zero stakeholder groups

To understand how net zero works in the UK as an organisational field it is important to understand its key stakeholder groups and how they interact. Prior to describing their individual roles, the concept of the Environmental State (Duit, 2016) (ES) will be explained; the ES is central to the behaviours of every other stakeholder group. They set policy, distribute financial resources, and set the political tone. Furthermore, this thesis argues that the ES could facilitate MSPs which have the potential to accelerate to net zero. However, that will require a modification from the old ES to the new ES. Following that discussion, each key UK stakeholder group will be outlined and their role and importance to the decarbonisation net zero agenda explained.

Figure 2.3 details how the UK net zero organisational field operates and how the stakeholder groups engage with each other. Appendix five explains their role and Appendix six details a set of role characteristics for each.

Figure 2.3 UK net zero. Stakeholder structures and interactions.

Source: Author's work



2.11.1 The Environmental State: A useful but incomplete concept

A nation state has three fundamental roles (Duit, 2016): To keep internal order, develop a system that can compete internationally and to enable the financing of both. 'How states operate and what they do depends on complex interactions among varied actors that evolve over time' (Duit, 2016, p.3). States have at their disposal the tools

of government and they can deploy four basic resources to any situation: authority, nodality (being at the centre of the information and knowledge network), treasury (resources and money), and organisational abilities (Hood and Margetts, 2008). From this the concept of the Environmental State (ES) has been developed. 'The analytical concept of the ES was coined in academic discourse to give conceptual expression to the emergence of environmental management as an integral function of the modern state' (Hatzisavvidou, 2020, p.96).

The ES has many responsibilities, but its prime responsibility is to deliver high-impact environmentally positive outcomes. That starts with the process of EBPM. The process is highly political, and this thesis will not engage in the politics of climate change, but others have and are referenced here for completeness (Carter, 2018; Dryzek et al., 2011; Gabrielson et al., 2016). The 'four faces of the Environmental State', (Duit, 2016), explains how the state can develop and control the environmental policy agenda through; a regulatory and administrative face (to make policy decisions); a redistributive capacity (to decide where to allocate resources in society); administrative agency (through its institutional organisations); and production and dissemination of relevant information (to shape and form the stakeholder narrative). 'We understand this to be a state that possesses a significant set of institutions and practices dedicated to the management of the environment and societal–environmental interactions' (Duit, 2016, p.5). Duit et al, (2016) and Hatzisavvidou (2020) both identify that the (old) ES has its limitations. Firstly, its top-down approach ignores the critical role that stakeholders play. Businesses have the financial resources, local authorities possess an intimate local perspective, whilst citizens have the capacity to deliver agency on a mass scale. Each of these can adopt a positivist or normative approach to the problem (Duit, 2016, p.16). Secondly, the neoliberal political argument highlights the limitations of equality and individual liberty, and it is unlikely that the ES can operate this way with the challenges it faces because it 'functions as a glass ceiling to radical environmental transformation' (Hatzisavvidou, 2020, p.96).

Based on this work the author would argue that placing the state at the heart of national environmental enquiry is a flawed approach. It is not that the state does not have important policy, tone-setting and strategic roles to play, but it is incomplete for the challenges of the 2020s. The (old) ES positions itself as the leader of a top-down policy process. This is inappropriate because it infers an exclusive approach to the process, whereas it is arguably better to be more inclusive, and engage as many relevant stakeholders as possible in wider forms of partnership. Secondly, effective implementation is not the responsibility of the UK state, and without effective implementation even the best market-optimised business policies do not deliver results. For these reasons the (old) ES could be transformed into a wider and deeper concept with the addition of MSPs, in a 'web of relationships between multiple organisations' (van Meerkerk, 2014, p.14). By combining institutional functions from the ES and elements from 'tools of government', especially authority and nodality, with deeper stakeholder engagement and MSPs, a new modern ES could be developed.

2.11.2 UK National government

The 2008 *Climate Change Act* was a significant piece of legislation (Climate Change Act 2008, 2008). It stated that collectively the UK Government and the devolved administrations (DA) of Wales, Scotland, and Northern Ireland must act together to meet the UK's legal objective of reducing UK GHG emissions to net zero. Ultimately the UK national government are legally responsible to the UN Framework Convention on Climate Change Secretariate (UNFCCC) who monitor national determined contributions (NDCs). These are the climate pledges and action plans required to deliver the 1.5°C limit on global warming following the Paris Climate Agreement. This requires considerable multilevel governance and cooperation between the four governments. The DAs can own their own local plans, but the CCC have statutory governance powers to ensure that individually and collectively the net zero plans are fit for purpose to meet the 2050 target.

The UK Government, through The Department for Energy Security and Net Zero (DESNZ) set the overall net zero policy strategy through a process of EBPM (HM Government, 2024a). They have the power to ensure high-impact outcomes. Five other departments have a supporting climate responsibility: HM Treasury (HMT) agree spending, The Cabinet Office coordinate cross-department initiatives, The Department for Business and Trade are responsible for industrial strategy, The Department for Environment, Food and Rural Affairs are responsible for environmental standards including GHG emissions from farming, and The Department for Levelling Up, Housing & Communities finance LG and provide funding to the (soon to be replaced) 21 Local Enterprise Partnerships (LEPs) (HM Government, 2024b). The LEPs operated until 2023 as independent arm's-length bodies. As of 2024 their responsibilities are being absorbed into the local authority to deliver more integrated local industrial strategy.

Net zero is a complex policy and one that requires significant oversight and co-ordination to be effective. The CCC play a key role as do The Cabinet Office who have established a cross-department committee. However, that committee has rarely met (Craig, 2020; HM Government, 2024b, 2024a).

2.11.3 Local Government (LG)

UK LG is broadly a two-tier system responsible for the provision of local services. It encompasses large city areas, Unitary Authorities, borough and county councils, and local district town and parish councils. LG is a complex stakeholder management challenge.

For LG net zero is not a statutory responsibility therefore, beyond an absolute minimum, LG can choose to focus on other priorities. Generally, they do take the challenge seriously, but they are faced with other significant challenges. LG are

responsible for between two and five per cent of UK emissions and can influence around thirty per cent of local area emissions (Climate Change Committee, 2020a, p. 17). This can be done through tailored policies on transport, planning, local investment, industrial strategy, and housing standards, giving direct benefits to pollution reduction, health, and energy efficiency. Most have chosen to declare climate emergencies (Local Government Association, 2024), and this has driven elevated levels of stakeholder salience, urgency, and legitimacy. However, funding and budgets are scarce. They are struggling to support statutory services where demand is high and when combined with a significant decline in funding, and high inflation, this has created significant financial discomfort and difficult choices. The realistic view is that net zero may be a desire of many local authorities, but when faced with more pressing and legally binding competing priorities, it is easy to deprioritise decarbonisation and net zero.

2.11.4 Arm's-length bodies and institutions

Over the last thirty years national government have frequently reorganised the intermediate tier institutions that operate between UK national Government and LG. This has been driven by central political whim and has created constant flux, with little stability or meaningful change, highlighting the uneasy multilevel relationship between national and local structures (Marlow, 2019).

When this research was commissioned in 2020, Local Enterprise Partnerships (LEPs) were a key local net zero actor, and this project was keen to engage locally with the Derbyshire LEP and understand their local net zero influence. However, following the publication of the Levelling Up and Regeneration Bill (2022), during 2023 there was an intention to disband LEPs and integrate their local economic strategy and delivery role into the local unitary authority (UA). That process has now started and will continue as they are nationally integrated into LG. Interviews were conducted with two LEP CEOs but LEP's importance diminished in view of the reorganisation.

The reorganisation does however point to a more fundamental issue characterised elegantly as the seven-year itch (Marlow, 2019) – every seven years a reorganisation occurs. This is not the first time local economic development institutions have been reorganised. Marlow critiqued a previous reorganisation. His forecasts, made three years ago, have happened, and the changes reinforce his view that 'England has struggled to create and sustain intermediate tier institutions of leadership and governance between national government and local authorities' (Marlow, 2019, p. 139).

What is clear, though, is that local decarbonisation, whether orchestrated by the LEPs or LG, is necessary and the CCC stated that LEPs are 'an underused driver for delivering net zero' (Climate Change Committee, 2020a, p. 27). Place-based

investigation of the low carbon economy, clean growth and local economic development has been an emerging area of study (Baranova et al., 2017, 2020; Baranova & Meadows, 2017; Baranova & Paterson, 2017).

2.11.5 Climate Change Committee

Establishing the UK's CCC in 2008 was a ground-breaking innovation. They have statutory powers to hold the UK Government to account as detailed in the 2008 *Climate Change Act*. This has provided external actors with the power to take the UK Government to court when it has not followed the CCC's recommendations. Since 2008 they have probably been the most important stakeholder and institutional organisation in the UK on climate change and net zero. They have adopted a highly scientific approach to assembling the evidence and have commissioned new scientific research to develop the UK's climate change models. They have used this information in combination with other models and frameworks to develop rigorous and detailed policy advice for government; in effect 'rules'.

However, the UK Government chooses to be flexible with that advice despite the legal oversight powers. In both 2022 and 2024 the UK High Court found that the UK Government were guilty of breaching their net zero legal duties and the government were instructed to rethink the net zero transition pathway and its carbon budgets (edie, 2022). As a result, in 2022 the UK Government commissioned the Skidmore report, published four months later (Skidmore, 2023). However, it is fair to say that the UK Government of 2023/4 was still adopting a very flexible approach to its legal responsibilities. This was validated by the CCC in its 2023 report to parliament (Climate Change Committee, 2023), and is further evidenced by a new legal challenge in 2024 (The Guardian, 2024b). Overall, this demonstrates a lack of stakeholder and institutional alignment arguably creating an impression of 'the rules are there to be broken'. Commenting on the wider negative messaging from government about net zero, the head of the CCC said that 'It is really damaging because the UK are trying to push others to go faster, and these messages have a negative impact... the UK had stepped off its ambition on climate' (New Statesman, 2024, p. 12).

2.11.6 Large Corporates

Since 2016 only fifty-seven companies have been responsible for eighty per cent of global emissions (Reuters, 2024). Large corporates are an important net zero stakeholder group. However, being large has both advantages and disadvantages. They are likely to be well resourced financially and operationally to contend with the many challenges of accurately measuring and actively managing an emissions reduction strategy. They are also likely to be organisationally sophisticated and capable of embracing management structures that cross territories and business units.

Additionally, they are likely to be extremely comfortable working with external partners in MSPs.

Large corporates are driven by the need to perform financially. That is what capitalism demands. Those that try to navigate a more balanced route between high financial returns and high ethical and sustainable standards do come under an elevated level of external scrutiny and threat. This is evidenced by BP's transformation strategy from an oil and gas company to a broader energy company with a significant green energy revenue stream. Compared to their peer group their financial performance has been under par and open to serious investor criticism (The Telegraph, 2024).

2.11.7 Small and Medium Sized Enterprises (SMEs)

The UK private sector is largely comprised of SMEs. They account for ninety-nine per cent of the business population and employ over sixty per cent of all employees (Statistics, 2023). Having discussed net zero with many SMEs and interpreting the evidence from multiple expert reports (Blundel, 2023; Blundel & Hampton, 2021; Caldera et al., 2019; Lloyds Bank, 2021) the author concludes the following.

SMEs are in a dominant position to impact net zero, but they often have limited financial and operational resources and, sometimes more fundamentally, a lack of management capacity to operate multiple projects simultaneously. They frequently must make tough decisions about what to work on and what not to work on and this can deprioritise important, but not strategically core, projects. Unfortunately, beyond what is a basic minimum, or what is legally required, net zero can fall into this grouping. However, they do also have some advantages. The research has established that propriety Intellectual Property (IP), and organisational agility are both competitive advantages. Innovation and IP are often important roles for SMEs which can be attractive to larger corporates who do not possess the innovation but may look to use the skills of the SME in some form of partnership arrangement. Organisational agility allows SMEs to make changes more quickly than their larger counterparts and from that can flow market opportunities.

2.10.8 Non-governmental organisations (NGOs)

As Figure 2.3 demonstrates, NGOs are a key net zero delivery agent. They have become more important as LG has downsized, and as national government have outsourced their delivery organisation (Banks & Brockington, 2020). Furthermore, global institutions and philanthropic organisations both use NGOs to deliver their projects because they have the local insights and organisational structures to make a difference locally.

2.11.9 Climate change lobbyists

Climate change is a highly polarised subject with significant effort and resources being deployed by both its advocates and detractors. The lobbying process takes many forms, and the power exercised by this stakeholder group can be very visible or quite hidden.

Climate change activists, such as Extinction Rebellion and Just Stop Oil, adopt quite extreme approaches intended to draw attention to the slow progress, as they see it, being made by government to decarbonise energy systems and reduce and even remove dependency on fossil fuels. The groups can be seen by the outside observer as negative and extreme, but they do collectively have one common trait: a keen sense of social justice and moral compass. They are successful at gaining publicity and drawing attention to what they feel are practices that 'threaten the breakdown of the planet' (Just Stop Oil, 2024). In the face of a climate emergency the networks of activists believe that 'ordinary people have the power to change things and governments cannot be trusted to act and reduce GHG to net zero by 2025' (Extinction Rebellion, 2024). Their methods may be in dispute, but beliefs are rooted in protecting planet Earth.

Shareholder activists are motivated differently. They are focused on corporate governance and climate change risk; it is a key concern for investors (Krueger et al., 2020). Studies show that this stakeholder group can 'elicit greater corporate transparency with respect to climate risks, and that companies achieve higher valuation following this' (Flammer et al., 2021, p. 1874). They can bring to the fore practices that organisations are less willing to disclose, and they have been successful at changing the corporate conversation from 'environmental performance' to 'climate risk information' (2021). This can move the conversation from superficial corporate social responsibility (CSR) performance indicators to the hard financial indicators that investors expect.

Significant effort is also being made by climate change detractors to influence public opinion and government policy. This can be motivated by an ideological belief that climate change is not real and just part of the natural cycle of Planet Earth. The 'climate change deniers' believe that the effort and resources being deployed by government and private sector organisations to deliver net zero are wasteful when there are many more pressing global issues. Other climate change detractors are motivated by economic self-interest. Large corporations whose business model is predicated on extracting oil and gas invest significant funds into lobbying national and global institutions to protect their corporate assets. Between 2000 and 2016 in the USA two billion Dollars was spent on this activity: 'Major sectors were fossil fuel and transportation corporations, utilities, and affiliated trade associations' (Brulle, 2018, p. 289).

2.11.10 UK Citizens

In the end it is citizens that will be impacted by changes in weather patterns, and they are customers and consumers. The UK public rates climate change in its top four issues of greatest concern and seventy-one per cent support the government's pledge to deliver *net zero by 2050* (YouGov, 2024) and (Byline Times & Omnisys Polling, 2023). Whether this enthusiasm translates to behaviour change is an area for further research, but for companies and the UK's institutions to achieve net zero, citizen support is essential.

2.12 Net zero from an organisational perspective

The following evidence was collected during 2023 and 2024 whilst attending the 8th and 9th Economist Sustainability Summits in London. Each event was three days and more than one thousand sustainability leaders attended. The author was also in attendance. The data was collected from lectures and one to one conversations and is used to illustrate the real-world net zero challenges that organisations face. They do not have unlimited resources and are constantly faced with competing logics and trade-offs. The reality is that they work in a capitalist ecosystem and corporate sustainable practices are generally inhibited by the profit imperatives of organisational owners (Belal & Cooper, 2011). They must deliver shareholder value.

This section presents multiple points of view about net zero, and how organisations are addressing its challenges. The data is included here in support of developing a fuller perspective about the Context of net zero and selective quotations are included to develop a balanced view about the difficulties and realities of organisation decarbonisation. Three themes emerged during the conferences. Firstly, that net zero is extraordinarily complex and it is difficult for organisations to embrace net zero whilst also managing multiple other competing priorities. Secondly, that organisations must change and adapt either voluntarily or under pressure from institutions Thirdly, the scale of the systemic change requires organisations to collaborate.

2.12.1 Net zero is about making choices

Since 2019 and the Covid-19 global crisis, organisations have been stretched for resources. Inflationary pressures plus the disruption to global supply chains have created significant tensions within organisations. Net zero and the demands to decarbonise add another competing logic to that complexity, and when faced with both short-term and longer-term pressures, there can be a temptation to focus on the more immediate challenges and forget about issues that are in the far distance. For organisations to seriously focus on a 30-year challenge requires a new set of rules. This dilemma is elegantly illustrated by three quotations:

‘Organisations are struggling to control costs and justifying decarbonisation is difficult. It is a cost with an uncertain payback; all the low-hanging fruits [those with easy to justify paybacks] have been tackled’

‘Sustainability and decarbonisation are about choice and trade-offs, sometimes arbitration is needed from the CEO and shareholders to ensure we are all aligned’

Chief Financial Officer (CFO): Large logistics business

‘We invest in business and have a five-to-seven-year return horizon. The challenge is that unless net zero can show a financial return in that timescale the CEOs are reluctant to invest’ – Vice President: \$900bn asset manager

2.12.2 How organisations change to embrace decarbonisation

Related to complexity and disruption was a recognition that to decarbonise requires new ways of thinking and working. The complexity of net zero sometimes forces organisations into thinking about the problem in a new way and reframing the subject. This includes adopting appropriate sustainability industry standards to understand how much change is necessary. They establish both a baseline position for the organisation and a quantified set of targets. Furthermore, the process can build organisational credibility and legitimacy. SBTi and ISO standards are two examples that are voluntary, whereas increasingly coercive institutional requirements from the EU, US, and India as three examples are a mandatory requirement to trade in the territories. This challenge is illustrated by the following three quotations

‘SBTi’s and the upcoming EU CSRD which will impact us in 2025 - 2028, requires us to measure and publish 1100 cross-functional metrics and this fiduciary responsibility is positive for sustainability and net zero’ – Chief Executive: Global car brand

‘We have a need to accelerate decarbonisation, and we are committed to SBTi’s. We decided we needed a disciplined pathway to decarbonisation because 80% of our emissions are scope three. We needed to work with farmers and be more carbon thoughtful and we formed new partnerships to do this’ – Chief Executive: Global ingredients business

‘Transparent non-financial reporting is essential if we are going to hit net zero’ – Board member: Accounting standards organisation

How organisations are structured to cope with sustainability was also discussed. This relates to how organisations are addressing their structures and organisationally changing to embed sustainability into the core of the organisation. It was recognised

as being exceedingly difficult and not all organisations were succeeding because of cultural issues and functional resistance. Frequently, sustainability is a discrete function. However, being a standalone functional pillar is understandable but not helpful. Ensuring that sustainability is embedded in the DNA of the organisation was seen as important. The ambition was for sustainability to be central to every pillar of the organisation; making it core to what everyone does is the priority. It is about culture change as these quotes illustrate.

‘It is not about a sustainability strategy it should be about a corporate strategy’ – CSO: European electronics business

‘Corporate sustainability governance helps. Embed it in the structure...Sustainability needs to underpin every pillar of the organisation. Not a single pillar... change the governance structures to enable a long-term sustainable strategy...it is about product, purpose, people, and profit’ – CEO: Small drinks business

‘Sustainability and how we decarbonise is hard-wired into the company. It is not forced; it is embedded into the organisation’ – CSO: Large mobile telecoms business

2.12.3 Net zero collaboration

Net zero is a complex systemic problem and its scale was recognised as a barrier and a motivation. It was seen as so large that it was beyond the capabilities of the any single organisation to deliver. This barrier was also seen as a motivator to share the problem collaboratively with other like-minded partners whilst respecting anti-competitive legislation. A more general point was made that for sustainability and net zero partnerships to be successful they must be well funded and have strong governance. These points are illustrated by the following quotations.

‘Net zero should be the largest collaboration the world has ever seen’ – CSO: Large drinks business

‘The systemic problem needs integrated value chain collaboration between Government, Institutions, and businesses’ – UK CEO: Global energy business

‘My experience is that unless partnerships are clear about who pays early on, and are well-resourced with skilled people who can ensure they are run well, they will fail’ – Innovation Director: Sustainability consultancy

2.13 Chapter conclusions

This chapter has investigated four connected territories. It has firstly developed the

idea that net zero is a Grand Challenge, drawing on the literature to build a compelling argument for its use as a positive net zero enabler with power to effect social change. It has further proposed that the thesis can advance the thinking, modernising Grand Challenge in the context of net zero and making it appropriate for net zero MSPs. Secondly, the chapter has presented the UK's net zero policy timeline, highlighted the key learnings and detailed relevant recent policy and governance reports that guide future policy. Thirdly, the chapter has detailed the key stakeholder groups to understand their role in net zero. It has also proposed that the new Environmental State can actively contribute to net zero MSPs. Finally, it has presented real life organisational evidence to demonstrate the reality that organisations face when decarbonising; its complexity; its uncertainty; the need to work out how to change; the scale of the challenge; and the role of collaboration. The chapter has endeavoured, both academically and practically, to build a clear picture about how net zero as a Grand Challenge can be understood.

Net zero is a value-laden Grand Challenge and benefits from an ontological realist position. It has the power to activate other **Mechanisms**, affect other structures, deliver faster decarbonisation and accelerate to net zero. Despite the criticism from Grand Challenge's detractors, the thesis proposes that it is a powerful concept and can be developed further. Its use adds significant value to the understanding of, and the ways that organisations can accelerate to, net zero through novel approaches. Furthermore, the concept has been designed around a core set of principles: overcoming obstacles or barriers; adapting to problems in a pragmatic way; curating compelling stories that communicate its urgency; complexity; and uncertainty (Dorado et al., 2022; Ferraro et al., 2015).

Net zero has the causal power to affect other structures and systems. It can create change, and this is key for every organisation and stakeholder group working on net zero, because the empirical evidence is clear: globally and locally, society is not on target to hit net zero and acceleration is required. However, organisations are faced with multiple challenges and these organisational logics or beliefs and practices can be in competition with each other and can create conflicts and barriers. Potentially, new organisational arrangements will be required to manage the multiple logics. Overall, this chapter has presented a thorough appraisal about the net zero Grand Challenge. When combined with multiple other theories and concepts, which will be developed in Chapter three, new net zero organisational perspectives can potentially be developed to facilitate collaboration between stakeholder groups through MSPs and accelerate the net zero decarbonisation agenda.

Chapter 3 Multi-Stakeholder Partnerships

3.1 Introduction

MSPs are key to achieving net zero (Gray & Purdy, 2018, Chapter 8) and this chapter will examine MSPs in detail. The key MSP literature is detailed in Appendix seven. The chapter develops both a net zero MSP theoretical framework and a net zero MSP general conceptual framework built on the **Context + Mechanism = Outcome (CMO)** realist approach (Pawson, 2006). This realist based causal approach to evidence-based policymaking (EBPM) is a good fit with the development of net zero policy and how it is interpreted and implemented by organisations. The models will demonstrate how net zero MSPs can be designed, built and maintained resulting in more effective organisational decarbonisation. MSPs and simple partnerships and their dynamic relationship will be detailed, followed by an explanation and critique of two key and complementary organisational theories: stakeholder and institutional. Both are well-placed to describe and interpret net zero's organisational challenges. They work independently of each other but can also be combined to maximise impact. One additional and important concept will then be introduced, that of the net zero MSP Boundary Spanner. The Boundary Spanner is an agency role that operates at the interface between organisational boundaries. As an MSP designer, builder and maintainer, the Boundary Spanner has the potential, under specific organisational conditions, to ensure that MSPs can be successful. The chapter will conclude by identifying literature gaps from Chapters two and three.

3.2 Theoretical and conceptual frameworks

The literature review has informed the framework models presented in this section and used in subsequent chapters. Frameworks 'are used to inform decisions and judgements about translation' (Milat & Li, 2017, p. 2) and assist the 'evidence-to-practice' transition. Why the **CMO** realism-based framework model (Pawson, 2006), was selected will be explained, and that narrative will be further developed in Chapter four.

A search for suitable framework models was undertaken by identifying experts in organisational strategy and public policy and understanding what tools and models they were using. This was approached by researching leading journals and consolidated handbooks, for example, Organizational Theory, Business Strategy and the Environment, Oxford Handbook of Organisational Decision-Making, then undertaking a literature search based on key words. It was also helpful to broaden the business specific search by investigating for example politics, environmental science and governmental studies. After extensive reading and analysis, models were located that were capable of translating research evidence into policy and practice in ways

that were appropriate for the scale of this study. For completion, models were excluded because they were overly complicated and needed more inputs than this study could deliver.

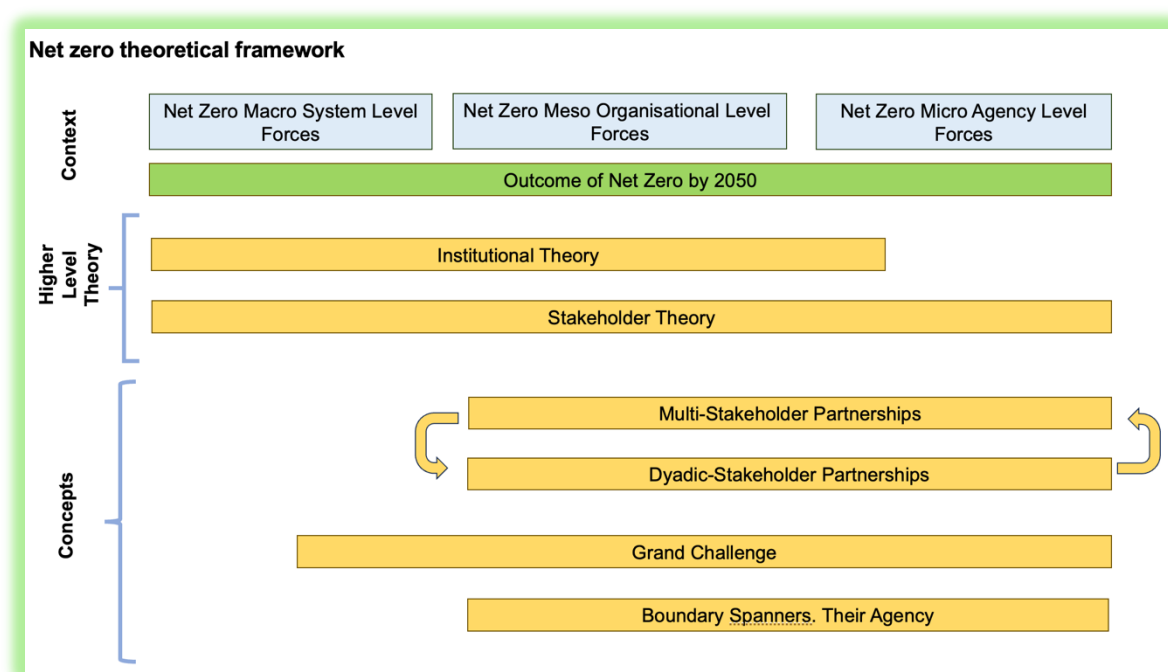
There were two aspects that were considered during the selection process. Firstly, evidence-based policymaking (EBPM). As Cairney (2015) details there is a need for structure in policymaking and his 'generative policy cycle' (2015, Chapter 2) is a good example of an approach that includes both policy agenda setting and implementation. Although his work does require post implementation analysis, which this study would not be capable of delivering, the foundations of EBPM were appropriate in this study. Again, for completion, the Knowledge to Action (KTA) framework (Graham et al., 2006) is also widely used. It follows a EBPM approach but is overly complicated and was ruled out because the study was searching for a simpler solution.

Secondly, philosophy was important. The work of Pawson (2006) was attractive because it joined both the principles of EBPM and philosophical realism based on a causal, explanation-based perspective; 'realism provides the most comprehensive account of principles and practice, theory and method, promise and limitations' (2006, p.17). EBPM is dominated by one question 'what works?' This is a causal question which challenges researchers to understand the effects that follow social interventions; the outcome of social interventions is change (Pawson, 2006, p. 21). Pawson's work endeavours to firstly understand **C**ontext and then by applying appropriate **M**echanisms drive **O**utcomes. His work is embedded in EBPM. Because this study was researching a real-world policy issue, a value-laden problem and one that was likely to require an understanding of how interventions effect change based on a set of enabling **M**echanisms, the realist EBPM **CMO** model by Pawson was selected as being a good fit. Furthermore, its inputs were manageable and appropriate for this study. The **CMO** model provided a solid foundation on which to build a more in-depth **M**echanism-based net zero MSP model and in Chapter four Pawson's work will be explained further.

3.2.1 Net zero MSP theoretical framework

Figure 3.1 presents the net zero MSP theoretical framework. This was constructed following the literature search which identified the important theories that were considered appropriate for this study and was shaped by the principle of **CMO**. *Net zero by 2050* is the **C**ontext and target **O**utcome for the study and is influenced by macro system, meso organisational, and micro agential level forces. At a macro system level, climate change and other environmental factors have a direct implication on the need to decarbonise and reduce global heating. Macro system level change is hard to effect and requires a range of other disciplinary inputs including technology, environmental science and politics. This multi-disciplinary approach is aligned to the principles of realism and Grand Challenge where there is a need to assess the issue

Figure 3.1 Net zero MSP theoretical framework. Source: Author's work



from multiple perspectives ruling nothing in or out (Pawson & Tilley, 2001) and provide different connections between ideation, action and outcomes that are cumulative in nature (Dorado et al., 2022). The meso organisational and micro-agency **Mechanisms** are of particular interest to this thesis and will be developed in more detail later in this chapter. Stakeholder and Institutional theory are two key high-level complementary theories that will be combined because they provide different perspectives on the organisation and help to support the development of net zero MSPs. These will be explained in sections 3.5, 3.6 and 3.7. A range of other concepts having differing levels of impact at the meso, and micro levels have been selected following the literature review and the gap assessment process. They are: MSPs and the dynamic interaction with DSPs which will be explained in sections 3.4; Grand Challenge, which was explained in Chapter two; the agency role of the Boundary Spanner which will be explained in section 3.9.

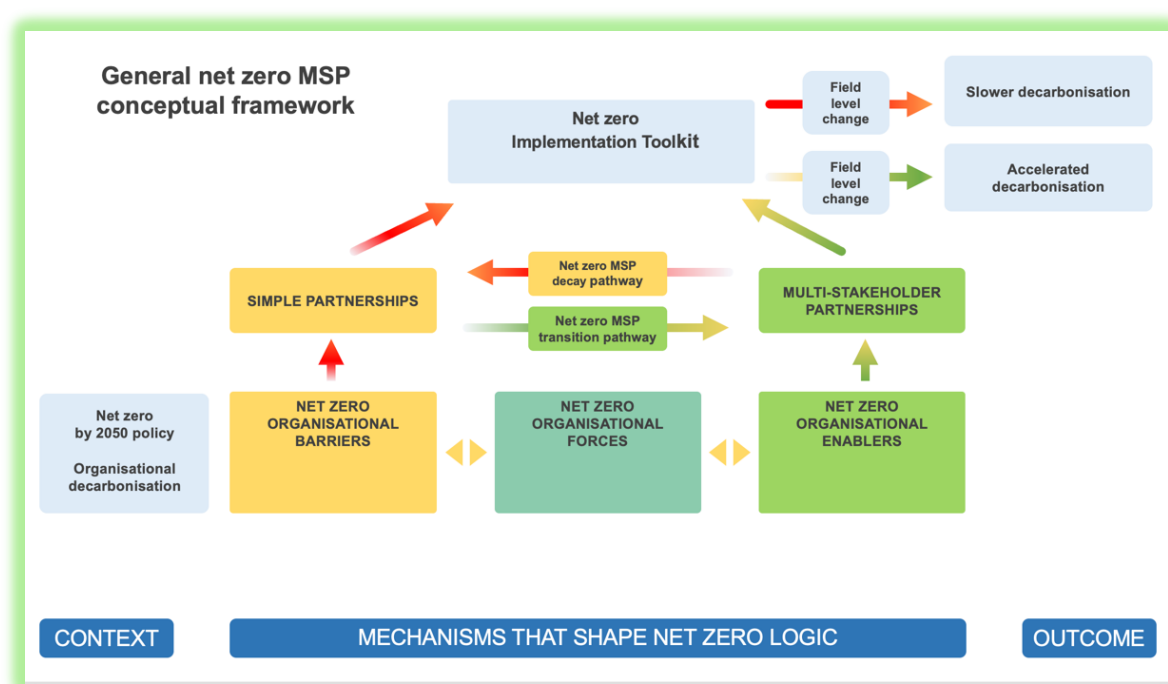
3.2.2 Net zero MSP general conceptual framework

This net zero MSP general conceptual framework, Figure 3.2, is also built on the principle of **CMO**, Pawson (2006) and was assembled following the extensive literature review and theoretical assessment. It details the roadmap from **Context** to **Outcome** and the high-level organisational **Mechanisms** that shape the net zero logic.

Chapter four will explain the **CMO** approach in more detail, as it influenced the methodology, but in summary this realist approach to evidence-based policymaking links together **Contextual** conditions with generalisable **Mechanisms** that produce a

successful **Outcomes**. **Context** is, in a realist sense, the understanding of causality and occurs when **Mechanisms** come into operation. **Mechanisms** explain causal relations, describe the powers inherent in the system and drive the interventions that are likely to have a ‘reasonable chance of repeating successful **Outcomes**’ (2006, p. 22). They act as the engine room and power the conditions under which MSPs can be enabled. In engineering, a **Mechanism** is a device that transforms input forces and movement into a desired set of output forces and movement. Similarly in this framework, the forces can operate in harmony or in opposition and act as enablers or barriers. **Context** is the *net zero by 2050* policy and how organisations are addressing decarbonising and assisting the transition to net zero.

Figure 3.2 Net zero MSP general conceptual framework. Source: Author’s work.



When in harmony, the enabling green pathway in Figure 3.2 is followed and MSPs are formed. When in opposition, barriers are established making it hard for MSPs to exist and, potentially, simpler partnerships are formed. There is a dynamic interchange between the simple partnership and the more sophisticated MSPs dependent on the barriers and enablers.

Inspiration has been taken from others’ work which has made it possible to synthesise the conceptual framework and inform the overall research design. Those influencers are notably: Cairney (2013) and John (2010), who both advocated combining theories as a way of advancing social science; M. D. P. Lee (2011), who combined stakeholder and institutional theory to understand CSR strategy; Hahn et al. (2015), who addressed the spatial and temporal issues associated with corporate sustainability; Wren & Simpson (1996), who introduced the dyadic buyer-seller relationship model;

and Gray & Purdy (2018), who are thought-leaders in the field of partnerships and the power of MSPs.

Chapter seven, as part of the conclusions, will populate Figure 3.2 and transform it from a general framework into a detailed and complete framework. That discussion, in light of the research findings, will concentrate on the **Mechanisms** that shape the net zero logic: the forces; the barriers; the enablers; and the partnership pathways.

3.3 The organisation, temporality, and sustainability

3.3.1 *The organisation*

Organisations dominate our everyday lives and every day they are faced with challenges that need to be overcome. They come in many forms. Small or large, privately or publicly operated, commercially orientated or community / charity focused. In 2024, as in 2007, 'organisations play a leading role in our modern world...in virtually every sector of contemporary social life' (R. W. Scott & Davis, 2007, p. 1). For organisational scholars and management research more generally, it has become important to understand how the organisations and the environments they operate in are 'constituted, reproduced and transformed through organisational action and relationships' (Lawrence, 1999, p. 1).

Scott, (1981, pp.24–28) described three organisational systems. Each has distinguishing features that differentiate it from other collective groups, for example a family.

- 1) A rational system. With its early focus on goal-directed systems, this approach emerged in the early twentieth century as industrialisation grew. It was a logical approach to how decisions were made and systematic in how information was managed and resources allocated. Rational systems can be bureaucratic and hierarchical and emphasise the need for continuous improvement through innovation and performance gains. Organisations that are rational have definite boundaries; it is clear where they stop, and another organisation starts.
- 2) A natural system. This is an informal structure that relies on emerging relationships between individuals or groups based on shared understanding. It is not about designing an organisation; it is about an organisation emerging. What sets natural systems apart is their focus on 'nonrational, informal and their moral bases of social conduct and cooperation' (Baum, 2007, p. 29). As with a rational system, natural system orientated organisations have clear boundaries.

- 3) An open system. One of the clearest differentiators to rational or natural systems is that an open system does not have clear boundaries. The focus is placed on the interdependence between organisations and environments. Open organisational systems can be hard to control, uncertain to manage and produce unpredictable outcomes.

Organisations are faced with competing and conflicting institutional logics, and these create a range of barriers and enablers (Besharov & Smith, 2014; Caldera et al., 2019; Oleson et al., 2023). These logics need to be managed, and enablers developed to allow the organisation to adapt to its new environmental circumstances. The work done by Oleson was specific to sustainability, and she established that the competing logics of commerce and professional services required specific actions to be taken to integrate sustainability into the organisation's business practices.

Gangadhari et al. (2023) were concerned with net zero and its impediments. They argued that with a transition as large and significant as net zero it was 'inevitably going to encounter obstacles' (2023, p. 1). Their quantitative study investigated the interdependent relationships of those barriers and identified that economic barriers are the most significant, followed by organisational and technological ones. Policy and framework obstacles were least important, which is quite surprising when one considers that net zero is fundamentally a policy-led agenda frequently influenced by political events. A key organisational finding is that when a barrier emerges it needs to be addressed immediately, and enablers found. This principle is highly related to one of the key pillars from Grand Challenge, obstacles. Similarly, obstacles need to be manoeuvred around and enabled if Grand Challenges are to be mitigated. Using the key components from stakeholder theory and institutional theory it is possible to frame the enablers as positive drivers for change if managed appropriately, and negative destabilising barriers if not. They have a duality.

3.3.2 *Temporality*

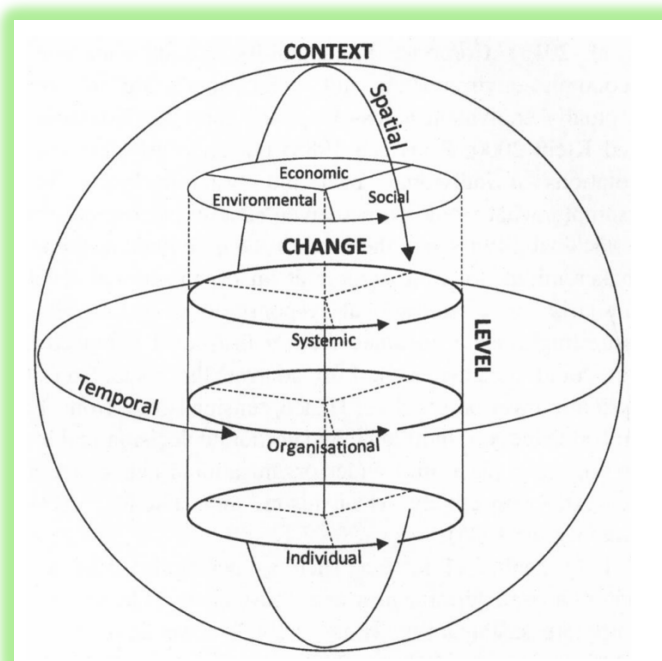
Resolving a Grand Challenge requires organisations to think differently and take novel approaches. There is a need for flexibility, approaching the problem in a non-linear way, and managing the radical uncertainty in ways that reimagine the future (Ferraro et al., 2015). Therefore, temporality is relevant to a Grand Challenge. The same is true for the organisation: 'Time has become an increasingly central consideration in the field of business and society in understanding the human–nature relationship and explaining organisational responses to climate change' (Nyberg et al., 2022, p.8). This suggests that organisations must break free from historical constraints breaking old path dependencies based on previous organisational experiences, and try to reimagine what a new vision of the future may look like (Adam, 2008; de Groote & Kammerlander, 2022). In this way change is possible.

Path dependency maintains that ‘history matters’ (David, 1985). Past events or decisions may constrain later events or decisions and ‘previous events affect the probability of future events occurring’ (Boschma & Frenken, 2006, p. 10). How those paths are interpreted can affect how new paths are created by organisations. Sometimes paths are so entrenched that it is just impossible to break free from them to reshape future paths. An example of this is the QWERTY keyboard, which is neither ergonomic nor logical, but to change keyboard layouts globally would involve significant economic disruption and re-education.

It can be argued that time is socially constructed and only experienced through the actions and interpretations of actors ‘that assign meaning to the events or cycles’ (2022b, p. 10). The concept of process time highlights how our experience of time is subjective rather than objective (Ancona et al., 2001) and ‘based on its embeddedness within a particular [organisational or societal] context, which is dependent on individual and collective norms, beliefs, and customs and its material effects’ (Orlikowski & Yates, 2002, p. 696). Therefore, although time is taken for granted, there is a need for organisations to apply the concept of temporality to climate change and net zero. Using time as a different lens through which to view how organisations and partnerships should function can potentially unlock some of society’s challenging problems (Ancona et al., 2001). Hahn et al. (2015) considered corporate sustainability to be both a spatial and a temporal organisational challenge and, through their framework (Figure 3.3), identified and analysed tensions in the subject.

Figure 3.3 Sustainability tensions: Temporal and spatial context

Source: (Hahn et al., 2015)



Organisational routines and the interrelation between individuals and organisations can be stuck in the past. It takes time and effort to break them down and form novel approaches. This is highly relevant to how business and society tackles climate change and net zero: modern technologies may be helpful, behaviours may need to change, new ways of working may be required. These may be uncomfortable for organisations, and hard to do, but necessary. Institutional theory and practices are well-placed to effect this change, and this theme will be detailed in section 3.6.

The future is also important to the present. Anticipation is all about the future, and frequently parents hope that the future will be better for their children than the present (Hoang et al., 2024). Most citizens and organisations hope that global warming can be resolved, decarbonisation can be accelerated and net zero delivered; opinion polls support this (Byline Times & Omnisis Polling, 2023; YouGov, 2023, 2024). However, it seems extremely hard to do. Breaking political ideologies, gaining widespread and deep consensus, facilitating effective organisational partnerships and getting ahead of the required decarbonisation trajectory to deliver net zero, is hard to do.

Finally, for organisational partnerships to form and work effectively, a strong collective sense of the future is necessary to shape the present. Adam (2008) clearly states that humans have agency and so can have a real effect on the future. This non-determinist stance (different results from the same starting position) allows an argument to develop that says there is an 'open future' (2008, p. 112), in which our understanding of the past can be used to rethink what is possible in the future. Adam & Groves (2007) call this the 'Present Future' as opposed to the pre-ordained 'Future Present'. By destroying old path dependencies and reimagining net zero scenarios that have an 'Open Future' it may be possible for organisations to innovate and accelerate to net zero.

3.3.3 *Sustainability and CSR*

Sustainability takes the widest possible view about planet Earth. It is concerned with climate change, biodiversity, resource protection, health, poverty and social justice, as key examples, and is summarised by the UN SDG's mission statement which states its goal as 'A shared blueprint for peace and prosperity for people and the planet, now and into the future' (United Nations, 2024). For organisations, sustainability presents stakeholders with a set of tensions and difficult complex decisions that are sometimes irreconcilable, especially between those that are economically and ethically centred.

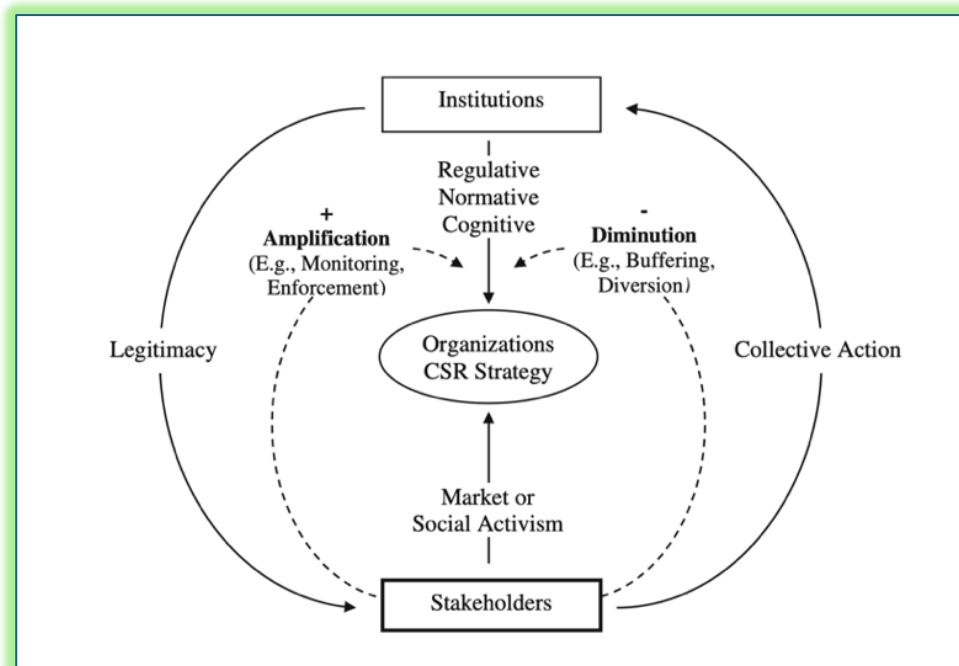
In 1997 The Triple Bottom Line was proposed (Elkington, 1997). This suggested that the firm should address the economic and sustainability outcomes, especially those concerned with the environment and social outcomes, simultaneously. This implied that succeeding on one of these outcomes could potentially be detrimental to one of

the others, and there could be an elevated risk of 'unintended consequences' (Hahn et al., 2015, p. 298). Van Der Byl & Slawinski (2015) investigated the nature of the resulting trade-offs and the embedded tensions and made a valuable contribution through paradox research. They recognised that 'corporate sustainability is rife with tensions' (2015, p. 55). Following an extensive literature review they proposed four strategic lenses through which to view and understand the tensions: win-win, trade off, integrative and paradox. Win-win aims to reconcile the three outcomes, trade off requires conscious choices to be made, integrative aims for balance, whilst paradox tries to understand the challenges in more depth and 'generate creative approaches' to solve them. Paradox is closest to the pragmatic reality of Grand Challenge which also aims to be both flexible and innovative. Their work is important and helpful when trying to reconcile the multiple inherent tensions resulting from corporate social responsibility (CSR).

CSR is a self-regulating framework and umbrella term that connects the firm's social, environmental and profit-related ambitions with its accountability to stakeholders. It is concerned with sustainable business practices that aim to enhance the impact of the organisation and minimise its environmental and social impacts. This is a wide area and includes how it extracts and procures its raw materials, how it manages its supply chain and reduces its GHG emissions, its employment practices and how it acts fairly and ethically to every stakeholder and finally its approach to charity giving and philanthropy. A positive CSR strategy can play a significant role in improving an organisation's reputation and image. It is an expected behaviour of the organisation to improve society, but this is not always a key trait or priority for business leaders. Stakeholders and managers can be sustainability disconnected and misaligned and this can lead to tensions that are understandable but difficult to reconcile. 'Corporate sustainability involves the simultaneous recognition of varying, but often conflicting demands of a wide set of stakeholders' (Clarkson, 1995; Hahn et al., 2015, p. 299). CSR attempts to tackle these tensions, and Schwartz and Carroll have been instrumental in developing the CSR agenda for business (2015, 2007). M. D. P. Lee (2011) proposed a theoretical framework, as shown in Figure 3.4, that combined stakeholder and institutional theory to explain how organisations select their CSR strategies. This was one inspiration for the author's decision to combine the two theories to explain how organisations are addressing net zero. The framework demonstrates how stakeholders draw legitimacy and power from institutions and the latter are activated through stakeholder **Mechanisms**. Although the two dimensions are independent, they can work together to shape and form actions.

Figure 3.4 Institutions and stakeholders in CSR

Source: (M. D. P. Lee, 2011)



3.4 Multi-Stakeholder Partnerships and Dyadic-Stakeholder Partnerships

3.4.1 MSPs: Multi-Stakeholder Partnerships

MSPs are an advanced form of partnership involving three or more state and non-state actors and are increasingly being deployed to resolve society's complex Grand Challenges. For example, the UN Global Compact is a global action orientated MSP movement comprising state and non-state actors. It coordinates organisations across the breadth of the UN SDGs and is trying to resolve issues surrounding hunger, poverty and health. In the UK, the Tony Blair Institute for Global Change is an MSP based organisation 'connecting visionaries and driving change...real change requires true collaboration' (TBI, 2024). However, the evidence from this research suggests that MSPs are challenging to design, operate and maintain. This section will explain in detail what MSPs are and how they can assist in developing a meaningful organisational solution to accelerated decarbonisation and net zero.

MSPs are 'broadly defined as a collaborative form of governance involving mainly business actors and civil society organisations that come together to find a common approach' (Dentoni et al., 2018, p.333). They can also be called cross-sector partnerships, and they span a wide array of institutional structures that encourage actor collaboration. The partners enter alliances to pool resources and share risks, costs, and benefits. By combining their skills and resources they hope to work more

effectively and faster than operating as a single entity. They provide both authority and capability and their rise can be seen because of governments cutting budgets and privatising core services. MSPs have been described as ‘third-party government’, ‘in which nongovernmental actors are enlisted to achieve public purposes’ (Bryson et al., 2006, p. 44; Salamon, 2002, p. 12). They have been framed as providing private governance or ‘governance with and without government’ (Mena & Palazzo, 2012, p. 527) and they strive for legitimacy based on their procedures, ways of working, effective governance, and accountability (2012, p. 549). They cannot be a ‘substitute for government action’ (Gray and Purdy, 2018, pp.34–35) but they can be a creative and effective means of tackling difficult and pressing problems. MSPs are constantly striving for legitimacy based on balancing inputs with outputs (Mena & Palazzo, 2012, pp. 537–541). Table 3.1 below details those criteria and cites examples from real life MSPs to support the importance of the work in real life situations.

Table 3.1 MSP input and output legitimacy: Criteria and examples

Input or output	Example criteria	Real life example
Input	Stakeholder inclusion	UN Global Compact operate a ten-step country by country stakeholder plan that accommodates local culture, language and stakeholder style.
	Procedural fairness	Collaboration agreements are important to the UK’s Department for Rural Affairs when forming environmental partnerships.
	Consensus and co-operation	The UK employment arbitration experts ACAS operate a consensus workplace forum to build consensus and promote partnership co-operation.
	Transparency	FasterCapital build global venture capital partnerships. They have a nine-step transparency approach underpinning stronger partnerships.
Output	Key performance indicators (rule target coverage)	The UN developed a 2022-25 partnership strategy for Mexico. Built on the SDG’s it framed a set of rules and operational targets.
	Efficacy – do the rules work?	As part of the UN Mexico strategy, they defined what success looked like.
	Compliance and rule enforcement	Governance of the Mexico strategy defined a risk and quality assessment for acceptable partnership performance.
Sources: (UN Global Compact, 2024); (DEFRA, 2021); (ACAS, 2024); (FasterCapital, 2024); (UN, 2022)		

Segmenting the term MSP identifies firstly, that this is a conversation about stakeholders; secondly, it is about multiple stakeholders; and thirdly, it is about how

they work together in collaborative partnerships. Each of these conversations is difficult and they significantly change the focus and purpose of the partnership arrangement from shareholder primacy to stakeholder primacy; value creation is for all stakeholders rather than just those with a financial interest. In the context of partnerships, 'stakeholder' has a slightly different definition than the way the term is used in stakeholder theory, where the focus is on the firm. In partnerships, stakeholders have a shared interest in a domain or problem. Even simple partnerships are challenging. They require prominent levels of effort and trust and hope to achieve rewards.

Collaboration is at the heart of any MSP, and it is important to be creative about how to design the partnership and be open to other perspectives and their challenges; overall MSP collaboration requires 'new strategies for managing interdependence' (Gray, 1989, p. xviii). Partnership development can also be thought of as negotiated order and 'symbolic interaction' (Day & Day, 1977, p. 127). These negotiated institutionalised fields, or networks of organisations, get together to tackle 'recognisable areas of life' (Dimaggio & Powell, 1983, p. 36) and can be described by their logic; what is done and how it is done. MSP actors are located within and between institutional fields and 'have the potential to institute field level changes' (Gray et al., 2022a, p.2; De Bakker et al., 2019) to resolve complex problems.

MSPs are voluntary in nature and are increasingly important in addressing complex social, sustainability and environmental challenges both globally and locally. They create governance systems between state and non-state actors in both the private and public sectors. When multiple stakeholders engage in initiatives through partnerships, they do so for multiple reasons including to '...achieve a common purpose, pool core competencies, share risks, responsibilities, resources, costs and benefits' (Utting & Zammit, 2009, p. 40). MSP creation is often a dynamic process. The partners are having to manage ambiguity and situations that are open to elevated levels of change. Projects may not be linear, nor logical, and require creative thinking, problem solving innovation and organisational agility (Gray and Purdy, 2018). Developing collaborative, co-operative capacity is key to a successful MSP. This comes through partners being integrated, having highly aligned agendas, and members being committed through shared agency. If these are not present, problems can occur (Vayaliparampil et al., 2021, p.16). They are 'not a panacea' and 'the problems that coalesce stakeholders often involve conflicts and power struggles over values, ends, and means' (Gray & Purdy, 2018, p. vi). Gray et al., (2022) identified that power disparities are a key determinant to the success of 'challenging societal problems'. If power dynamics are neglected in favour of focussing on delivery and outputs, it can seriously affect the project's efficacy. Examples include a) critical stakeholders being excluded from discussions, b) powerful stakeholders being exempted from rule and agreement compliance, c) low power stakeholders disproportionately bearing the implementation costs. As a result, power difference 'may impede or disrupt effective collaboration in partnerships' (Gray et al., 2022a,

p.15) resulting in creating only superficial rather than substantive change (2022a, pp.14–15). MSPs are not a magic bullet for success, and amongst other reasons, they often fail due to actor power imbalances (Gray et al., 2022a, p.3). When actor relationships fail, field level disintegration will follow. MSPs will decay to simpler partnerships that are likely to be easier to manage, control and resource.

Over the last two decades MSPs have increasingly been used to help address the challenges of sustainability; this growth has been ‘exponential’ (Gray & Purdy, 2018, p. 131). Neither the UK state, businesses nor NGOs individually have sufficient resources or skills to mitigate the risks of climate change and achieve net zero (Reay, 2023). Consequently, a new form of governance structure called ‘collaborative governance’ is necessary. This is defined as ‘a set of legitimate and authoritative relationships and processes that define public goals and stimulate collective action’ (Waddell and Khagram, 2007, p.262). This net zero Grand Challenge could therefore significantly benefit from multiple stakeholders working together in a ‘web of relationships between multiple organisations’ (van Meerkerk, 2014, p.14). These type of MSPs are an ‘essential vehicle for solving complex societal problems’ (Vayaliparampil et al., 2021, p. 1) and are common in sustainability, environmental degradation, and climate change. They have many labels including governance networks (Krogh, 2020; van Meerkerk and Edelenbos, 2018; van Meerkerk, 2014), cross-sector social partnerships (Selsky & Parker, 2005), multi-stakeholder initiatives (Banerjee et al., 2020; De Bakker et al., 2019) or a public-private partnership (El-Gohary et al., 2006). MSPs are seen as a way of ‘reducing uncertainty, acquiring resources, and solving local and global problems’ (Gray et al., 2022a, p.1). MSPs have the scale to deliver the level of necessary change that net zero requires, but simpler Dyadic Stakeholder Partnerships (DSPs) need to be considered in the context of being easier to manage.

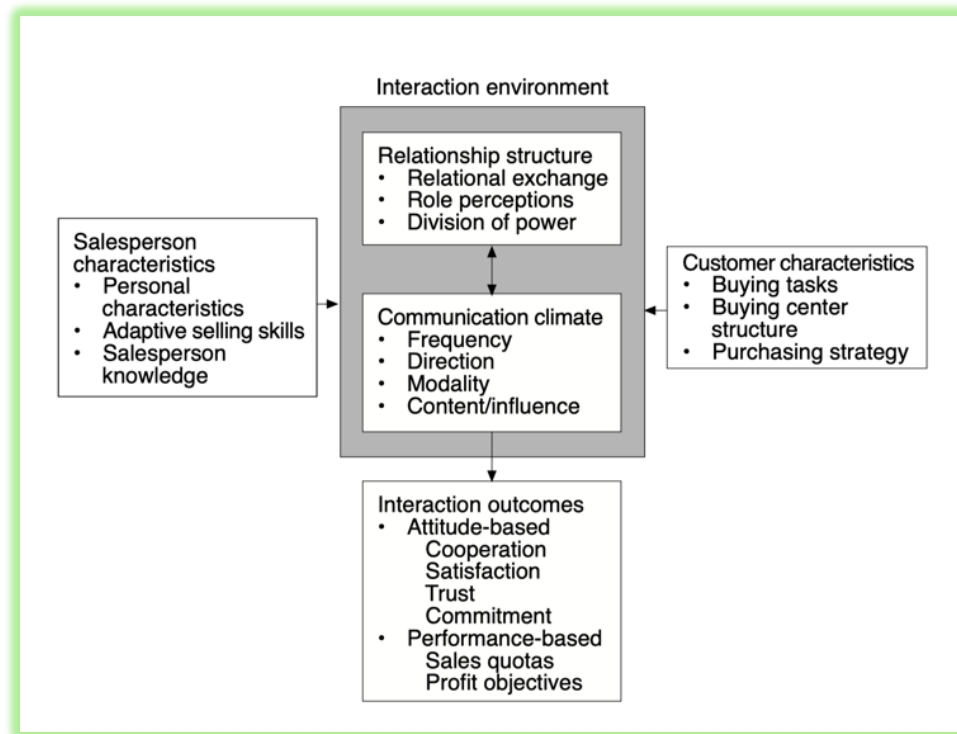
3.4.2 DSPs: Dyadic-Stakeholder Partnerships

Simple dyadic arrangements are used to resolve a common objective where a buyer and a seller come together in a two-party exchange (Wren & Simpson, 1996). Their work was concerned with the transformation from short-term transaction-based relationships into longer-term partnerships, and they identified a wide range of components to synthesise a model of buyer and seller relationships. This is shown in Figure 3.5.

Dyadic as a term is commonly used but has not been used to describe a partnership. Others have referred to ‘dyadic’ in exploring the relationship between businesses and NGOs as an institutionally normalised solution. It has the potential for both negative and positive outcomes based on an understanding about the tensions between the parties (Martinez, 2023). A dyadic perspective has also been taken to explain a long-term, hybrid organisational relationship in a public-private partnership (Caldwell et al.,

2017). Bishop & Waring (2016) have used the term to identify tensions in institutional logics, again in hybrid organisations, and explain how those difficulties are navigated to develop a negotiated order. But to reiterate, dyadic has not been used as a stakeholder partnership term.

Figure 3.5 Wren and Simpson dyadic model (1996)



The thesis takes an original approach and proposes the term Dyadic-Stakeholder Partnerships (DSPs) as a way of describing a partnership arrangement between two organisations who are transactionally working in a cooperative arrangement to solve a problem. The thesis accepts that net zero DSPs are an appropriate structure, but they fail to have the necessary scale to accelerate decarbonisation and achieve net zero. Therefore, the net zero DSP to MSP transition, facilitated by a range of **Mechanisms** and enablers, is the proposed solution for net zero. The theoretical and conceptual frameworks integrate this transition into the models. Chapter five will identify conditions under which DSPs operate, and Chapter six will analyse this and explain what this means. Overall, there is a need to maximise the organisational drivers, and minimise the organisational barriers by using a range of organisational enablers.

3.5 Stakeholder theory

At the heart of every organisation are its stakeholders. They come in many forms, some internal, some external, and possess varying levels of power and influence. Section 2.10 detailed net zero's key stakeholder groups. Stakeholder theory was therefore an automatic choice when selecting an appropriate organisational theory capable of furthering the understanding about MSPs. This section explains how the forces from the attributes of stakeholder theory can act as organisational enablers or barriers. Enablers are **M**echanisms that shape the positive organisational outcomes of the organisation including its strategic direction, culture, and operations, whereas barriers are obstacles or impediments that hinder its ability to achieve its outcomes. Appendix eight details the key stakeholder theory literature.

Explaining how power is exercised is a useful complement to stakeholder theory because power can be obvious and subtle. In section 3.5.3 stakeholder theory and power theory will be discussed, mainly referencing Lukes' (2005) seminal work. Power has already been evidenced in Chapter two when discussing the CCC's legal powers over the UK Government's climate plans. For this reason, the three faces of power are explored more explicitly than just as a single attribute of stakeholder theory.

3.5.1 *What is stakeholder theory?*

Stakeholder theory has emerged as an important management and organisational theory. It advances the idea that all stakeholders are important to the organisation when making key decisions. Rather than decisions being purely economically motivated they ideally need to be based on a more balanced collective view that shapes strategy and actions.

Freeman's (1984) classic work 'Strategic Management: A Stakeholder Approach' introduced the concept of the stakeholder, and their relationships inter- and intra-organisation. Stakeholders are individuals or groups who have some form of tangible or intangible interest in the outcomes of an organisation and on whom the organisation relies directly or indirectly to achieve those aims. Freeman described a stakeholder as 'any group or individual who can affect or is affected by the achievement of a corporation's purpose' (Freeman, 1984, p. vii). 'Stakeholders include employees, customers, suppliers, stockholders, banks, environmentalists, government, and other groups who can help or hurt the corporation' (1984, p. vi). If, rather than tasks, the stakeholder relationship is used as the central unit of strategic analysis, executives are better placed to deal with their challenges. Stakeholder theory was developed as a way of redefining relationships between business strategy, value creation, decision-making, relationship forming, and tension/conflict resolution. As many decisions have stakeholder consequences, an ethical and moral dimension has become core to stakeholder theory (Gibson, 2000).

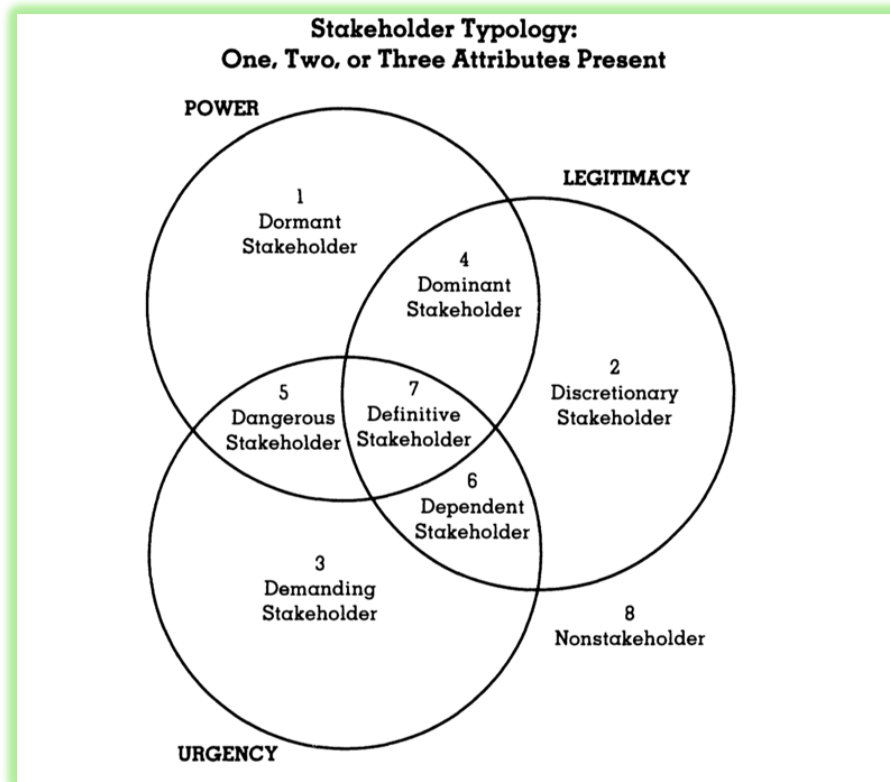
Donaldson & Preston (1995) advanced stakeholder theory by creating three pillars of managerial interests based on descriptive, instrumental, and normative intent. Descriptive concerns what managers do. Instrumental identifies connections between stakeholder management and corporate objectives. Normative is concerned with what managers should do. The latter connected stakeholder theory to two contrasting moral theories of utilitarianism and deontology. Deontology, or what is right and wrong, has become an important business agenda in sustainability, the environment and corporate social responsibility.

Mitchell et al. (1997) identified three key stakeholder attributes: power amongst actors, legitimacy of desirable or proper actions, and urgency of stakeholder claims. Stakeholder typology provided a powerful way of characterising stakeholders dependent on their attribute mix. By presenting the three attributes in a Venn diagram, as shown in Figure 3.6, the concept of stakeholder identification, typography and salience was born. Eight stakeholder groups, based on the balance between the attributes, were characterised, for example: those with high power and high urgency are dangerous; those with high power and high legitimacy are dominant; those with high legitimacy and high urgency are dependent. Stakeholders can be clearly classified, and their underlying motivations identified, and it is argued that if managers are clear about the stakeholder roles it will be easier to manage the firm and drive a unified, aligned agenda. This attribute concept is important in CSR as it can identify who matters to managers, and overlooked and undervalued stakeholders (Wood et al., 2021, pp. 197–201).

Proximity was added as a fourth attribute: 'Proximate stakeholders are those related to the organisation spatially, such as members of the same network or value chain, local customers and communities and the natural environment' (Driscoll and Starik, 2004, p.63). The environment has both spatial connection with businesses and provides the physical context in which they operate daily. The environment is therefore a proximate stakeholder. Fineman and Clarke (1996) categorised environmental stakeholders into four key groups: Those with an interest in protecting planet Earth and a 'green' environmentally orientated agenda; those responsible for the regulation of the environmental state; those with green interests as suppliers, customers, or financiers; and internal stakeholders including employees. Those firms with prominent levels of environmental stakeholder awareness and cognisance organise themselves in a unique way and the alignment of stakeholder interests makes it easier for socially-purpose-driven strategies to flourish.

Figure 3.6 Stakeholder typography

Source: (Mitchell et al., 1997)



Finally, Stakeholder theory is a complementary yet also divergent theory to the resource-based view (RBV) of the firm. The latter is associated with strategic management whereas the former is about social responsibility and business ethics. The two theories initially had contrasting views about the role of shareholder interests. However, Freeman, et al (2021), have revisited the integration of RBV and stakeholder theory and their helpful combined approach concludes that 'RBV and stakeholder theory are both fundamental theories in management...RBV, in its current form, is incomplete and can become a more comprehensive theory by incorporating four essential elements from stakeholder theory' (2021, p. 1767). These elements are normative (the values, norms, and ethics our society is built on); sustainable competitive advantage (born out of sustainable stakeholder relationships); people as stakeholders (valuable assets, bring useful resources); and sustainable co-operative advantage. 'We believe their greatest potential is in their combination' (2021, p.1767). These four elements align well with this thesis's objectives and validates the use of stakeholder theory as a key theory, but the author is sensitive to the criticism of stakeholder theory.

3.5.2 *Stakeholder theory's critics*

Stakeholder theory does have its critics. Freeman himself is highly aware of its limitations and tensions. He advocates a pragmatic and flexible approach to its use and suggests applying stakeholder theory with other theories from strategic management to produce better and more interesting insights (Freeman et al., 2020). This was one of the reasons that the author chose to combine stakeholder and institutional theory. Other critics, mainly economists and lawyers, say that shareholders should have primacy and the broader stakeholder agenda undermines the need to maximise shareholder value. This economic argument also suggests that stakeholder theory dilutes accountability. This has been an observed theme identified through the research and will be returned to in later chapters, but at this stage the author would argue that a balance should be struck between financial benefit at all costs versus the wider sustainability agenda. Finally, stakeholder theory does attract significant ethical criticism. At its most extreme the modern-day complex corporation is just not capable of engaging with every stakeholder and listening to their perspective; 'ethical distance of managers from the sensibilities of individual shareholders lies at the root of many of the moral complaints levelled at the corporation' (Mansell, 2013, p. 160). The author would argue that good managers should be highly attuned to the key stakeholder groups and be capable of engaging in and being highly cognisant of ethics. If they are ignored, they have the potential to quickly undermine the organisation, as BP experienced following the Deepwater Horizon catastrophe (US Coast Guard, 2010).

3.5.3 *Stakeholder theory and power: How they engage*

Stakeholder theory explicitly discusses power as a key attribute. In net zero, stakeholder power is both important and subtle; its sources and influence can be hidden. It can, however, become an overwhelmingly powerful force on the organisation dominating urgency and legitimacy. Net zero is an urgent issue for planet Earth, but organisations can choose to deprioritise the subject or even ignore it. As an example, ecomodernists believe that at some point in the future innovative energy management solutions will save society from the consequences of global heating and therefore it is possible to focus on other serious threats and reduce the urgency of decarbonisation in 2024 (Symonds, 2019, pp. 54–56). Equally, legitimacy may be only superficial or even false, hidden by other competing priorities or politics. The causes may be embedded in hidden organisational power arrangements. For these reasons power deserves special focus.

Lukes' Power, a radical view (2005), challenged the accepted wisdom that power is a simple blunt instrument that individuals or organisations can use to gain an advantage. His view was that power is embedded in social structures and is a fundamental shaper

of society. His three-dimensional power perspective challenged previous pluralist views about power; A has power over B, that forces B to do something they would not have previously done. He developed this further by challenging the more advanced A vs B model where there is a potential for sanctions and coercive power based on authority. Lukes' critique of others' work identified a third dimension centred on 'potential issues that are kept out of politics, whether through the operation of social forces and institutional practices or through individuals' decisions. This can occur in the absence of observable conflict ... what one may have here is a latent conflict' (2005, p. 28). In effect it is hidden power and not observable, but it has the potential to fundamentally shape social structures and manipulates consciousness.

Net zero is continually faced with situations of stakeholder power and examples where A has power over B have been cited in Chapter two. But power as a net zero organisational driver and shaper, and as a real object that operates through the four planes of social being, has the potential to influence net zero in hidden and latent ways. This has been characterised as 'midstream green action' (Park et al., 2023) and involves nudge theory (Thaler & Sunstein, 2009). Smart meters installed in homes are a good example of this. This voluntary installation encourages customers to be more energy-efficient (Advizzo, 2021). The generalisable point is that institutions arguably need to be smart and creative when trying to modify net zero decarbonisation citizen behaviour. Rather than enforcing rules and regulations blatantly through power over **Mechanisms**, where party A mandates party B to act with a penalty if they do not conform, more subtle approaches may be more appropriate. For these reasons Lukes' three-dimensional power theory is highly relevant to stakeholder actions.

3.6 Institutional theory

Institutional theory is a diverse body of work that has undergone notable change since it was originally developed in the 1950's and 1960's. Appendix nine details the key literature used in this thesis. Max Weber was interested in bureaucracy and authority, and Parsons, Selznick and Gouldner were concerned with how organisations relate to external environments. The term institutional originally referred to the way that organisations related to external partners as a way of gaining resources. Parsons viewed the organisation as being part of a wider social system or society that operated on three functional levels: technical production, managerial control, and institutional external relations (Parsons, 1956, pp. 228–229). The latter relationship provided legitimacy which is a central theme of modern institutional theory.

Over time institutional theory has gone through significant transformation from a focus on power to one of cognitive habit-forming and learning. Old institutionalism focuses on issues of 'conflicting interests and values, and power and influence at the local community level' (Lawrence, 1999, p. 1). This emerged from two significant case studies: Selznick's (1949) study of the Tennessee Valley Authority, describing how local

interest groups were persuaded to support the project, and secondly Pferrer's (1974) study about a regional electricity utility board of directors who gained local political support. New or neo-institutionalism is associated with routines and patterns of repeated action. Habit formation produces isomorphism and the pressure for conformity within a field, resulting in sets of homogeneous organisational forms (Dimaggio & Powell, 1983). Isomorphism is 'a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions' (1983, p. 149).

Since the mid-1990s new institutional research has adopted a stronger focus on agency. 'Institutions and agency are essential concepts within institutional theory' (Abdelnour et al., 2017, p. 1775). Old and new institutionalism are also methodologically divergent. Old institutionalism focuses on processes inside the organisation, whereas new institutionalism focusses on processes that occur between groups of organisations that work together, frequently referred to as the 'organisational field'.

Often, the institutional environment can strongly influence how formal organisational structures are shaped and formed, more so than external market forces. Dimaggio and Powell concluded that the net effect of institutional pressure is to 'increase the homogeneity of organisational structures in an institutional environment' (1983, p. 149).

3.6.1 What is institutional theory?

At its core, institutional theory explains how organisations and management practices are the result of social rather than economic forces and it acts as a strong balancing theory to stakeholder theory. It recognises that institutional forces shape organisational systems, and the social order is created out of social norms and rules that affect the actions of actors. According to Scott, R (2005, p.462) 'such behaviours are not so much socially influenced as socially constructed'. J. W. Meyer & Rowan (1977) argued that formal structures in organisations 'dramatically reflect the myths of their institutional environments instead of the demands of their work activities' (1977, p. 341) and that these myths are embedded in the institutional environment. Therefore, institutional theory is concerned with how organisational changes are driven less by formal structural considerations and more by symbolic actions and external coercive influences. It explains the external forces on a firm and their resulting behaviours. Institutional experts argue that the firm's behaviours are influenced by the institutions they are surrounded by and how that environment shapes and forms the legitimate social choices that the organisations make. However, those choices are not endless and 'action is not a choice among unlimited possibilities, but rather among a narrowly defined set of legitimate options' (Wooten et al., 2016, p. 3).

Institutionalisation can develop at the point where the organisation is aware of its dependence on the external environment, resulting in a change in the way it perceives and feels about itself. Once this has happened and been accepted within the organisation, the internal actors understand their role and the organisation's expectations of them. This in turn creates responses designed to maintain or gain legitimacy and this happens through isomorphism.

DiMaggio & Powell (1983) developed a variant on the theory, arguing that 'network connections make organisations more similar without making them more efficient' (1983, p. 147). Organisations with the same pressure will adopt similar strategies or logics to gain legitimacy. This transmitted isomorphic pressure can be Coercive (regulatory), Normative (social 'good citizen' pressure) or Mimetic (mimicking competitor behaviour).

The ontological roots of institutional theory are about the gradual, widespread acceptance of ideas and practices which over time are taken for granted, legitimised and institutionalised (Dacin et al., 2002; DiMaggio & Powell, 1983). It is concerned with situations where 'context is strong and binding, yet subtly experienced ...where agency is often diffuse, embodied in an arrangement or system of actors rather than in an individual' (Jennings et al., 2016, p. 1). A good example of this is the complex web of relationships that exist between institutions, private and public sector organisations, and the natural environment. It requires collective agency and changes at the macro, meso and micro levels to make a real difference. Institutional theory has been used in proactive environmental strategy studies to identify the coercive pressures from regulation, customers, and competitors as critical factors that motivate firms to go beyond what is necessary in order to maximise their legitimacy and acceptance from society (Li et al., 2023, p. 6107).

Central to institutional theory are the concepts of organisational logics and fields and they help to explain how organisations operate. P. H. Thornton & Ocasio (1999) investigated how power and authority shape internal organisational politics and succession planning. They assessed that, rather than authority being driven by demographic and structural characteristics of boards and senior managers, it was driven by 'the sources of power...its meaning, and its consequences which are contingent on higher-order institutional logics. Institutional logics define the rules of the game by which executive power is gained, maintained, and lost in organizations' (1999, p. 802). In effect, institutional logics are a set of belief systems or 'taken for granted social prescriptions that represent shared understandings of what constitutes legitimate goals and how things may be pursued' (Battilana & Dorado, 2010, p. 1420; W. R. Scott, 1994). They characterise how 'a particular social world works' (Jackall, 1988, p. 112), fundamentally shape the organisational beliefs and operational practices of the firm, and can be used to track the development of the organisation in the specific logic over time. Institutional logics are both symbolic and material and can

be formally embedded in the organisation or they can be more informal, almost hidden within the organisation but generally accepted as the way things get done (Friedland, 2012, p. 589).

The change processes involved in modifying either the formal or informal can take considerable effort and time. As was discussed in section 2.3 when describing net zero as an institutional logic, multiple competing logics frequently interact and there is a need to search for at least initially compatible components from the multiple logics. Oleson et al. (2023), have shown how enablers and barriers are created as different institutional logics interact. When aligned they create enablers, and when in competition they create barriers. Although this may have limited initial impact, it will build organisational confidence which can then be used to advance to more complex challenges (2023, pp. 19–21). When faced with challenging change-based projects, an arbitrage process may be necessary, where each logic is compared, and minor differences carefully assessed. From this the collective logic can be exploited to generate valued organisational outcomes (Perkmann et al., 2022).

Institutional fields are communities of organisations that interact more ‘frequently and fatefully’ with one another than with actors outside the field (W. R. Scott, 1994, pp. 207–208). An alternative definition is provided by DiMaggio and Powell (1983, p.148) as ‘those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organisations that produce similar services or products’. Those that operate in an institutional field tend to be connected in some way either through their subject matter,

a structural connection or a shared meaning. This is relevant to the thesis because MSPs are a form of institutional field. Field level analysis is used to study the dynamics and power relations that operate within institutional fields.

Hoffman and Devereaux (2015) state that ‘Institutional theory emphasizes environmental problems as being not primarily technological or economic in character but behavioural and cultural’ and that ‘While technological and economic activity may be the direct cause of environmentally destructive behaviour, it is our individual beliefs, cultural norms, and societal institutions that guide the development of that activity’ (2015, p. 9). They develop a detailed argument that questions how society will resist, or transition to, a new set of social values in the face of a fast-changing Anthropocene. Although no single event will create a fundamental disruption in the institutional order, a multiple set of climate events may create revolutionary change. How will the institutions change, adjust, and adapt in ways that develop both conformity and legitimacy and shift away from economic performance? The complexity of environmental problems may require new methodological approaches and neo-institutionalism thinking that focus on isomorphism and the processes that occur between the organisations as they work together.

3.6.2 *Institutional theory's critics*

Institutional theory is not without its critics who highlight certain weaknesses which the author suggests are not insurmountable. Critics include Munir, (2020); Alvesson and Spicer, (2019); Dacin et al., (2002). Institutional theory has been criticised for over-emphasising homogeneity and isomorphism, and for being selective about agency and power and the part they play in shaping organisations from an external institutional perspective.

In a UK context, institutional theory is perhaps a little limited when assessing institutional change. With the level of institutional flux that has occurred in the UK recently perhaps institutional theory needs to be reassessed. This thinking is in line with the work of Dacin et al. (2002) who believe that the full power and potential of institutional theory has not been realised because of its focus on persistence and homogeneity. Institutions can exist to effect change and shape the change process across society, but they also change themselves (2002, p. 45). This requires new methodological approaches. Agency is also critical in organisations and, as discussed earlier, institutional theory does not ignore agency, but the role of institutional agency must not be overlooked. Finally, power is not really considered, especially hegemonic power, but the exchange of power between the external institutional environment and an organisation is critical especially in the change process. Power is a difficult concept to measure and isolate, and it is addressed by other organisational theories, including stakeholder theory. These criticisms have been considered, and it is one of the reasons that Institutional theory has been synthesised with other organisational theories to provide a more powerful theoretical cocktail. This will be further developed and argued in section 3.7.

3.6.3 *Institutional theory and sustainability practices*

In section 3.3 the organisation and its connection to sustainability was discussed. Studies have used institutional theory to assess the effectiveness of corporate sustainability practices (CSP) and their subsequent effect on competitive advantage (CA) through the influence of coercive, mimetic and normative institutional pressure (Bhuiyan et al., 2023; Harms et al., 2013; Pedersen & Gwozdz, 2014; Phan & Baird, 2015; Shnayder et al., 2016; Zhao & He, 2022). CSP has been widely evaluated by these studies and multiple benefits have emerged. With the need to be more rigorous about raw material sourcing, efficiency improvements have resulted which have contributed to a reduction in the cost base. Product differentiation and the need to demonstrate to consumers that products are more sustainable has driven firms' innovation credentials which has increased their average selling price and their overall reputation. Because legitimacy is so important in this field, striving for greater trust and respect has had a positive impact with stakeholders and had a beneficial effect on

recruitment and retention levels as well as overall corporate image. Finally, because CSP is a long-term agenda, CA has been seen to steadily improve over the longer time period.

To conclude, institutional theory is a powerful and alternative organisational theory to economically centred stakeholder theory. It challenges the organisation to think differently about the external and social forces that affect its structures. Institutional theory encourages organisations to maximise legitimacy, and this occurs through isomorphism and coercive, mimetic, and normative pressures. As has been seen, these theoretical attributes can drive competitive advantage. With its focus on social practices, behaviours, and norms and how they can be applied to the organisation and embedded in organisational behaviour, it provides valuable insights into sustainability and net zero. For the reasons outlined, it is worthy of its place as a core theory in the thesis, working in partnership with stakeholder theory.

3.7 The power from combining theories

Probably no one theory is powerful enough to explain entirely the net zero Grand Challenge, just as no one actor has sufficient resources or skills to deliver net zero. It is a complex multidimensional subject where institutions and stakeholders frequently interact (Lee & Min Dong, 2011). Previous stakeholder studies have proved that it is beneficial to take a broader theoretical perspective. De Bakker et al. (2019) identified three new partnership themes that would not have been identified by applying one single disciplinary or theoretical approach. Additionally, He et al. (2020) and Child et al. (2019) advocate that future research should combine, and consider alternative ways of using, existing theories to 'better reflect emerging strategic alliance business models' (He et al., 2020, p.212). By combining theories, it is possible to produce new perspectives, and it is 'especially helpful when trying to derive insights from a range of disciplines' (Cairney, 2013, p. 2). Net zero is an ideal topic to consider this approach. It is only through the synthesis of multiple theories that the richness of a subject can emerge; 'social scientists need to make sense of the complexity, variation, and changeability of the empirical world, which is constituted by conflicting ideas' (John, 2010, p. 176). But John does encourage caution. Do not overreach, and over-theorise or reinvent circumstances that can more easily be explained by using simpler approaches. The selection of appropriate theories needs to be done cautiously and with a valid set of reasons. For the thesis, the author considered carefully the theoretical and practical organisational challenges that net zero presents. Understanding stakeholder organisational behaviour is critical and institutional theory brings a different and complementary set of issues. Table 3.2 summarises each theory's key attributes. Both theories have deficiencies which is why they are complementary. Institutional theory is deficient on power, but that is addressed by stakeholder theory. Equally, stakeholder theory is arguably too shareholder and financially dominated and quite inflexible; institutional theory brings softer attributes

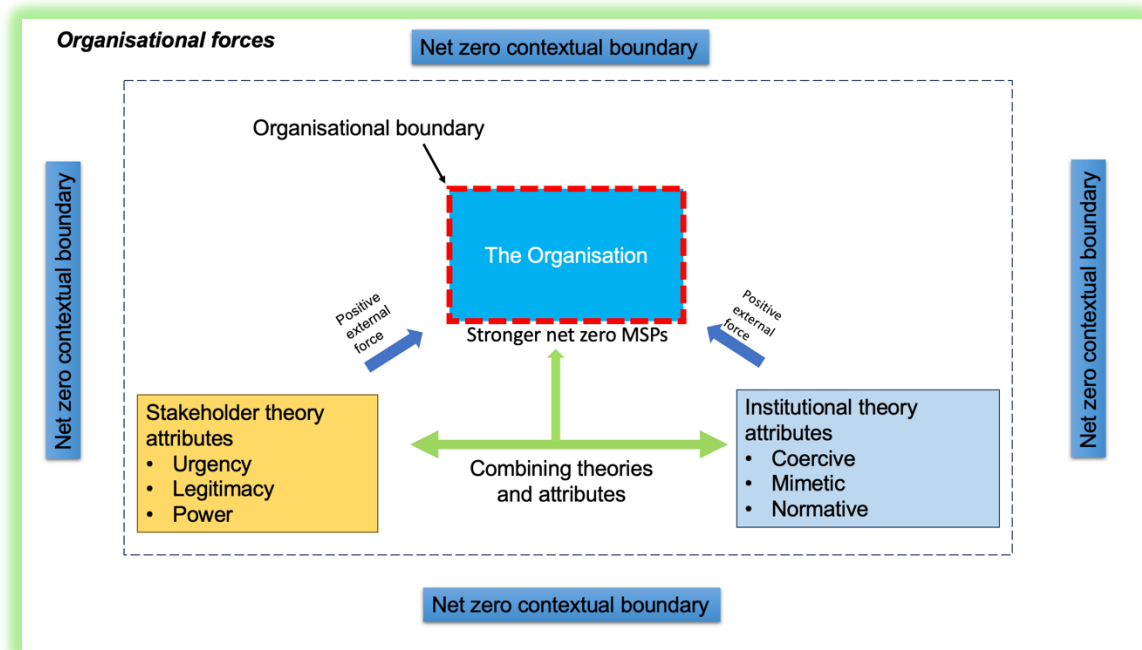
that require subtlety and agility, and a more nuanced approach as well as its purer social perspectives. As was detailed by M. D. P. Lee (2011), institutions and stakeholders interact; that model was presented in Figure 3.4 and his approach to combining the two theories was seen as an appropriate and powerful approach for this thesis. However the author wanted to apply the theories in a way that was appropriate for this study, and it is for this reason that the individual attributes from each were thought of as forces that could exert a pressure on the organisation and its boundaries.

Table 3.2 Organisational attributes derived from stakeholder and institutional theory

Stakeholder theory attributes	Institutional theory attributes
Urgency	Coercive
Power	Normative
Legitimacy	Mimetic

Organisational stability can be a rare and short-lived, whereas instability resulting from external and internal pressures is quite normal. Chief Executives and boards must manage unpredictable situations with incomplete information, sometimes with desirable outcomes, other times less so. Predictability can be anticipated and managed, experienced directors and managers can cope with that state; but the significant challenges come from unpredictable situations where there is little experience and no road map. The reality for most organisations is a set of constant pressures is a set of constant pressure from a wide range of external and internal forces so that their organisational boundaries are frequently being challenged, creating barriers. The pressures arrive from institutions and other stakeholder groups. Organisational balance is preferred to organisational imbalance. When there is instability, barriers are erected, and chaos can ensue. Multiple authors have contributed to this narrative e.g. (Brown & Sherriff, 2014; Caldera et al., 2019; Gangadhari et al., 2023; Olesson et al., 2023). For net zero to be achieved, close alignment must therefore exist between the aims and objectives of institutions and the organisations tasked to deliver net zero. Expressed another way, stakeholder and institutional theory and their component attributes must be aligned and be used as a positive enabler, and Figure 3.7 below illustrates how the forces are applied on the net zero boundary. Individually and collectively, they can be a barrier if negatively aligned with the organisation's aims and purpose, or a positive enabling force if managed in ways that encourage co-operation. By ensuring that the attributes are positively aligned, MSPs are more likely to be formed and maintained and net zero is more achievable. In Chapter Seven this thinking will be used to help populate the net zero MSP conceptual framework

Figure 3.7 Stakeholder and Institutional attribute alignment: A positive boundary enabler Source: Author's work



3.8 The combined theories from the perspective of MSPs

MSPs operating in a net zero environment are highly influenced by institutional and stakeholder forces. Each theory provides different and complementary theoretical perspectives for MSPs; Table 3.3 presents a summary of each and their relevance to MSPs. Combined, they help explain how MSPs can operate effectively. By understanding how the tensions can be managed and minimised between the coercive institutional forces to drive conformity and legitimacy, and the stakeholder forces to deliver urgent decarbonisation, it is possible to develop a theoretical perspective that can underpin the success of MSPs. This will require, firstly, that stakeholders and institutions recognise that MSPs are a powerful net zero tool which, if managed correctly, can accelerate decarbonisation; and secondly, that institutions can play a positive coercive role in helping to facilitate an environment where MSPs are encouraged.

To explain how MSPs can operate in a net zero organisational field, it is necessary to reimagine how the multiple forces that are being exerted on the organisation can be controlled. Imbalance is disruptive and creates entropy, which can result in a 'field of struggles' (Bourdieu & Wacquant, 1992, p. 97). Machines work best when they are balanced and operating smoothly; every component is in harmony. MSPs can be thought of in the same way. An MSP will operate effectively if the institutional and stakeholder forces are all being directed the same way and are positively reinforcing each other. If the forces are in opposition, negatively directed and not working

together, it is unlikely the MSP will drive the required level of field change necessary to accelerate to net zero.

According to institutional theory, institutions can provide positive coercive pressure to encourage partnerships. They can facilitate networks that encourage organisations to work together, for example in supply chain management where industry associations have exerted pressure on competing firms to adopt green supply chain practices (Hoejmose et al., 2014, p. 217). From an organisation's perspective, institutional theory can help them consider how homogeneity and mimetic behaviour can be focussed as a positive force, for example, by learning from best practice organisations, or by using the disruptive power from an individual or organisation to think differently about a problem, including MSPs, and challenge the status quo in an unexpected manner.

Stakeholder theory, on the other hand, is concerned with stakeholder relationships and the relative importance of power, urgency and legitimacy: 'The way management perceives the legitimacy of a stakeholder may or may not be in line with the stakeholder's perception of its own legitimacy' (Herold, 2018, p. 11). Stakeholder management can be a positive force in MSPs. Ensuring that the stakeholders are engaged can be key. In addition, it is important to recognise the power dynamics between stakeholders, again to ensure balance. The work of Gray, Purdy, and Ansari (2022), assesses power asymmetries in Grand Challenges. They identify 'four field conditions that differ with respect to the degree of power and alignment of goals among actors in the field ... and describe shifts in field-level power or alignment of goals: collaboration, contention, consciousness raising, and compliance' (2022, p.1). This is helpful to understand effective MSPs.

Table 3.3 Theoretical contribution and relevance to MSPs

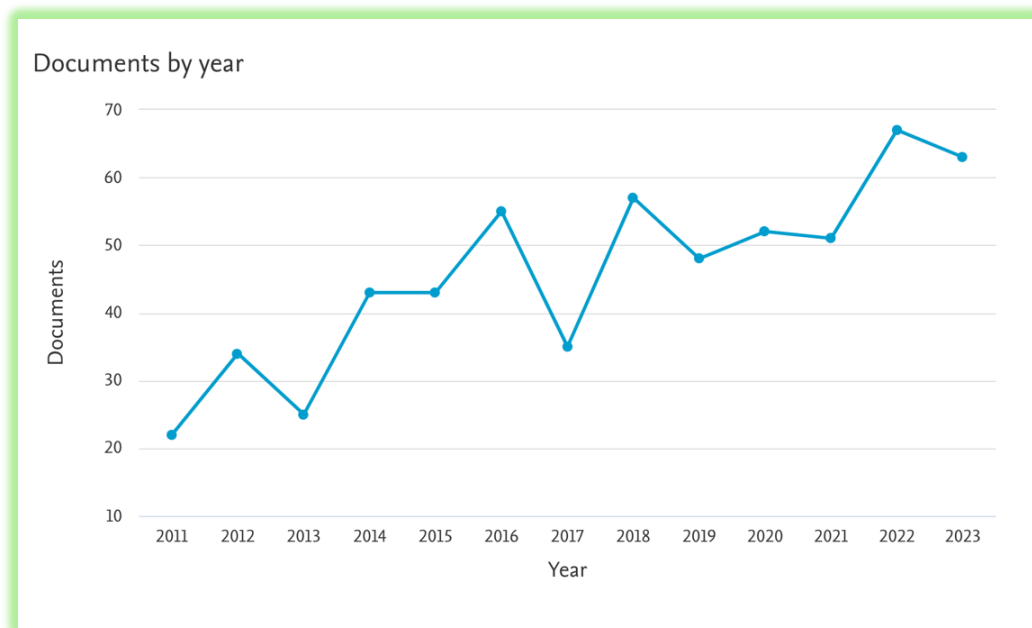
Theory	What is it?	Academic Leaders	Contribution to this study	Relevance to MSPs
Stakeholder	Frames the discussion on organisational stakeholders and their role in value creation.	Freeman, 1984, 2010, 2021; Mitchell, 1997, 2021; Donaldson and Preston, 1995; Wood et al, 2021;	• Urgency, legitimacy, power, environmental proximity • Managerial interests • Normative ethical approach versus positivist • Citizens and the environment as key stakeholders • Sustainable co-operation	• Urgency of net zero & legitimacy of actions by MSPs • Stakeholder selection. Prioritisation and management to build long-term partnerships • Identification of stakeholder roles and their power • How the Boundary Spanner manages stakeholders • Actors' alignment of ethical responsibility to sustainable business practices
Institutional	Understanding organisations and management practices as the product of social rather than economic pressures. Adoption of organisational practices driven by the coercive pressure for conformity and legitimacy rather than value.	Meyer and Rowan, 1977; Dimaggio, 1988; Dimaggio and Powell, 1981, 1983; Lawrence, 1999; Devereaux and Hoffman, 2015; Abdelnour et al., 2017; Van Wijk et al, 2019;	• Inter- and Intra-institutionalism • Net zero organisational field analysis • Accepting or resisting institutionalism, isomorphism, and heterogeneity • Coercive power • Organisational agency change • Net zero legitimacy in the organisation	• How actors manage their institutional environment • Actors engaging in creating, changing & maintaining institutions to positively affect net zero • How to compose a net zero organisational field? • How to break free from or conform to institutional isomorphism / power • Role of agency and institutions – voluntary or coercive • How Boundary Spanners can apply the theory and its principles to MSPs

3.9 The Boundary Spanner

3.9.1 Boundary Spanner definition

As an academic subject, Boundary Spanner has ebbed and flowed over the years. Appendix ten details the key literature used in this thesis. The Boundary Spanner emerged in the early 2000s and has become more popular since 2011 in line with the need to tackle society's Grand Challenges. The literature on Boundary Spanners has grown over the last ten years, and it has become an area of relevant study to organisational scholars, and has been scrutinised within public management, policy development, governance networks and network management. Figure 3.8 demonstrates the scholarly growth.

Figure 3.8 Scopus database search: 2011-2023 term 'Boundary Spanner(s)'



There are many academic definitions of a Boundary Spanner. The one that most closely fits this study and articulates the net zero MSP challenges, is provided by van Meerkerk and Edelenbos, (2018, chap.1).

'Boundary Spanners are people who proactively scan the organizational environment, employ activities to cross organisational or institutional boundaries, generate and mediate the information flow and coordinate between their home organization or organizational unit and its environment, and connect processes and actors across these boundaries'.

van Meerkerk, (2014, p. 36) develops this further. 'Boundary Spanners are specialized in negotiating the interactions between the organization and its environment in order to realize a better fit'.

These definitions start to guide an understanding about what Boundary Spanners do, their specific role, and what skills an effective Boundary Spanner needs.

Boundary Spanners need to be multi-talented and highly skilled individuals (e.g., Aldrich and Herker, 1977; Goodrich et al., 2020; van Meerkerk and Edelenbos, 2018; Williams, 2002; William, 2013). If they are performing optimally, they will be a powerful and valuable asset to the organisation or an MSP. In the UK Government the Cabinet Office states that effective government required civil servants to be better at working across organisational boundaries, needing to 'alter their mindset from a culture of tribal competitiveness to one of partnerships' (UK Cabinet Office, 2000, p.42; Williams, 2002, p.113), promote cross-department behaviours and act as culture breakers.

Organisational theorists who have specialised in how to build partnerships and relationships between multiple parties have recognised the need for an organisational role that connects the parties together. It has been variously called a 'lynchpin', a 'broker' and a 'gatekeeper' (Williams, 2013, p.19). In 2024 what has changed is the complexity of the Boundary Spanner's task and their effectiveness. Available information has expanded exponentially, and inter- and intra-organisational dynamics are more complex. This is evidenced both by the number of partnerships and external governmental agencies in existence, and the complexity of public policy. Complexity is a common theme in the thesis. Grand Challenges are complex, as is net zero and social innovation. MSPs are complex and instigating field level change is complex. Any agent operating in this space will be faced with complexity and be highly skilled at managing that complexity. 'Complexity stresses the interactions and interrelationships between parts of systems. This makes the 'whole' system largely unpredictable' (van Meerkerk, 2014, p.18), and in the words of Dryzek (1990:59) complexity is a 'non-simple relationship'.

3.9.2 Boundary Spanners' agency role

Agency theory is based on the relationship between the principle who delegates tasks and decisions to another party, the agent (Bendickson et al., 2016). This relationship can lead to tensions and conflicts that need to be negotiated resulting in principle-agent contracts (Mitchell & Meacheam, 2011). The Boundary Spanner is the agent in the contract and their role is to negotiate settlements and develop organisational outcomes, including MSPs, that deliver the principles objectives. The Boundary Spanner often acts as a change agent and is responsible for actions that affect change. Actions are performed by agents, individuals or groups of them, and agency

can be categorised either as (Macro) system level agency, (Meso) firm level agency or (Micro) individual level agency (Isaksen et al., 2019).

Boundary Spanners operate at the individual agency level and instigate actions to activate both firm and system level agency. Therefore, exploring human agency is beneficial. When working well, Boundary Spanners have the potential to demonstrate how human agency can be used to accelerate performance. 'By linking organisations with their environments, Boundary Spanners are engaged in building and maintaining sustainable networks' (Tushman and Scanlan 1981). Boundary Spanners can play a key role in enabling a productive interplay between 'incompatible prescriptions' of different institutional logics (Williams 2002; Meyer and Hammerschmid 2006). A boundary spanning employee is a key stakeholder role. They are there to negotiate the terms of relationships and 'deliver on the implicit promise to reciprocate stakes by providing benefits to stakeholders' (Bhattacharya & Korschun, 2020, p. 147). They must forge strong and enduring relationships with other stakeholders. If the Boundary Spanner fails, this has the potential to undermine both their and the organisations' effectiveness. Boundary Spanners exhibit human agency as well as having to contend with different forms of agency, therefore a brief explanation of this subject will help to explore and shape their sphere of influence.

Human agency is the capacity of an individual to act independently and make their own choices based on free will. Humans, however, sit within some form of social structure or organisation. 'There is no way to cope with the issue of agency and institutions without ultimately confronting how individuals relate to and work within organizations' (Abdelnour et al., 2017, p. 1776). Emirbayer and Mische (1998) describe human agency as 'the temporal-relational contexts of action – which, through the interplay of habit, imagination, and judgment, both reproduces and transforms those structures in interactive response to the problems posed by changing historical situations' (1998, p. 970). This classic definition describes how human agency is both 'constrained and enabled' and is centred around three institutional contexts: culture, networks of social engagement, and social psychological context. From this 'actors are theorised to express agency through iteration (conditioned by routines and habits), projectivity into the future (conditioned by imagination) and practical evaluation' (Abdelnour et al., 2017, p.1777).

A distinction needs to be drawn between primary agency and institutional agency. It is possible to move between these stages of existence when organisations, through their ways of working, help to facilitate the transitions. Once the transformation has occurred, actors are more empowered, and evidence has shown that better results are delivered by practitioners resulting in increased institutional agency (Maier & Simsa, 2021). Primary agency means 'reacting to one's social-cultural context while trying to survive in it and possibly pursuing upwards social mobility' (2021, p.556). At birth, this reflects an individual's lack of awareness as to where they sit in society. This

changes and develops as they are assigned to positions in society. Institutional agency involves an 'elevated level of reflexivity and projectivity' (2021, p. 556) and the ability, once actors understand the institutions and their positions within and towards them, to exercise institutional agency through institutional work.

3.9.3 *Where Boundary Spanners operate*

Boundary Spanners operate across organisational boundaries and this section will explain what an organisational boundary is. A boundary is, on the surface, a clear and well understood term but it can get a little hazy and confusing and for organisations it is highly dependent on the criteria being used to define it. Boundaries identify a demarcation between two areas and can be physical, mental, jurisdictional, organisational, or sectorial (Aldrich & Herker, 1977). (Wenger, 1998, p. 120) describes boundaries as discontinuities and as lines of distinction between inside and outside, inclusion and exclusion. Boundaries can be used to understand behaviours and social groupings and create patterns of association and structured social interactions. Kislov (2014) identified three **Mechanisms** of discontinuity created by boundaries: those of identity formation; political; and multiple competing discontinuities of both knowledge and meaning. However, it is more nuanced than that. Boundaries capture a basic social process, that of relationality and the relational processes that operate across a range of social phenomena, institutions, and locations (Emirbayer, 1997, p. 287; Lamont & Molnár, 2002, p. 169). Finally, boundaries can also have a dual nature; they both facilitate and hamper. They facilitate routines, co-ordination, communication and identity development within boundaries, whilst hindering collaboration, co-ordination, and communication across boundaries (van Meerkerk and Edelenbos, 2018, chap.2).

In the study of public management and governance networks, there are three types of boundary that are worthy of consideration. Firstly jurisdictional, which reflect the institutional and political systems of public life. Secondly, those policy boundaries which are functional in nature. Finally, sectorial boundaries between public, private and society. Over the last twenty-five years those boundaries have become blurred following governments' active privatisation and outsourcing crusades and the exponential growth in non-governmental organisations. These forms of governance networks are defined as a 'web of relationships between government, business, and civil society actors' (van Meerkerk, 2014, p.17). This work has challenged the fundamentals of accountability, economic value and even their democratic nature. However, this is reality and the norm in contemporary governance as a delivery vehicle to address society's Grand Challenges.

By understanding the subtleties of a boundary, the study will develop a full understanding about the challenges that a net zero Boundary Spanner (Williams, 2002) operating in an MSP is likely to face, which starts with understanding the forces

that are exerted on an organisational boundary. Those trying to manage and understand organisational boundaries have multiple domains to contend with, and their role in spanning, bridging, traversing, or stretching between those domains and boundaries is complicated. One of the key roles of the Boundary Spanner is to understand boundary complexity and manage the ambiguity that results from competing boundaries. If they do this well, they can maximise the facilitation process and circumvent the barriers to collaboration, co-ordination, and communication. They also have other roles.

3.9.4 Boundary Spanner skills

Six studies have attempted to characterise the role and skills of Boundary Spanners, as summarised in Table 3.4. These studies suggest that Boundary Spanners must be exceptionally talented individuals with years of highly relevant experience. They should also possess a strong balance between IQ and EQ, strong organisational skills, technical knowledge, and a keen understanding of the complexities of relationship building. The collective skills of Boundary Spanners make them crucial actors in the development and operational effectiveness of MSPs, ultimately contributing to the successful delivery of the net zero Grand Challenge.

Table 3.4 Boundary Spanner roles and skills

Boundary Spanner. Roles and skills			
(Williams, 2002, 2013)	(van Meerkkerk, 2014; van Meerkkerk and Edelenbos, 2018)	(Goodrich et al., 2020)	(Aldrich & Herker, 1977)
Reticulist 'skilled at bridging professional and organisational interests'	Collaborator	Organiser	Information filter and transmitter
Network manager	Developing and maintaining actor relationships	Trust builder	Defence against information overload
Relationship builder	Align activities and processes across organisational boundaries	Foster mutual understanding	External representative
Listener	Mediator	Challenger	Organisational legitimiser
Interpreter	Proactive activator	Trainer	Power disseminator
Communicator	Broker		Conflict resolver
Co-ordinator			Observer
Entrepreneur			Knowledge exchanger

3.9.5 *Boundary Spanners in the context of net zero MSPs*

Potentially Boundary Spanners play a crucial institutional and stakeholder role in the MSP and the net zero organisational field. Net zero adds significant complexity for managers because it is a multidimensional Grand Challenge that requires creative imagination as much as practical skills to unlock. It is complex with multiple actors working across multiple domains and requires specific curation, innovation, agility, and adaptation skills. Understanding what net zero entails brings together a range of diverse and complex challenges from the realms of science, energy management, economics, business, and networking. A deep understanding of each is necessary to be effective in the Boundary Spanner role. 'To improve our ability to respond to addressing our most urgent social-ecological challenges, we need more boundary spanning and co-production of knowledge to increase the use of science in solving sustainability problems' (2020b, p. 49). Having individuals who can span the policy, scientific and practice divide will benefit those working on environmental challenges. The specific context of net zero involves a range of public policy, technical and scientific, operational, communication and stakeholder management requirements. The Boundary Spanner role requires multi-skilled agents who possess a strong mix of IQ and EQ and 'Meeting today's environmental challenges increasingly requires individuals who are able to operate at the boundary between science and policy' (Goodrich et al., 2020, p.45).

This review has demonstrated that the Boundary Spanner can play a significant role in MSPs and could be important for organisations as they respond to society's challenging problems. Although MSPs are not a panacea to solving the Grand Challenge, if structured, governed and managed properly, they may have impact. The emergence of new organisational fields is likely to be a complex process needing to be led by highly skilled agents, and Boundary Spanners can play a pivotable role in MSPs as partnership designers, builders and maintainers that have the potential to accelerate the net zero agenda.

3.10 Literature gaps

The literature review method, as explained in section 2.1, followed an integrative approach and identified a number of gaps. Collectively these gaps, problems and opportunities inform research questions and the thesis's proposition, aims and objectives and study contribution.

What is a gap, and what is the basis for using a gap as the 'prevailing way to generate research questions?' (Alvesson & Sandberg, 2011, p. 248). Gaps emerge from incomplete literature, or perspectives that had been overlooked or were outside the scope of the study. From these, researchers are able to contribute new insights and

either build on previous research or challenge others' assumptions and identify problems with the research. This latter idea, known as 'problematization', leads to more important and influential theories (2011). This study will be concentrating chiefly on identifying gaps in MSP literature from a net zero and organisational perspective. In addition, it will challenge the existing concepts of Grand Challenge and Boundary Spanner in a positive way to reinvigorate their use as contemporary enablers as society tries to accelerate to net zero. Each of these gaps could be empirically researched. The quantitative research could isolate facts about net zero and participants perceptions, which could be further probed during the qualitative research.

Following the literature review, gaps emerged located in three areas from an organisational context; Grand Challenge; Boundary Spanners [agency]; and Multiple Stakeholder Partnerships. By recognising these enabling **Mechanisms**, the thesis title was modified from its original working title to the final title.

Original

'A study of understanding, expectations and policy engagement with net zero carbon: A multi-stakeholder perspective'

Final

'Reimagining how organisations can design, build, and maintain effective net zero Multi-Stakeholder Partnerships: embracing the enabling **Mechanisms** to help the UK accelerate to its net zero by 2050 Grand Challenge'

3.10.1 Gap one: Net zero as a Grand Challenge

Net zero is important, and arguably even more important, to society that it was three years ago, as Chapter two detailed. As the literature search developed, it became clear that from an organisational point of view net zero is under-represented. Researchers concentrate on its scientific origins and its scientific realism epistemology (Madill et al., 2000). It is a scientifically quantifiable target that aims to reduce GHG emissions to net zero by 2050. At the macro system level sustainability and climate change have been extensively investigated. At the meso and micro level less has been written about net zero as an organisational change project. The importance of place in the low carbon economy has been detailed (Baranova et al., 2020) and place has also been used as a key driver of regional partnership development (Broadhurst et al., 2021). But the specific organisational enabling **Mechanisms** as to how organisations can accelerate to net zero has not been explored. By developing net zero as a Grand Challenge, it is possible to understand how Grand Challenge, as a key enabler with causal powers to overcomes obstacles, can enable decarbonisation. Gangadhari et

al. (2023) investigated the barriers in the net zero economy and advocated further research be undertaken. That is what this study will develop.

3.10.2 *Gap two: Role and contribution of the Boundary Spanner in MSPs*

The enabling agency role of the Boundary Spanner has not been researched as part of net zero nor MSPs. They have the potential to have causal powers and effect change. Understanding their agency role will benefit MSPs.

There is a growing interest in how agency and agents can break old path dependencies and create 'new industrial paths that are able to foster and nurture both economic and social development' (Huggins & Thompson, 2022, p. 1). This academic endorsement, although from a tangential discipline, adds to this thesis's credibility and its hypothesis that Boundary Spanners are important, have a key enabling mechanistic role to play in net zero MSPs. This is a literature gap.

Leading experts in boundary spanning, van Meerkerk and Edelenbos (2018), call for future research on how multiple disciplines can work together on boundary crossing subjects. Net zero is one of those and the concept of Grand Challenge advocates multi-disciplinary collaboration. Therefore, MSPs can potentially benefit from the reframing of a Boundary Spanner from merely an actor who collects and disseminates information as a bureaucratic function (2018b, p.2) into an active designer, builder and maintainer of cross-boundary MSPs. This is a research gap and worthy of active investigation.

3.10.3 *Gap three: MSPs as a **M**echanism for addressing Grand Challenges*

MSPs have been widely researched globally. They are generally accepted as the gold standard partnership arrangement and work has been undertaken globally to investigate MSPs in sustainability (MacDonald et al., 2019). This extensive study looked at ninety-four sustainability-focussed MSPs and examined their impact. However, only 6.3% were in Europe with just one located in the UK. This is a literature gap.

Furthermore, the enablers that encourage MSPs in net zero is an area that has not been researched. Barriers, drivers and enablers in the context of lean SME sustainable business practices has been researched and referenced earlier in this thesis (Caldera et al., 2019), but this study did not investigate MSPs nor net zero. Collectively this evidence supports the case that net zero MSPs in the UK is a key research gap.

3.11 Chapter conclusions

This chapter has focussed on MSPs because they are key to achieving net zero. It has explored some of the MSP organisational enabling **Mechanisms** that can be deployed to help organisations accelerate to net zero by overcoming organisational barriers. A theoretical framework (Figure 3.1) detailed the macro, meso and micro level forces that impact on the **Outcome of *net zero by 2050*** and identified several important theories and concepts. Furthermore, the chapter proposed a net zero MSP conceptual framework (Figure 3.2). This, like the theoretical framework, was inspired by the work of Pawson (2006), and has used his **CMO** realist approach as a way of detailing a potential pathway to effective net zero MSPs. However, it is hard for organisations to engage with sustainability, including net zero, and the chapter explained what an organisation is and how they are faced with competing and conflicting institutional logics. These tensions create a range of barriers and enablers that need to be understood and overcome.

Addressing the net zero Grand Challenge requires organisations to think differently and address temporal and spatial tensions because this approach has the potential to break previous path dependencies, overcome the barriers, and create powerful enablers. Partnerships play an important part in this, and the chapter explained in detail both sophisticated partnerships, MSPs, and simpler ones, DSPs. By using some key organisational theories and their component attributes, MSPs can be enabled and barriers overcome. Central to this are stakeholder and institutional theory. Both have been explained and critiqued, and the benefit of combining the theories has also been developed. The Boundary Spanner, acting as an organisational agency role, has also been introduced and the concept connected to MSPs; Boundary Spanners have the potential to be important in the development and maintenance of MSPs. When these theories and concepts are combined with Grand Challenge, from Chapter two, they can develop the net zero MSP general conceptual framework (Figure 3.2) into a more specific and complete framework. The detailed net zero MSP conceptual framework will be completed in Chapter seven. Finally, Chapter three has identified three literature gaps. Chapter four will now detail the research philosophy and the methodology and methods used to unlock the research objectives and questions.

Chapter 4 Methodology and Methods

4.1 Introduction

This chapter will explain the chosen research philosophy, realism, and justify that choice as opposed to other options. It will navigate the complexities of understanding ‘what matters’ (Jagosh, 2020, p. 121) in net zero, and what ‘constitutes acceptable knowledge’ (Saunders et al., 2009, p. 119). It will explain how realism informed the ROs and the RQs and how that thinking identified the realist-based **CMO** concept (Pawson, 2006). The chapter will then detail the research development strategy. This will be followed by an explanation about why a mixed methods research approach was adopted and how that was used as part of a five-step research framework. That framework commenced with data familiarisation and understanding the research landscape, and was followed by the primary data collection using the mixed method approach. The data was then coded, indexed, and reduced using thematic analysis to four key themes. The chapter concludes by detailing the limitations of the method, the thesis’s ethical approval process, and finally the reliability, replication and validity of the research.

4.2 Research philosophy

It is customary to decide one ontological path as that informs how the research questions are asked, how the data is collected, and through which methods. That will be explained in section 4.2.2 Prior to that, it is worthwhile recognising that the author found it difficult to isolate just one, and had some empathy with the idea of ontological pluralism (Esbjörn-Hargens, 2010). Esbjörn-Hargens’ logic, centred on climate change, is clear and aligns with the complexity of climate change ‘we have multiple perspectives using a variety of techniques, practices, and injunctions to enact multiple objects that overlap with and diverge from each other in numerous ways to generate an object that goes under the signifier of climate change’ (2010, p. 145). What is true for climate change is also true for net zero. However, this level of sophistication is not appropriate for this study. As he says, this line of thinking is aimed at ‘advanced scholar-practitioners’ (2010, p. 145). Having acknowledged that future research opportunity, and prior to explaining why realism was chosen as the most powerful and helpful philosophy, it is worthwhile explaining briefly the other philosophies considered.

4.2.1 *Philosophical options*

Positivism argues that natural science methods and rules can be applied to social science and its reality. However, it is really hard to study social science according to the same principles and rules as the natural sciences for two reasons. Firstly, science

must be conducted in a value-free way whereas net zero is a value-laden subject. Secondly, the knowledge is assembled by gathering facts which are then used to generate laws; this approach is too linear, and process driven, whereas net zero is an ambiguous subject that is far from linear (Clark et al., 2021, p. 27). For these reasons positivism was rejected.

Interpretivism, a contrast to positivism, posits a fundamental difference between people and natural science phenomena. This distinction suggests that the social world cannot be studied using scientific models. Interpretivism aligns well with the context of net zero, as it emphasises the importance of meaning and human experiences in understanding organisational behaviour. This perspective could have led to a nuanced interpretation and explanation of net zero actions. However, critics argue that interpretivism lacks predictive power. Focusing on meaning and interpretation can hinder policy and practice by making it difficult to predict future behaviours (Clark et al., 2021, pp. 25–29). While interpretivism does have merits, this latter point was seen as a disadvantage because net zero requires inspirational policy and practice forecasts to accelerate the UK to *net zero by 2050*.

Pragmatism was also considered. Pragmatism focuses on solving real world problems and improving human life, both of which are relevant to net zero. Although there would have been advantages in adopting this philosophy because of its pragmatic approach to constantly adapting and renegotiating the truth to meet the circumstances, that is exactly why the author felt this approach was weak and not appropriate; pragmatism is too flexible and too applied. As such, this approach has the potential for manipulation and can always be used to justify an acceptable end result (Talisie & Aikin, 2008).

In the end, although interpretivism was a strong candidate, realism was chosen because the context of net zero aligned more closely with its principles. Social change is not linear, and neither is net zero. Net zero is a value-laden subject with multiple options that need to be considered, and nothing should be ruled in or out. Furthermore, net zero is a subject with multiple beliefs and expectations. Realism is overall a more natural fit, and this will be explained in more detail.

4.2.2 Realism

Net zero is a multidimensional, complex, non-linear Grand Challenge. This narrative has implications about the researcher's view about the nature of net zero's reality and what constitutes acceptable knowledge. It can be challenging to establish the complete truth about net zero and it is highly dependent on the beliefs, expectations and values of the participant. Furthermore, the organisation to which they belong may have power over those opinions for stakeholder legitimacy reasons or institutional coercive requirements. Overall, the truth about net zero can be hard to establish which places the subject elegantly in a realism space. Gray & Purdy (2018), referred to MSPs

as being messy. The same can be said of climate change and net zero. Net zero is not a simple, clean and clear subject. 'Rather than being 'one thing', climate change is a set of complex issues made up of many interconnected sub-issues' (Inglis, 2008, p. 498). Additionally, climate change and net zero are very influenced by values and opinions and overall, the subject is highly value-laden. This has implications for how the science and the social implications of decarbonising energy systems are viewed. This shapes and influences how the research is approached and undertaken (Saunders et al., 2009). Chapter two presented the argument for net zero being a Grand Challenge. Ferraro et al. (2015) described Grand Challenges as being complex, evaluative and non-linear. A similar set of arguments can be applied to the organisation. For organisations, there are multiple competing organisational logics, and this makes decarbonisation messy and complex. Organisations are faced with situations that are ambiguous, as well as competing both temporally and spatially for resources. Overall, this makes it really hard for organisations to isolate the nature of their reality, and how they should view acceptable net zero knowledge. Realism can unlock aspects of the net zero organisational puzzle.

Madill et al. (2000) detailed three realist epistemologies about how knowledge is discovered; those of naïve, scientific and critical realism. Naïve realism can be quickly eliminated. It adopts a simple theory of truth in which 'the world is largely knowable' (D. A. Gray, 2014, p. 74). That does not fit well with net zero because there are hidden and unknown aspects of climate change, decarbonisation, and net zero. Scientific realism considers that scientific methods can present a true representation of the world and is the best mode of enquiry. Although carbon production and elimination can be measured, net zero is a subject that is open to multiple interpretations and influenced by other philosophies including politics, economics and morality and it is hard to assess the complete truth. Critical realism depends on our 'beliefs and expectations' (Bunge, 1993, p. 231) and has an 'inherent subjectivity in the production of knowledge' (Madill et al., 2000, p.3). This approach does resonate well with net zero but there is a severe risk that when trying to interpret the subjectivity of the knowledge nothing is resolved, and everything is complicated further. Therefore, in the view of the author, based on this assessment about how knowledge can be discovered, net zero is in a realist space somewhere between scientific realism, where the facts can be quantified, and critical realism, where there is an inherent subjectivity; probably closer to the former than the latter. A useful contribution to this study is made by the critical realist thinker Bhaskar. In his book 'A realist theory of science', Bhaskar (2008) developed the idea of 'causal Mechanisms'. Causal Mechanisms will be used here as part of a realist narrative to understand how knowledge can be obtained through direct and empirical investigation and by understanding 'what works' (Pawson, 2006, p. 21). By focussing on the practical tasks of discovering 'what works for whom in a set of given circumstances' (Parra, 2023, p. 861), this approach informed how the questions were framed and what additional concepts were deployed to build the theoretical

foundations with ‘nothing being ruled out, according to opportunity and need’ (Pawson & Tilley, 2001, p. 323).

4.2.3 *Axiology*

Axiology makes judgements about ‘values’ and is engaged with assessing the role of the researcher’s own values and how they impacted the study (Saunders et al., 2009). It is therefore necessary to briefly discuss the author as a researcher. Axiology is connected to bias and how to minimise bias and maximise objectivity. In value-free subjects, science specifically, researchers have the luxury of undertaking the investigation objectively which is reflected in the earlier discussion about positivism. Net zero is, however, a value-laden subject and the researcher has to attempt to isolate themselves and their own views of the world, their culture, and life experiences from the research evidence. Realism and interpretivism are both impacted by this issue. As a researcher with many years of experience in organisations, the author was very conscious about not influencing others’ values, but it must be acknowledged that the author’s world view may have affected the research findings. This is reality, but at every step of the research the author was conscious of this weakness and minimising its effect on the study.

4.3 Research objectives and questions

Section 1.4 detailed the five ROs, and these are summarised below.

- RO1 Establish the importance or otherwise of net zero partnerships and MSPs
- RO2 Identify the barriers and enabling **M**echanisms of net zero MSPs
- RO3 Construct a net zero MSP conceptual framework
- RO4 Understand the enabling role of agency in net zero MSPs
- RO5 Identify how organisations are engaging with net zero and develop policy and practice recommendations

Having taken a realism philosophical approach, it was necessary to structure the research questions appropriately. These questions have been designed to uncover the activating powers necessary for effective net zero MSPs and understand their observable and hidden features. They are informed by ‘retroduction’ thinking which is appropriate for ‘addressing complex entrenched problems’ (Parra, 2023, p. 865) and the ‘activity of theorising and testing for hidden causal **M**echanisms responsible for manifesting the empirical, observable world’ (Jagosh, 2020, p. 121). The questions have been designed based on realistic evaluation; ‘what works for whom in what circumstances’ (Tilley, 2000), and ‘what matters’ (Jagosh, 2020, p. 121). They have been phrased in ways that ask ‘how?’ based on ‘what is it about x that matters?’ and ‘why do things appear as they do?’ (2020, p. 121).

The CQ emerged from the thesis title, the literature review and gap analysis.

How do the enabling **Mechanisms** of effective net zero Multi-Stakeholder Partnerships shape the net zero organisational logic, why do they matter, and how can they be used to respond to the *net zero by 2050* policy Grand Challenge?

There are four supporting RQs summarised below:

RQ1 How can organisational MSPs tackle the net zero Grand Challenge?

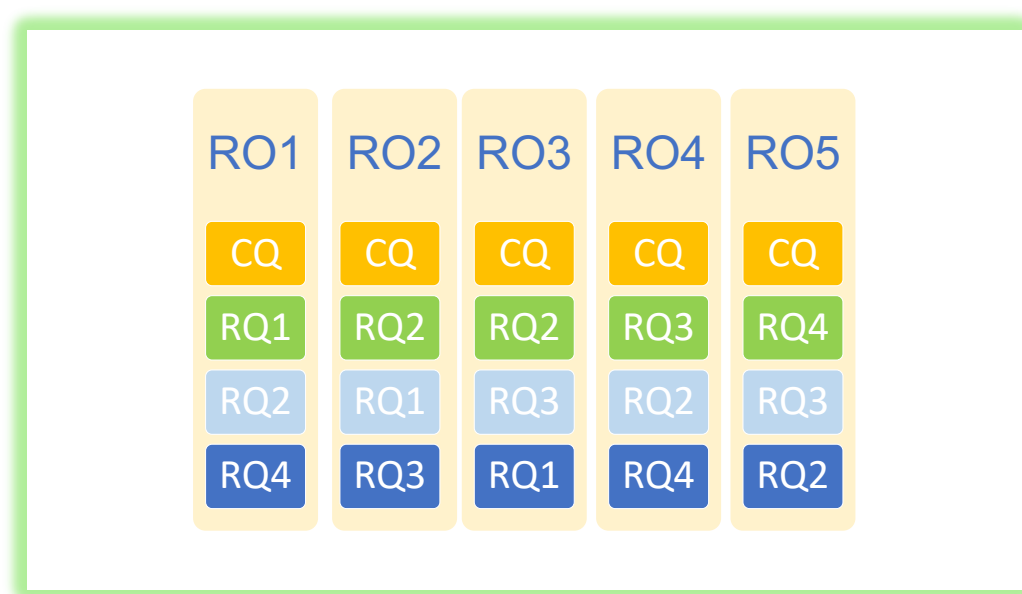
RQ2 How can net zero's MSP organisational barriers be overcome and used as enablers to build more effective net zero MSPs?

RQ3 How is agency important, and how can the change agent enabling role contribute to effective net zero MSPs?

RQ4 How can organisations reconfigure themselves to adapt and participate in effective net zero MSPs?

The ROs are linked to the CQ and the RQs, as was presented in Figure 1.3. Each RO has multiple RQs that help to deliver the objective.

Figure 1.3 Alignment between ROs and RQs
(descending priority order)

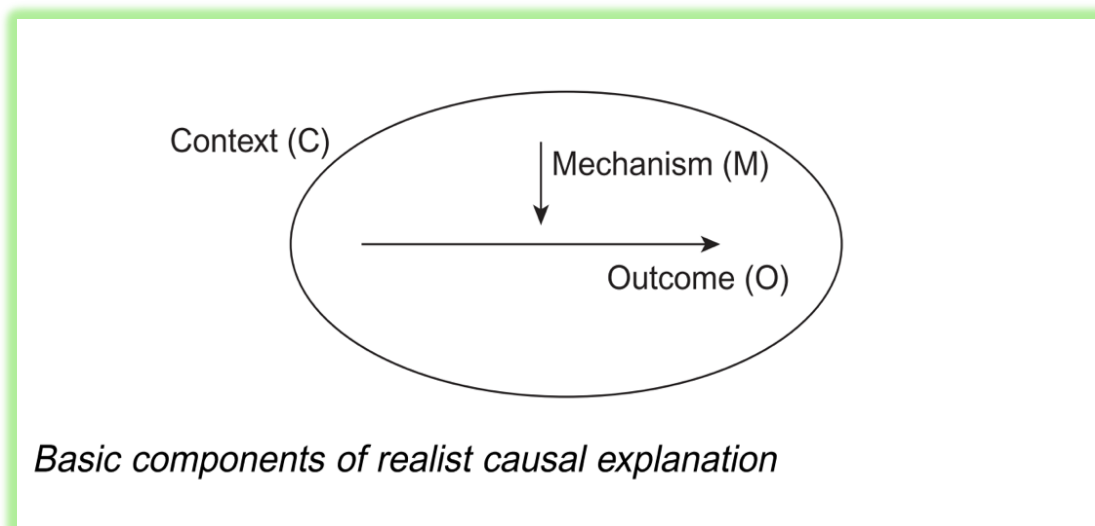


4.4 The realist-based **CMO** model

Chapter three, section 3.2 explained and used the Pawson (2006) EBPM **CMO** approach to help build the net zero MSP conceptual framework. This realist-based approach will be developed further. Pawson proposed three main components, **C**ontext, **M**echanism and **O**utcome, for understanding evidence-based policy, illustrated in Figure 4.1. This provides a methodological approach or a 'broad logic of inquiry' (Pawson, 2006, p. 17). Searching for **C**ontextual evidence, in support of causality, is part of the data collection stage. Certain interventions are required and the **M**echanisms are the engines of explanation used to tell us why the interventions should occur (Pawson, 2006, p.23). The **O**utcome is net zero and how MSPs can accelerate decarbonisation.

Figure 4.1 Context, Mechanism, Outcome model.

Source: (Pawson, 2006)



As a supporter of evidence-based decision-making, the author was attracted to the work of Cairney (2020) and Pawson (2006) to help understand net zero policy. The former advocates its use in public policy development whilst the latter develops an argument based around the causal question about what works and how, as a result of multiple social interventions, research can answer questions and provide alternative policy approaches. Pawson asserts that the purpose of interventions is to produce change, and the purpose of social research is to understand that change. The realist methodology approach is to 'look for causal powers within the objects or agents or structures under investigation' (2006, p. 21).

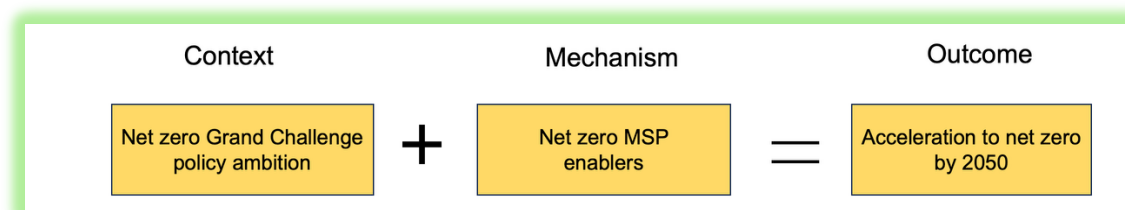
Using this concept, the author adapted the model to this study, which is shown in Figure 4.2. This was further used as the basis for the development of the quantitative study and the qualitative semi-structured interview guide. **C**ontext, **M**echanisms and

Outcomes were further segmented into specific investigation areas to develop quantifiable questions and areas of interest to be discussed in semi-structured interviews.

Figure 4.2 The CMO net zero Grand Challenge MSP equation

Source: The author, based on (Pawson, 2006)

Context + Mechanism = Outcome



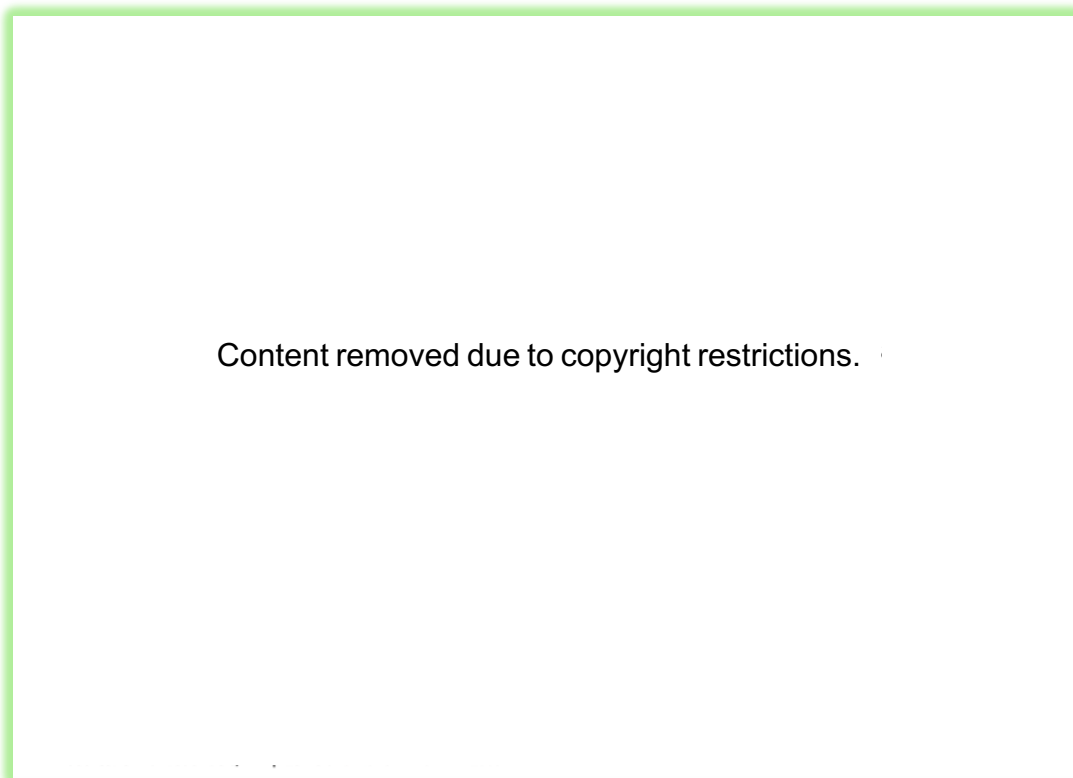
4.5 Research journey and the research onion

This thesis asks some fundamental questions around how organisations operate in net zero, how they address its challenges, and how they are structured to manage its complexity. The journey started as one of realistic discovery. Net zero and partnerships are both so vast that they must be broken down into manageable blocks to allow them to be examined and understood. There was a need to obtain a view from those who were experiencing the challenges of net zero and partnerships to explore their dilemmas. Rittel & Webber (1973) stated that the policy solutions to wicked problems - climate change and net zero certainly qualify - are not about being true or false. Because of the multiple stakeholders involved, the solutions, if solutions are at all possible, are more likely to be good or bad or good enough. Unlike formulating a scientific experiment where there is likely to be a true or false answer, decarbonisation is significantly closer to the Grand Challenge narrative of obstacle navigation and avoidance, moving beyond the 'linear process of problem, diagnosis and resolution' (Dorado et al., 2022, p. 23). This thinking shaped and formed the view that it was important to analyse the problem on multiple levels and with multiple organisations in order to triangulate multiple objective perspectives. This multi-level approach would help to uncover the beliefs and reality of net zero and partnership knowledge. Furthermore, it would aid understanding of the macro system level issues, the meso organisational level challenges and the micro agency level problems.

The research 'onion' (Saunders et al., 2009, p. 108) approach, as shown in Figure 4.3, helped to structure the exploration journey. It starts at the outside of the onion and moves right to left. The philosophy journey has already been explained (section 4.2),

Figure 4.3 The research 'onion'.

Source: (Saunders et al., 2009, p. 108)



and it has shaped the ROs and RQs (section 4.3). The remainder of this chapter will follow the remaining key stages of the research onion: starting with the inductive nature of this work (section 4.6); moving through the research strategy (section 4.7); its mixed method approach (section 4.8); and ending with a five-stage research framework (section 4.9) that details how the data was collected, and how the themes were isolated and reduced.

4.6 Inductive research approach

This study is best suited to an inductive bottom-up approach whereby data can be gathered, observations made, and themes developed. From this, new insights and academic contributions are possible. As a business orientated organisational thesis there were several organisational theories appropriate to the thesis. As detailed in Chapter three, stakeholder and institutional theory were the lead theories, supported by the principles of agency. These theories are well developed and, although they have been critiqued within this thesis, they are perfectly positioned to be used as part of an inductive research approach. Data can be collected and applied to develop the core theories. By constructing a conceptual framework, it is possible to extend their

usefulness by interweaving MSPs, Grand Challenge and Boundary Spanner together to help unlock the problem. As Saunders et al. (2009, p. 126) details, the inductive approach is likely to be concerned with **Context**, as the **CMO** model demonstrates, and smaller sample size studies, which this study used. Qualitative data collection can be complemented by other sources to provide a rich data set of information from which to develop the theory.

4.7 Research strategy

It is helpful to explain the research strategy that informed the method development process. Section 4.8 then explains the mixed methods approach.

An effective strategy considers all available evidence and plots a path to understand the problem. This research strategy determined the type of organisations to collect evidence from. It was necessary to engage with organisations who were working on net zero and decarbonisation, understand how they were managing its complexities and urgency, and whether partnerships were part of their operational toolkit.

Net zero is a subject that affects every type of organisation and is a logic that crosses many disciplines. Therefore, a strategic decision was taken to engage with as many diverse types of public and private sector organisations as possible, from large complex multinationals through to smaller SMEs and LG. This approach offered advantages, such as a breadth of views, increasing the author's confidence in the findings' generalisability, and contributed both public and private sector views about sustainability, identifying normative and economic tensions. However, it also had disadvantages, such as the potential for superficial sectoral views without in-depth understanding. To address this, the author clustered sectors, for example, treating ten interviews from national, local, and arm's length bodies as both individual and collective groups. The second aspect of the strategy was to design a representative sample strategy and who to engage with within the organisation, being careful not to bias the sample. To mitigate bias the author ensured that the sample size was large enough to provide a range of views and opinions. Secondly, breadth of organisations (SMEs to large corporates) and the sectors (architects to food manufacturers) ensured a variety of ideas.

Finally, a non-probability purposive sampling strategy was adopted as a way of maximising participant contribution and minimising selection bias. However, the author was very aware of the limitations and conscious of potential bias during the research and was open to views and opinions from multiple perspectives; people who had alternative or contradictory views were not excluded from the study. The sample was random in the sense that a wide database of participants were approached, and it was entirely down to them whether they wished to take part. The core sampling strategy was purposive in terms of its randomness and how it identified appropriate

participants. Information about the study was made available to the potential participants allowing them to decide whether they wished to contribute; the qualification question and the nature of the subject guided the suitability of those able to take part. This sampling strategy has practical advantages and has limitations. The process is efficient and flexible as it can adapt to the changing needs of the study, and it also allows for participants to provide in-depth insights. However, it can limit the generalisability of the study and if the researcher is not careful it can create bias or subjectivity. On balance, this approach was the best available notwithstanding some of the disadvantages (M. Meyer & Mayrhofer, 2022, Chapters 17, 70).

Seniority, experience and expert subject knowledge were all key. Ideally the person was directly managing or responsible for sustainability or decarbonisation and had in-depth knowledge and experience to be able to cite appropriate examples in support of their opinion. The aim was to engage with board-level decision-makers because they personally had the power and authority to negotiate the multiple and competing logics organisations face when integrating decarbonisation into priority-setting. Although this has a big advantage because of their expertise and subject relevancy, the disadvantage was that they were already likely to be committed to the principles of sustainability and an advocate of it as an organisational priority. This is acknowledged as a potential weakness and a concern; however, this study was not closed to contribution from those not as committed to sustainability. For example, RC3 was quite negative, but their input was still valuable.

Having decided on the type and variety of organisations and the individual specification of the participants, it was necessary to design the networking and contact strategy. The starting point to recruit participants was to use the author's network. That network was broad and diverse and not specifically aligned to sustainability. It had been built up over many years and although they were personal contacts they were not going to participate as a favour to the author, nor would the author have allowed that as it would have been a complete breach of the research ethical standards. A WhatsApp group consisting of sustainability professionals was also utilised, and that did contain participants who were aligned to the principles of sustainability, but once again individuals were not targeted; it was left to participants to volunteer assuming they could meet the previously stated qualification criteria. This dataset was augmented with help from academic staff at the University of Derby including the supervisory team.

The final component of the strategy, informed by the methodology, was to design and deploy an appropriate set of research methods to help answer the research questions. This mixed methods approach will be explained next.

4.8 Mixed methods research approach

The mixed methods approach is a systematic integration of qualitative and quantitative methods into a single study. By combining methods a better understanding of the subject is possible (Chen, 2006). It increases the probability that the data will be richer, more meaningful, and help answer the research questions more fully than would otherwise have been possible using one method alone. Furthermore, the questions can be examined from different perspectives. For example, quantitative research can establish data and information about a subject that can be analysed at sub-levels, whereas qualitative research allows for a dynamic discussion between the interviewer and the interviewee. This develops a deeper subject understanding based on a wider range of views and opinions. Typically, in mixed methods studies the quantitative research informs and complements the qualitative study. Operationally the two studies were run broadly in parallel, although the quantitative study had a two-week time advantage over the qualitative survey allowing it to inform the development of the qualitative discussion guide. Section 4.9.2.1 and 4.9.2.2 will further detail the quantitative and qualitative research.

Mixed methods has developed as a perfect solution where the ‘researcher seeks to view the problems from multiple perspectives to enhance and enrich the meaning of a singular perspective’ (Meissner et al., 2011, p. 6) and is the type of research which ‘combines elements of qualitative and quantitative research approaches...for the broad purposes of breadth and depth of understanding and collaboration’ (Burke Johnson et al., 2007, p. 123). Good mixed methods research should use well developed quantitative and qualitative research that must integrate knowledge and contribute to the literature (Creswell & Tashakkori, 2007, p. 108). The completeness or ‘fuller account’ (2021, p. 557) that a mixed method approach could provide was therefore ideal for this study. Furthermore, mixed methods research has many advantages. Clark et al., p. (2021, p. 557) detail sixteen of which completeness, greater validity, deeper explanation and credibility are key. Overall, their narrative presents a compelling argument for its use. This is further validated because the mixed methods approach minimises inherent weaknesses that are present in both quantitative and qualitative research (Bazeley, 2006).

This study chose to deploy a mixed methods approach to discover from multiple points of view how organisations are contending with the issues of the *net zero by 2050* policy. By combining quantitative and qualitative research, the evidence could be triangulated “checking results gained from one research strategy with a second” (Clark et al., 2021, p. 556). The triangulation process possible from a mixed methods study enables this validation to occur: ‘cross checking results gained with one research strategy against the results gained from the other is an advantage’ (Clark et al., 2021, p. 556). Specific areas of interest were triangulated between the quantitative data and the attitudinal qualitative research. For example, in the quantitative study net zero

partnerships were cited as being a key operating principle by 87% of contributors. However, the qualitative study found this overwhelming support masked the underlying reality: that MSPs are perceived to be the ideal solution, but are challenging to implement in practice. Depth of explanation was also key because net zero is complicated and not superficial. It was necessary to interrogate the subject thoroughly and the combination of methods allowed this to happen. Finally, the study had to demonstrate credibility and a deep understanding of the subject and therefore it was necessary to gain input from a diverse and varied group of contributors. This expansive method did take extra time and resources because there are two studies to design and deploy rather than one, but the mixed methods approach provided the most thorough methodology for capturing the perspectives of organisations and their employees on the challenges of net zero.

To conclude, the mixed methods approach delivered both subject breadth and depth, as well as viewing the subject from multiple perspectives, and its use was completely validated by the experienced reality.

Table 4.1 below summarises each research instrument and its objective and how they helped to unlock the research objectives and questions.

Table 4.1 Research mixed method objectives

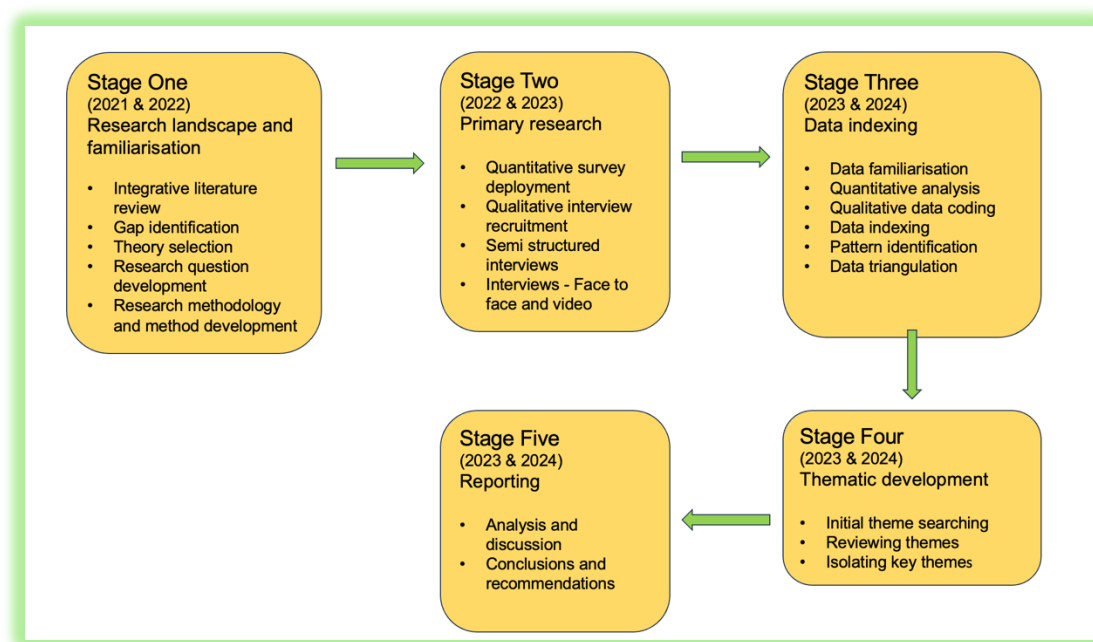
	Quantitative method	Qualitative method
Method objectives	• Broad discovery • Quantitative facts • Subject breath • Recruitment vehicle for semi-structured interviews • Selectively used to help understand some of ROs and RQs	• In-depth discovery • Views and opinions • Breadth and depth • Understand complexities • Used to unlock each ROs and RQs
Research objectives	• RO1 – The importance of net zero partnerships • RO2 – Help identify the organisational barriers and enablers of net zero MSPs • RO4 – Help understand facts about net zero MSPs	• RO3 – Help build the framework • RO1, RO2, RO4 • RO5 – Identify how organisations are engaging with net zero and develop policy and practice recommendations
Research questions	• RQ1 - Help unlock how organisations tackle net zero and its policies • RQ2 – The importance of partnerships and MSPs • RQ4 – The organisational challenges of net zero?	• RQ1 & RQ2 - MSPs • RQ3 - Understanding agency • RQ4 – Organisational reality

4.9 Research framework

Figure 4.4 illustrates the framework used to unlock the ROs & RQs. This was informed by Ritchie & Spencer (1994). Their Framework model proposes a multi-stage approach to data collection and analysis: familiarisation; primary research and data collection; data analysis and indexing; thematic development; and reporting. These principles have been followed but also expanded on to ensure that the adopted process is fully explained. Furthermore, the thematic analysis work of Braun & Clarke (2006) informed stages three and four. Their six-phase approach overlaps with the Framework model during data familiarisation and provides a useful approach to generating the initial data codes, searching for themes and using mind maps to collect initial ideas, reviewing the full range of themes emerging, and finally isolating key themes. Clarke & Braun (2017) describe the process as an organic one where the researcher plays an active role in the process of data coding and theme identification. This accurately describes the author's process, which ensured objectivity and minimised confirmation bias.

Figure 4.4 Research framework stages

Source: Author's work informed by Ritchie and Spencer (1994) and Braun & Clarke (2006)



4.9.1 Stage One: Research familiarisation.

Research familiarisation is an immersive process and is concerned with gaining an intimacy with the landscape and its setting (D. A. Gray, 2014; Lofland et al., 2006;

Ritchie & Lewis, 2003). It is about developing an understanding for both the breadth of the subject and its depth and gaining a detailed understanding about the context for the study and its boundaries. This process started in September 2021 and lasted twelve months, and although the knowledge acquisition process was ongoing, this initial stage was a fundamental one. It shaped, formed and located the author's position about the subject, identified appropriate literature gaps and helped to develop the research questions. In effect the research familiarisation built the foundations of the research and the thesis. By encompassing the subject in multiple situations: literature, online events and in-person with experts, it was possible to participate in the mind of individuals, take the role of the other, acquire widescale social knowledge and become familiar with the subject (Lofland et al., 2006, chap.2). Familiarisation commenced by undertaking an expansive and critically orientated integrative literature review in order to uncover 'new knowledge based on existing body of literature' (Chigbu et al., 2023, p. 5). The full approach was detailed in section 2.2, whilst chapters two and three detailed the specific literature reviews for net zero as a Grand Challenge and the enabling **Mechanisms** of MSPs. From these reviews the literature gaps emerged as detailed in section 3.10. This approach also shaped and formed the research questions.

The integrative literature review was informed by the original working title of this scholarship project. That identified net zero and MSPs as two key areas of investigation. This allowed a structured and methodical approach to be taken in search of relevant journal articles. Tables 2.1 and 2.2 from Chapter two provided a qualitative and quantified analysis of the core subject keywords and how the reduction process resulted in the final key words or phrases used during the study being selected.

Selection bias was minimised by ensuring that a precise set of key words were initially searched for and then constantly updated as new work was published. This was enabled through Google alerts and by subscribing to appropriate journals' newsfeeds.

Every key paper was summarised, criticisms assessed, and its key conclusions recorded. Appendices one and five through to ten provide a set of literature tables for the most important documents used in support of this study. They cover Grand Challenge, MSPs, stakeholder and institutional theory, and Boundary Spanner.

This literature search and gap identification process highlighted that, although academia is active in interrogating how organisations change and adapt as they face threats and try to achieve competitive advantage, there is a lack of consensus about what net zero actually means for business actors (McGivern et al., 2022; Steen et al., 2022). There is no shortage of views and opinions about what needs to get done to achieve net zero, but there appears to be little agreement about how to accelerate to net zero and the organisational delivery pathways. This scoping exercise clarified the research opportunity and reinforced the relevancy of the study.

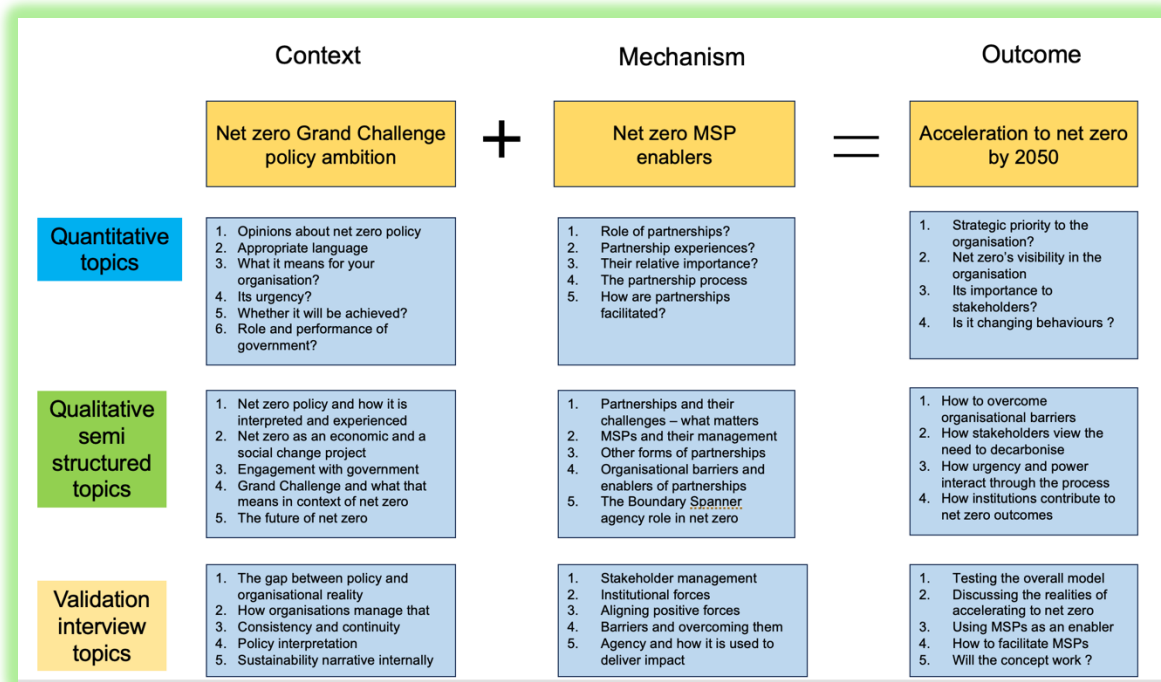
4.9.2 Stage Two: Data collection

Stage one, familiarisation, equipped the author with clarity about the broad areas of interest. Stage two, data collection, will now explain how the data was collected which involved narrowing down the broad subject areas, being specific about the questions, and designing and deploying the quantitative questionnaire and qualitative semi-structured interviews. It will also explain how appropriate contributors to the study were recruited and how the studies were deployed. This process was ethically approved by the University of Derby Research Ethics Committee and will be detailed in section 4.11.

As was detailed in section 4.4 the **C**ontext + **M**echanism = **O**utcome approach was proposed to help answer the research questions and this structure was used during the data collection stage to locate relevant topics and questions that required investigation. Figure 4.5 demonstrates how that worked for the quantitative study, the qualitative semi-structured interview guide, and the validation interviews. The **C**ontext was defined as the net zero Grand Challenge from which broad topic areas and questions were developed. The **M**echanisms are the enablers, which focussed especially on the role of MSPs, net zero as a Grand Challenge and the Boundary Spanner. The **O**utcome, how to accelerate to net zero, focused on how the organisation could decarbonise faster by thinking and operating differently, its importance to the organisation and how to manage the barriers and enablers.

The research stage is arguably the most critical and important part of any research project. If the research questionnaires are not designed appropriately the outputs from the interviews will not be optimised to answer the research's aims. The shaping of the interview questions, their tone of voice and the choice of individual words can make the difference between success and failure. Specifically, the research questions for both the quantitative survey and the semi-structured interviews were developed following the literature search and wider contextual reading. By developing a full understanding about the situation, it was possible to design an initial set of quantitative questions which are detailed in Appendix eleven. Those results helped to inform the semi-structured interview discussion guide which is included in Appendix twelve.

Figure 4.5 Applying CMO concept to the interview topics



Each study will now be explained detailing how the questions were designed, how the quantitative questionnaire and semi-structured interview guide were written, how recruitment occurred and how the studies were deployed. Prior to final deployment each study was trialled. The quantitative survey was tested with a small sample to tease out any structural or meaning issues, whilst the qualitative semi-structured interview guide was trialled in a mock interview with a person familiar with the subject. Some alterations and improvements were made prior to final deployment. These changes were around clarity, the way the questions were phrased, and in three cases the choice of words that were used.

4.9.2.1 *The quantitative study*

The aim of a quantitative study is to demonstrate generalisability and repeatability. Sampling must be randomised to eradicate bias, and to achieve the thesis's aims. The sample size must be appropriate ensuring that any sub-sets are not so small as to invalidate robust analysis and generate spurious conclusions. However, quantitative research can be superficial, and its lack of depth can limit the understanding of the problem. Furthermore, its lack of control and remoteness means that contributors can submit inaccurate or biased data that can affect the thesis's outcomes. Equally, bias can be introduced at the start of the survey in the way the questions are written, and care must be taken at this stage to be accurate and precisely craft the questions and

their meaning. Sampling and sample size can also affect the validity of the research findings.

The quantitative questions were developed following the literature review and wider reading about the organisational context of net zero. They were designed to understand about the broad areas of interest prior to undertaking more in-depth semi-structured qualitative research. From this the quantitative survey could be designed to isolate generalisable facts about net zero partnerships and their organisational challenges. This section will explain the quantitative survey development process in detail. The sky-blue box at the top left in Figure 4.7 and the individual **C M O** sections identify the quantitative areas of interest and from this a set of detailed questions were developed. The questions were broken down into three banks. These are detailed in Appendix eleven, and how they connect to the research objectives (ROs) and research questions (RQs) is as follows:

Context	Question bank 1 and 2	RO5 RO2 & RQ1, RQ2, RQ4
Mechanism	Question bank 2 and 3	RO1 to RO4 & RQ1 to RQ5
Outcome	Question bank 1 and 2	RO5 RQ4 RQ3 & RQ1

As was detailed in section 4.6, an inductive research approach is more suited to small scale surveys (Saunders et al., 2009, p. 126). The quantitative study was never intended to be a large, statistically robust, survey. Its ambition was to gain fifty to sixty responses. This target was chosen because it was judged that this size would strike a balance between credibility and manageability. The final study delivered sixty-three replies. This credible quantity demonstrates sufficient data to report with a good level of confidence that the quantitative questions were being answered fully, helping to deliver the research objectives and answer the research questions. Furthermore, this quantity built subject confidence and helped inform the development of the semi-structured interview guide. Quantitative participants were asked whether they would be willing to participate in the qualitative research and this strategy was successful. Manageability also needed to be considered. It was not easy to recruit participants, and therefore, with the available resources and timescales, it was judged that striving to recruit significantly more quantitative responses was of lower importance than concentrating on recruiting and undertaking quality semi-structured interviews.

The recruitment strategy was two-fold. Firstly, it was communicated that a tree would be planted for every reply. This was a way of demonstrating relevancy and engagement with the target audience and received many positive comments. Secondly, appropriate media channels were used to access the networks of sustainability professionals and gain reach. LinkedIn gave access to both the author's own network and a wider sustainability group. A WhatsApp group, established following a course the author attended at The Cambridge Institute for Sustainable

Leadership, was also used. The questionnaire was designed and made available through Microsoft Forms.

The questionnaire was completed independently therefore it was important to design research questions that were simple to understand and easy to follow. There can be a temptation in quantitative studies to be overly ambitious and ask too many questions. It was therefore important to strike a balance between questionnaire length and delivering the research objectives; making it short enough to attract contributors to participate yet getting the maximum number of insights. Asking too many difficult and involved questions can lead to contributors abandoning the survey or answering any question in any way just to get to the end. Through small-scale testing this balance was achieved. The survey lasted seven minutes, and following the initial classification questions, thirty-four questions grouped into three themes were asked concerning: opinions about net zero; organisational responses to net zero; and how partnerships and net zero connect.

The survey asked participants to confirm that they or their organisation had worked on a net zero project in the last eighteen months. This qualification question was designed to ensure that the participant had relevant and recent knowledge of sustainability and were able to contribute their own or their organisation's experiences in the subject and was a way of excluding those who did not meet the survey's inclusion criteria. It then asked participants to profile the organisation they worked for and themselves.

The literature review had identified net zero and partnerships as key areas and they were the focus in this survey. Concepts requiring detailed explanation, for example Boundary Spanner, were ignored in favour of more familiar ideas that were easier to communicate and understand, such as stakeholders. Grand Challenge, although less familiar, was included at this stage because it was consciously being tested versus the more familiar and populist term 'crisis' to understand whether there was a perceived difference between the terms. The core thirty-four questions consisted of short, simple statements with key words highlighted in capitals to ensure a real focus on the statement. The participants were asked to score each on a five point, highly agree to highly disagree, Likert scale.

4.9.2.2 The qualitative study

Qualitative research is far more subjective and is opinion-led, but that is where its richness lies, and useful insights obtained. Purposeful sampling is widely used in qualitative research and involves identifying individuals or groups that have the appropriate knowledge or experience for the subject (Palinkas et al., 2015, p. 534). Net zero is an exceptionally large subject and it was particularly important to carefully isolate appropriate participants from the sustainability population who had the correct expertise without introducing operational selection bias into the interview recruitment

process. This was possible by being open to contribution from any expert from any organisation who was willing to participate, interested in contributing and suitably qualified. Finally, qualitative research can be difficult to use when comparing diverse groups. Each may present their information differently and use language and meaning in subtle ways. The researcher must interpret and infer, and care must be taken during the coding and decoding stage of the work.

Semi-structured qualitative interviews, conducted in-person or by video call, were chosen as the companion to the quantitative survey; thirty-four were achieved. This research technique allowed for in-depth investigation and in a way that was flexible and more fluid than formal, rigid, quantitative questions. However, the technique is difficult; trained researchers have expertise in both asking and listening. Although the author has significant research experience, it is not as a moderator and facilitator of qualitative research. This was therefore a learning experience, and those skills developed as the interview process proceeded.

The semi-structured interview guide, like the quantitative questionnaire, needed to be realistic. The expectation was to facilitate the interview over one hour to one hour fifteen minutes, depending on the contributor's availability, and broadly this was achieved; interviews ranged from thirty minutes to one hour thirty minutes.

The interviews were undertaken both in-person and online via Microsoft Teams. The preferred route was to interview in-person as that provided more immersion in the organisation, its surroundings and the individual, but that was not always possible; Microsoft Teams was more frequently used. Every interview was recorded with permission.

Recruitment was challenging because it required individuals to commit considerable time to a study that was of more benefit to the author than the participant. Their involvement could be repaid by a full project debrief and this offer was sometimes accepted. Equally, it was important to engage with those who were appropriate and knowledgeable. The recruitment strategy was as follows. Firstly, the quantitative research provided consent to contact those who had expressed an interest in contributing further. Whilst not always resulting in their participation, it was nevertheless a good recruitment approach. Secondly, using LinkedIn, the researcher's wider network, and valuable contacts provided by the supervisory team and others at the University of Derby, it was possible to identify individuals and ask them to participate. This was also highly effective. However, one stakeholder group should be highlighted as a problem: that of national government. The ambition was to engage with a policymaker in the department for net zero, but that proved difficult. This was overcome in two ways. Firstly, by attending a sustainability conference it was possible to hear the views of the then Government's net zero minister. This was supplemented by significant net zero public domain information. Secondly, LG were very co-operative

and agreed to both in-person and video interviews, and multiple contributors provided a view about their national government experiences. In this way triangulation was achieved which, although not perfect, was acceptable.

The full semi-structured interview guide is included in Appendix twelve with the topic areas detailed in the middle green box of Figure 4.7. Following a brief introduction to the study and its objectives, the discussion was structured into five areas. The aim was to obtain in-depth perspectives into each. They were as follows and how they were connected to the ROs and the RQs is as indicated:

• Net zero as a Grand Challenge	RO2 RO5 RQ1 RQ4
• Stakeholder and institutional theory	RO1 RO2 RO3 RO5 RQ1 RQ2
• MSPs	RO1 to RO5 RQ1 to RQ4
• How complex partnerships are managed	RO1 RO2 RO5 RQ1 to RQ4
• The Boundary Spanner agency role	RO4 RO5 RQ3 RQ4 RQ2
• What the net zero future looks like	RO5 RQ4

Grand Challenge and especially Boundary Spanner were both unfamiliar concepts that required explanation. The approach taken to explain them was to detail firstly the theory, then the benefits identified from the literature review, and finally suggest real-world organisational benefits from each. This approach normalised the concepts and gained acceptance with the interviewees. They were then able to discuss the concepts more fully, expressing opinions about their usefulness and validity.

To complete this section, it is worthwhile briefly discussing part of the research design that it was not possible to deliver. The method had to be redesigned to accommodate practicalities. Three years ago, it was planned to complete the study with two workshops or sets of paired interviews in which the insights could be tested with sustainability actors. This idea proved difficult to deliver because of the time commitments required from participants. In its place two one-to-one semi-structured validation interviews were undertaken with experienced sustainability experts; this work was formally recorded and is included in the findings. These contributors participated following an email request to the original interviewee database. The two participants agreed to the follow up interview; others either failed to reply or could not work to the timescale.

4.9.2.3 *The validation interviews*

The bottom yellow boxes of Figure 4.5 details how the validation interview topics were constructed and what was discussed across **CMO**. This subject will be discussed further in section 5.7.

4.9.3 Stage Three: Data analysis and indexing

The data analysis and indexing has taken three forms. The quantitative questionnaire data has been analysed using Microsoft Excel. At a basic and at an advanced level the data has been cross tabbed to identify facts and trends. Secondly, the video and audio transcripts of the qualitative interviews have been both digitally and manually coded. NVivo was used to identify word and phrase trends and coding themes, whilst manual coding identified trends linking interviewees; stage four will explain the thematic development, analysis and reduction process. Finally, the author's own intellectual effort, impression forming, pattern spotting and data interpretation was applied, being incredibly careful and aware of the potential for personal bias. To mitigate against this the author was guided by Ritchie & Lewis (2003). Their highly cited qualitative research practice guide advised that to avoid 'bias creep' (2003, p. 20) it is important for the researcher to adopt multiple methods including reflexivity, transparency and vigilance. Reflexivity and constantly thinking of ways to be objective and neutral is important as it allows for an 'always on' method of mitigating personal bias. Allowing others to scrutinise the data and how the sample was approached is also key. This was achieved through the supervisory process and the final examination viva. Also, being vigilant and ensuring that the highest possible standards are adopted throughout (2003, p. 71) allows for constant awareness of the creep process. Collectively this process has created a rich evidence base that has allowed the themes and hypothesis to be built and developed. Each stage of data collection is outlined.

4.9.3.1 Quantitative data

Microsoft Forms enables the presentation of basic data. An example data spreadsheet is provided in Appendix thirteen. The raw data was exported to Microsoft Excel which allowed further detailed examination and segmentation to occur, for example by organisation size. This exercise fulfilled the quantitative objectives of creating clear views and quantifiable facts about net zero, partnerships and how organisations view both areas.

4.9.3.2 Qualitative data and NVivo coding

Many researchers and PGR students are positive about the power of Computer Assisted Data Quantitative Analysis Software (CADQAS) of which NVivo is an example. NVivo is widely advocated as a key academic tool (Alam, 2021; Dalkin et al., 2021). Both these journal articles are supportive of its usefulness in the development and identification of new theoretical approaches and research insights. As a counterargument to this perspective Zamawe (2015), whose work has been cited by nearly one thousand five hundred others, presents a more even-handed assessment of the tool. On one hand he believes it can work well with most research designs and

analytical approaches (2015, p. 14), but on the other he develops an argument that NVivo is an aid to analysis but the 'researcher must always remain in control' (Zamawe, 2015: 13). This author agrees with the latter comment. Although this software was used as a filing and analysis tool its usefulness as an insight tool was as supportive to personal thought, reflection, pattern spotting, and listening to what interviewees said and inferred. The author's experience was that NVivo did help this study, for example identifying the 's of the Boundary Spanner's as will be discussed in section 6.5.8, as well as identifying paragraphs that could be connected between transcripts. However, personal study and evidence interrogation was equally powerful.

Indexing is the process by which the collected data or evidence is thematically coded and classified into clustered themes from which it is possible to develop patterns (Ritchie & Spencer, 1994, pp. 180–181). The thematic analysis approach 'involves the production of initial codes from the data' (Braun and Clarke, 2006, p.88) and is phase two of their six-phase approach to the analysis process, organising the data into helpful, insightful clusters and themes that can be further interpreted. Appendix fourteen presents the clusters and themes identified for this study.

The NVivo qualitative data coding process will now be explained.

Firstly, the video and audio files were digitally transcribed then reviewed and edited, referring to the original source material to ensure accuracy. The data was then imported into NVivo, and each interview coded by identifying key phrases that linked to the literature gaps, the quantitative research themes, and the qualitative research semi-structured interview guide. This process, which represents phase two of the six phase approach to thematic analysis, (Braun & Clarke, 2006), created an expansive list comprising one hundred and twenty-three codes. This is shown in Appendix fifteen, whilst an example coded interview is included in Appendix sixteen. The codes were then split between core and second order categories. The twenty-four core categories are shown in Figure 4.6 and were isolated based on frequency.

The word cloud in Figure 4.7 shows the interview word density after excluding unnecessary and duplicate numbers, dates and names. Partnership(s), Chang(ing), Net Zero, Challenge, Organisations and Government predominated. This is perhaps not surprising considered they were included in the original questions, but their high frequency over and beyond those questions merits inclusion and comment.

Figure 4.6 NVivo 1st order categories

Home
Edit
Import
Create
Explore
Share
Modules

Export Project

Copy Project

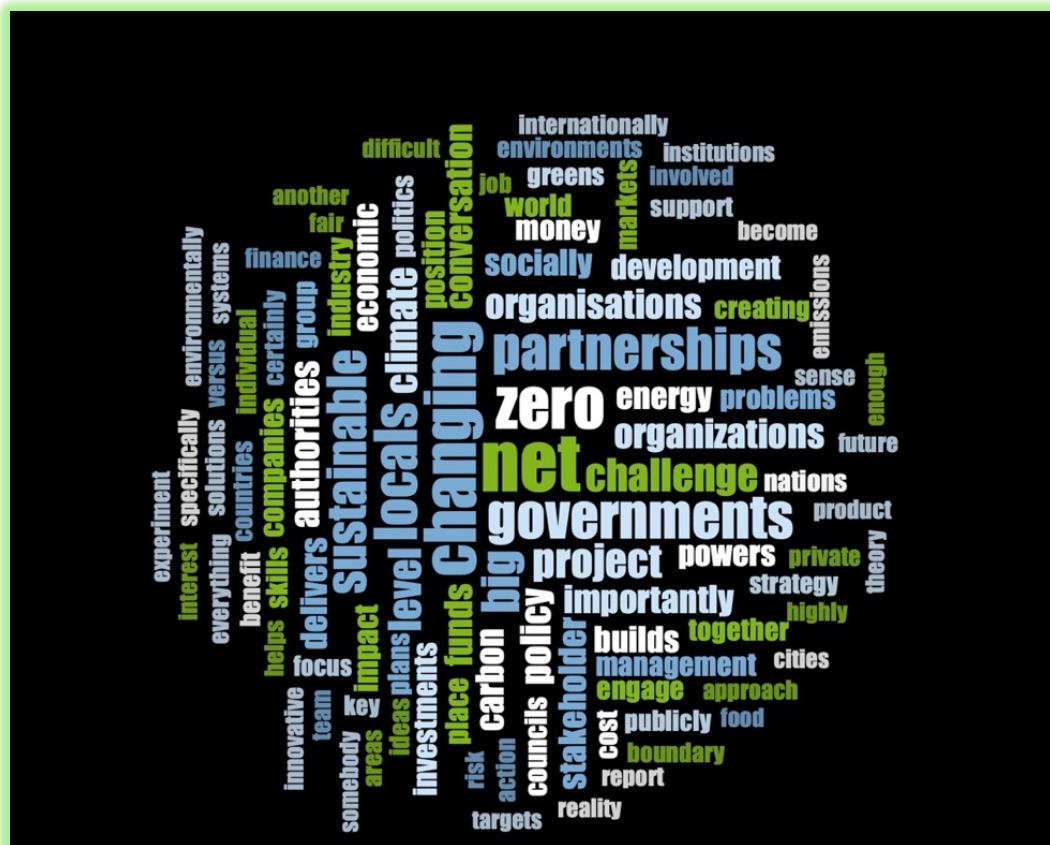
Print

Export

Upload Project

Name			Files	Refs...	Created on	Created...	Modified on	Modified by	Color
> ○ Net Zero by 2050			23	63	30 Aug 2023 at 12:...	DD	18 Dec 2023 at 14:...	DD	●
> ○ Organisation			22	42	29 Aug 2023 at 17:...	DD	18 Dec 2023 at 14:...	DD	●
> ○ Power			20	32	3 Oct 2023 at 10:47	DD	18 Dec 2023 at 14:...	DD	
> ○ Funding Finance			14	29	30 Aug 2023 at 12:...	DD	10 Nov 2023 at 16:10	DD	●
> ○ Multi Stakeholder Part...			15	27	30 Aug 2023 at 14:...	DD	9 Nov 2023 at 17:51	DD	●
> ○ Sustainability			17	26	29 Aug 2023 at 17:...	DD	10 Nov 2023 at 15:...	DD	●
> ○ Grand Challenge			15	24	29 Aug 2023 at 17:21	DD	18 Dec 2023 at 14:...	DD	●
> ○ Social Issues			15	24	30 Aug 2023 at 12:...	DD	10 Nov 2023 at 16:10	DD	●
> ○ Time Span			11	24	3 Oct 2023 at 11:37	DD	18 Dec 2023 at 14:...	DD	
> ○ Governance			13	21	3 Oct 2023 at 13:08	DD	9 Nov 2023 at 18:13	DD	
> ○ Economic vs Social			14	20	4 Oct 2023 at 07:41	DD	10 Nov 2023 at 11:30	DD	
> ○ Policy			14	19	3 Oct 2023 at 11:17	DD	10 Nov 2023 at 13:...	DD	
> ○ Boundary			12	17	29 Aug 2023 at 17:21	DD	9 Nov 2023 at 16:06	DD	●
> ○ Change			13	16	29 Aug 2023 at 17:...	DD	18 Dec 2023 at 14:...	DD	●
> ○ Stakeholder Theory			7	10	29 Aug 2023 at 17:21	DD	9 Nov 2023 at 15:46	DD	●
> ○ Sacrifices			8	9	3 Oct 2023 at 11:43	DD	9 Nov 2023 at 15:52	DD	
> ○ Agency Impact			7	7	3 Oct 2023 at 10:55	DD	10 Nov 2023 at 12:...	DD	
> ○ Government			2	3	8 Nov 2023 at 16:53	DD	10 Nov 2023 at 12:12	DD	
> ○ Institutional Theory			3	3	3 Oct 2023 at 10:53	DD	9 Nov 2023 at 18:38	DD	
> ○ DSPs			1	2	8 Nov 2023 at 15:57	DD	9 Nov 2023 at 16:35	DD	
> ○ Level			1	2	8 Nov 2023 at 15:50	DD	9 Nov 2023 at 18:36	DD	
> ○ Pressure			2	2	8 Nov 2023 at 15:47	DD	10 Nov 2023 at 14:...	DD	
> ○ Institutions			1	1	29 Aug 2023 at 17:21	DD	30 Aug 2023 at 12:...	DD	●
> ○ Type of Thinking			0	0	8 Nov 2023 at 15:55	DD	8 Nov 2023 at 15:55	DD	

Figure 4.7 NVivo word density analysis



As part of the evidence indexing process, institutional reports were also coded into NVivo and linked to other relevant paragraphs from the contributor interviews. Those reports were selected in an objective way. Firstly, based on their level of expertise. Those organisations were the CCC, the NAO and UK Government. Each met the expertise threshold because of their legal status and subject specialism. In addition, collectively these acted as a self-regulating group: government were determining strategy based on best available evidence, the NAO were auditing that strategy and its value for money, whilst the CCC were legally responsible to UK parliament for the delivery of the net zero strategy. Finally, reports were selected based on the broad research period of 2008 – 2024. In this way the indexing process could bridge the primary and secondary evidence and be used to triangulate views and opinions with secondary evidence.

Finally, to ensure valid and robust evidence was being collected, triangulation of the information was undertaken. This manual inspection cross-checked the data to ensure that the evidence was strong enough and fit for inclusion. By ensuring there were multiple sources and support for the key themes, the author could build confidence in the quality of the impact and its contribution.

4.9.4 Stage Four: Thematic development and data reduction

The theme building stage was the opportunity to think about what had been said, written, read and observed during three years of work. Searching for themes, and reviewing themes, phases three and four from the Braun & Clarke (2006) approach to thematic analysis, enabled analysis to refocus at a 'broader level of themes' (2006, p. 89). To assist this process mind maps were developed, an example is provided in Figure 4.8. This particular mind map was used at an early stage of the theming prior to further reduction. The transition from phase three to phase four of the six stage process, was enabled by reviewing and refining those themes, trying to identify a coherent pattern and assessing the 'validity of the individual themes, and whether they accurately represent the data set as a whole' (2006, p. 91). The four core signature themes that are shown in Table 4.2 below emerged from the reduction of the one hundred and twenty-three codes to the twenty-four core codes during the data analysis and relating them to the **CMO** key stages of the Pawson model. This data reduction process was achieved through a process of abstracting relevant information relating to those core codes and making a judgement about the evidence through NVivo word and phrase density analysis, complemented by manual pattern identification and matching. In this way the four core themes emerged. Those were then manually checked versus the literature gaps and finally sense checked versus the quantitative data and the qualitative semi-structured interviews.

Table 4.2 Four core themes

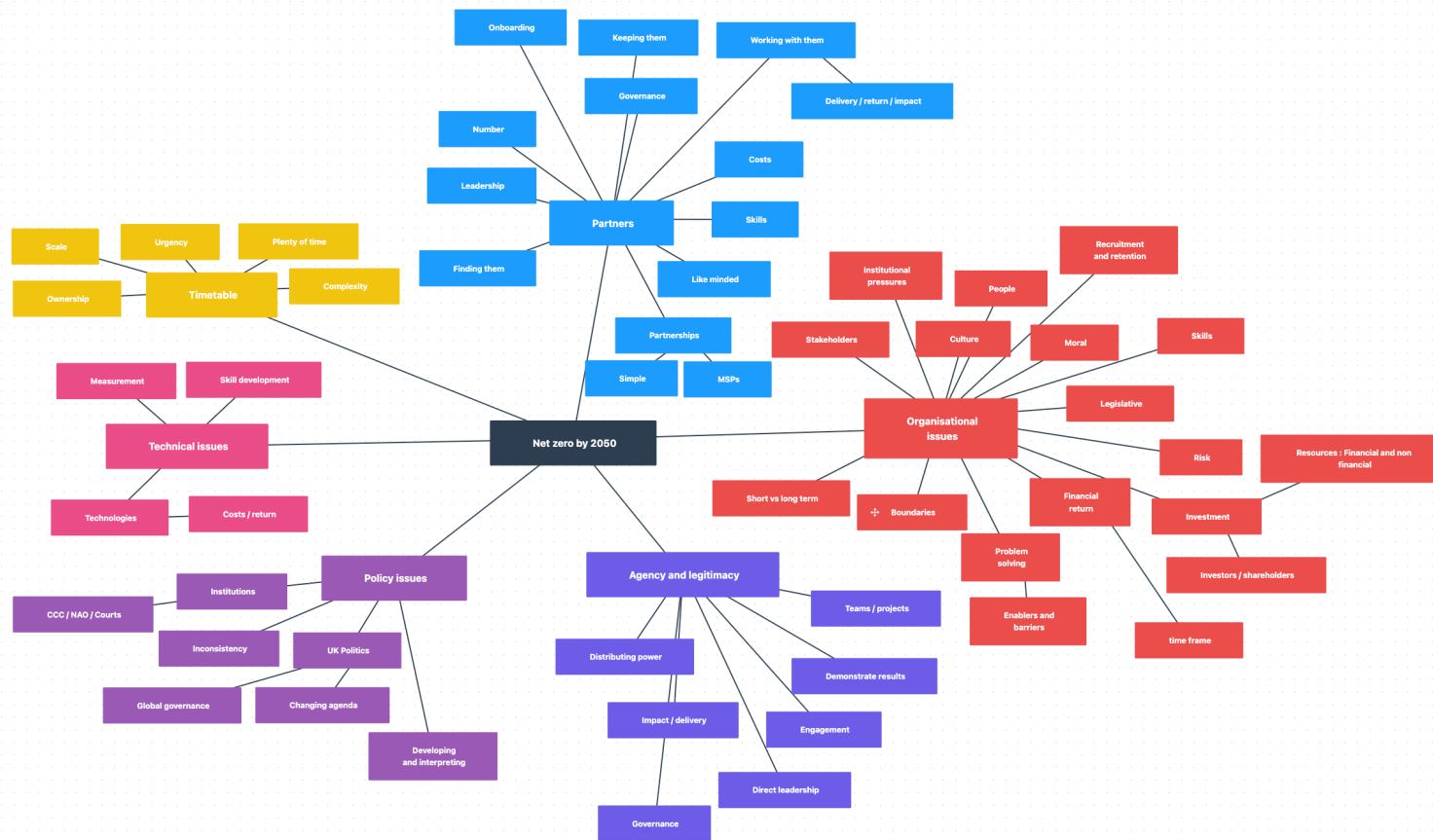
Theme	CMO relevance	Detail
One	Context and Outcome	Net zero: An ambitious policy versus its organisational reality
Two	Primarily Mechanism also Context and Outcome	Net zero: An organisational cross-boundary Grand Challenge
Three	Mechanism	The net zero MSP Boundary Spanner
Four	Mechanism	Net zero partnerships: How to enable MSPs

For example, net zero is a macro public policy issue and a critical priority for the UK. In the quantitative survey this proved, in contributors' opinions, to be a weak policy lacking credibility, which prompted in-depth investigation in qualitative depth interviews. This theme emerged through many of the interviews, was one of the most densely coded terms during the coding process and developed into Theme one; there is a gap between net zero policy and its reality.

A second example presents a different core theme development pathway. There was a clear assumption from the literature that MSPs were a common organisational arrangement. When tested on real organisational leaders this proved to be an incorrect view. Although the quantitative study supported the assumption that partnerships are certainly important when organisations are faced with decarbonisation and its challenges, the qualitative study identified that MSPs are extremely hard to assemble and operationalise, and simpler partnerships were far more common. MSP as a term was a low-density code and only fifth in the absolute ranking. It was from this contrast between the literature and reality that Theme four emerged.

Through the author's own puzzling and what if scenario thinking, several ideas were developed which survived the stresses of this stage of the research, whilst some failed. The DSP to MSP transition pathway resulted from this process. The question 'What would it take to ensure that MSPs were the automatic organisational arrangement rather than DSPs?' was brainstormed and then tested with several participants during the interviews. They were asked to think about the dynamic nature of MSPs and DSPs and the barriers and enablers of each. This is an example of what typically occurred during stage four of the research process.

Figure 4.8 Initial mind map: Searching for themes
Phase three (Braun & Clarke, 2006)



4.9.5 *Stage Five: Reporting*

Reporting is about presenting the findings, discussing the evidence, drawing conclusions and making recommendations. Chapters five, six and seven are dedicated to that purpose.

4.10 Research methods limitations

Sections 4.8 and 4.9 detailed the limitations and advantages of mixed methods research, quantitative research, and qualitative research. This short section will discuss the limitations of this study and highlight where these limitations may affect the results.

Researching realism-based subjects does have inherent problems, and is identified as a limitation, but one that was managed. Because the subject is value-laden, it is not only contributors who have beliefs and expectations about the subject. Problems are also related to researcher bias, and it was really important to recognise this and limit its effect.

The study is aiming for impact and contribution, but the author was very conscious about being critical about the evidence and how it was interpreted by securing multiple sources and avoiding being tempted to strive for impact at the expense of quality. In an ideal world researcher bias would have been minimised by engaging multiple coders to interpret the data or even asking participants to evaluate the findings. This latter point was possible but only in a limited way. Significant effort was placed on evidence triangulation (Clark et al., 2021, p. 556). Researcher bias was actively managed in a number of ways. The quantitative results were tested during the semi-structured interviews and the ideas that emerged from both stages with tested on experts in both formal, recorded and coded interviews and informal situations. The former are included in Chapter five and the latter were undertaken during supervisory meetings and at conferences.

The quantitative sample size is small and statistically not robust enough to analyse small sub segments. Therefore, only a top-level analysis between small and large organisations was undertaken. There was also limited control about who could submit responses, but care was taken to recognise and eliminate multiple submissions.

The qualitative sample size, although relatively small, is more than made up for in quality and the number of hours of detailed contribution. Through listening to and observing the interviews, the author was decoding what was being said, requiring multiple authorial judgements. As discussed in the NVivo section, this study has relied

on a balanced perspective between the author's objective judgement and the pure outputs from NVivo; as much care as possible has been taken in this overall process. In this way researcher bias has been addressed and minimised. Evidence has been assembled to justify every statement, as Chapter five and six detail, and conclusions are justified from that evidence. Mixed methods tries to limit the weaknesses and limitations of each method and, by triangulating the evidence, the thesis has endeavoured to overcome any limitations.

4.11 Ethical approval

This research study was approved by the University of Derby, College of Business Law and Social Sciences Research Ethics Committee on 09th November 2022: ETH2223-0057. The approval email is included in Appendix seventeen and follows the University's standards and ethical guidance principles (University of Derby, 2024).

The ethics of social science research are critical to any study and over the last thirty years ethical research has emerged as an 'issue of increasing prominence' due to the complexities of the stakeholder groups, their interests and the subjects being investigated (D. A. Gray, 2014, p. 153).

Diener & Crandall (1978) categorised ethical principles into four areas: harm, deception, consent and privacy. For this study, harm can broadly be ignored as it did not involve any physical experimentation or any likelihood of psychological, emotional or social harm. The interviews were conducted in a friendly, relaxed and non-intrusive manner and if there were subjects participants did not wish to discuss these were avoided. Deception was mitigated by complete transparency. The research was undertaken on behalf of a reputable university which had approved the study ethically. This information was supplied to the participants in advance of the interviews. Consent and privacy were two important and relevant ethical principles for this study and deserve more scrutiny.

The quantitative survey was open to an unrestricted audience and was advertised on professional and social media channels to targeted groups of sustainability business managers. At the start of the study the participants were asked to tick three boxes to approve their participation consent: that they were an adult, that they would generate a unique identifier number to allow easy identification should they wish to be removed from the data set at any point, and that they were happy to participate in the research. This fulfilled the consent principle. It was further made clear that the study had been ethically approved, and the data would be anonymised, protected and respected in line with the UK's GDPR legislation. Prior to commencing the study, participants were able to view the University of Derby's GDPR policy. This fulfilled the privacy principle. The data was securely stored on the UOD Microsoft OneDrive system.

The qualitative research required a more rigorous consent and privacy approach. Prior to participants taking part in the research, it was necessary for them to be supplied with documentation that informed them fully about the study, its ethical and confidentiality standards and how their data would be managed. Those consent forms were informational but were also required to be signed and returned to the author for filing. On a few occasions the author accepted an email agreeing to participation and consent when that was more convenient to the participant. If necessary, the participants were required to gain their employer's consent to participate, but this was never needed.

The interviews were always recorded either via Microsoft Teams, or when in-person, using an iPhone. Participants were informed, prior to the interviews commencing, that they would be recorded and with one exception this was agreed to. In that instance the participant asked that the recording be stopped as they were concerned about their views being recorded. The interview proceeded but the data was recorded as written notes. The contract with those participants was that their data would be anonymised, non-attributable and securely stored. An example participant involvement form is included in Appendix eighteen.

Trust and trustworthiness are key. This will be detailed further in section 4.12.3. when considering validity. Trust operates in multiple ways. Participants must trust the researcher 'trust must be developed in the researchers as persons' (Flick, 2009, p. 109), and the researcher must trust the participants' contributions. Equally, the researcher's findings must be trusted by the wider academic community. This thesis is completely built on trust which is critical to its credibility and its value.

4.12 Reliability, replication and validity

4.12.1 *Reliability*

Reliability is concerned with the consistency of a measure of the concept (Clark et al., 2021, p. 155). The objective is to ensure reliable data and, as much as possible, create a process that is free from errors to ensure repeatability (Easterby-Smith et al., 2012). Research must try to maximise reliability and to protect against bias. This study addressed these four key threats to the data in the following ways.

Participant error: Every participant was verified as being an expert in their field through their seniority and role, as explained previously in the recruitment process.

Participant bias: Honesty was key to this. The narrative being provided was certainly observer specific and open to their interpretation of the situation. However, the author constantly asked for evidence in support of their claims.

Observer error: Every qualitative interview was recorded and has been listened to and coded at least twice. The author as the observer has tried to be accurate about what has been said, recorded, and decoded as objective fact. Triangulation of the participant information with a second or third source has been attempted throughout, and if that was not possible the evidence has been excluded.

Observer bias: The author started this study with curiosity and an openness to learning and has endeavoured to construct a narrative based on evidence. Evidence based decision-making is really important to the author and a significant driver of why so much data has been collected for this study. This has aimed to remove the author's own bias from the work.

The research strategy detailed the ambition to consider all the available evidence and reference as many triangulation points as possible to create a reliable study. The evidence base is significant comprising academic and secondary sources augmented by primary research. This fulfils one aspect of reliability. A more challenging aspect of reliability is stability. This study is not a scientific experiment operating under closed laboratory conditions. There would be different participants if the study were undertaken again and there would be new and nuanced perspectives about the net zero Grand Challenge. However, it is hoped that with the adopted mixed methods strategy, reliability and repeatability have been maximised. The quantitative study could be repeated and tracked over time and the five point Likert scale ensures the questions have longevity and repeatability.

4.12.2 Replication

Replication is not a key objective of the study, but it is worthwhile addressing it briefly. Replication is not straightforward in social science research (Clark et al., 2021, p. 369) due to a number of the issues discussed in the previous section, but as mentioned, the quantitative study can be easily replicated over time using a tracking study. Qualitative research is often criticised for its subjective nature, but it is hoped that the mixed methods approach allows for better replication than would otherwise be possible with a single method study. This line of argument is also true for the issue of generalisation and whether the study can be generalised to other Grand Challenges. This will be addressed in Chapter seven.

4.12.3 Validity

Validity refers to whether the idea actually does measure that concept (Clark et al., 2021, p. 156). Can the author's work be trusted and is the 'enquiry worthwhile paying attention to'? (Lincoln & Guba, 1985, p. 290). Their work on validity and trustworthiness investigated four areas. Those of:

Truth: The work has been based on others' perspectives of the net zero reality and the author has endeavoured to create an accurate representation of the truth based on maximising the available evidence.

Applicability: Grand Challenge and Boundary Spanner have a generalisable applicability to other settings. If this study delivers that, it fulfils trustworthiness.

Consistency: Repeatability will be hard to fully achieve. The quantitative survey is easier, but the semi-structured interviews are highly time and person dependent.

Neutrality: Bias has been managed through the triangulation of the mixed methods as detailed in section 4.8 and 4.9

Overall, the author would contest that maximum effort has been made to make this work trustworthy.

The work is logical, factually sound, convincing and clear. Section 4.12.3 has discussed how the ideas have been stress-tested with experts which relates to face validity (Clark et al., 2021, pp. 156–157): do those with relevant experience align with the findings? As described in that section, two additional validity testing in-depth interviews were undertaken following the completion of the main research to gain findings feedback and test whether the work felt correct. This will be reported on in detail in section 5.7, and the findings were supported. Finally, the author's two experienced academic supervisors also support the work and are confident about its validity.

4.13 Chapter conclusions

This chapter has detailed the thesis's philosophical approach, grounded in realism, which has determined how the questions are asked. The RQs are concerned with 'what matters' and 'why do things appear as they do' (Jagosh, 2020, p. 121). The **CMO** realist-based model (Pawson, 2006) has been explained and applied through this chapter to unlock the insights from the research. The chapter used the 'research onion' (Saunders et al., 2009, p. 108) taxonomy, which starts with philosophy and ends with data collection, and explained why a mixed methods research approach was chosen and the details of the chosen methods. Furthermore, the chapter detailed a five-stage research framework emphasising the data collection, coding and thematic development process and how the considerable number of open codes were distilled down to four key themes.

Overall, the methodology and methods are considered by the author to be as rigorous as possible and have been strategically and tactically applied to help answer the research objectives and questions.

Chapter 5 Findings

5.1 Introduction

This chapter presents the research findings of the thesis. It examines the *net zero by 2050* policy from various stakeholders' perspectives, providing a comprehensive understanding of net zero and the challenges of partnerships. The author interviewed many sustainability experts over the past three years, each contributing valuable insights into the strategic and operational challenges of managing the net zero Grand Challenge alone or in partnership. While it cannot be guaranteed, the author is confident that the contributors have provided an honest and balanced view. These rich conversations have uncovered a variety of beliefs, expectations, and what matters most in organisational decarbonisation. The research has endeavoured to locate the 'causal powers' that effect organisational change and provide an understanding of the net zero organisational narrative. This aligns with a realism-based agenda (Pawson, 2006, pp. 20–21).

5.2 Chapter taxonomy

The research framework, as detailed in Figure 4.4, focusses on the findings from stage two, primary research. The chapter first details the demographic data from the quantitative survey and semi-structured interviews. Section 5.4 then explores the four key themes and develops an evidence base that helps to answer the ROs and RQs. Each theme is explored using both quantitative and qualitative primary data. Section 5.5 discusses the six component attributes from stakeholder and institutional theory, as detailed in Chapter three sections 3.5 and 3.6, and used in the theoretical framework. The data highlights how organisations contend with stakeholder urgency, legitimacy, power, coercion, normativity, and mimicry, which shape their beliefs and attitudes. The chapter concludes by summarising the key findings, testing them, and discussing their validity and reliability.

5.3 Contributor demographics

Tables 5.1 and 5.2 present an overview of the demographic data from the quantitative survey and the semi-structured interviews. The data was extracted from Microsoft Forms and analysed in Microsoft Excel. Appendix nineteen presents the quantitative demographic data whilst Appendix twenty presents the quantitative results graphically.

5.3.1 Quantitative data: Socio-demographic summary

Table 5.1 provides a summary of the demographic data, supported by Figures 5.1 to 5.3. The quantitative survey contributors were evenly split between large and small organisations. They represented a diverse range of organisations, including complex corporates, SMEs, LGs, LEPs, sustainability consultancies, and small NGOs (Figure 5.1). The contributors were predominantly senior, with over 60% operating at board level (Figure 5.2). Each contributor was directly or indirectly responsible for sustainability and possessed strong subject knowledge. Their functional responsibilities varied widely (Figure 5.3). Notably, 25% of contributors had direct management control over sustainability and net zero. Geographically, the UK was the predominant territory, with over 30% of contributors having an international reach. Regionally, Derbyshire and Nottinghamshire had the highest number of survey contributors.

Table 5.1 Quantitative data: Contributor demographics (n = 63)

Size of Organisation	Type of Organisation	Functional Level*	Functional Responsibility*	Geography*
48% Large	31% Large corporate	14% CEO	25% Sustainability or net zero	28% UK wide
53% Small	28% SME	34% Director	12% Board	32% International
	11% Local Government	26% Manager	13% Operations or Supply chain	13% Derbyshire & Nottinghamshire
	4% LEP	9% COO	13% Strategy or Policy	8% London & Southeast
	4% Financial services	4% Chair	11% Commercial	7% West Midlands
	4% NGO	9% Other	12% Project delivery	8% North of England
	3% Education		7% Finance	
	9% Other			
Notes * Contributors could select up to two responses Large > 250 employees Small < 250 employees 250-employee distinction aligns with EU categorisation (European Commission, 2021)				

Figure 5.1 Quantitative survey: Organisational type



Figure 5.2 Quantitative survey: Functional level

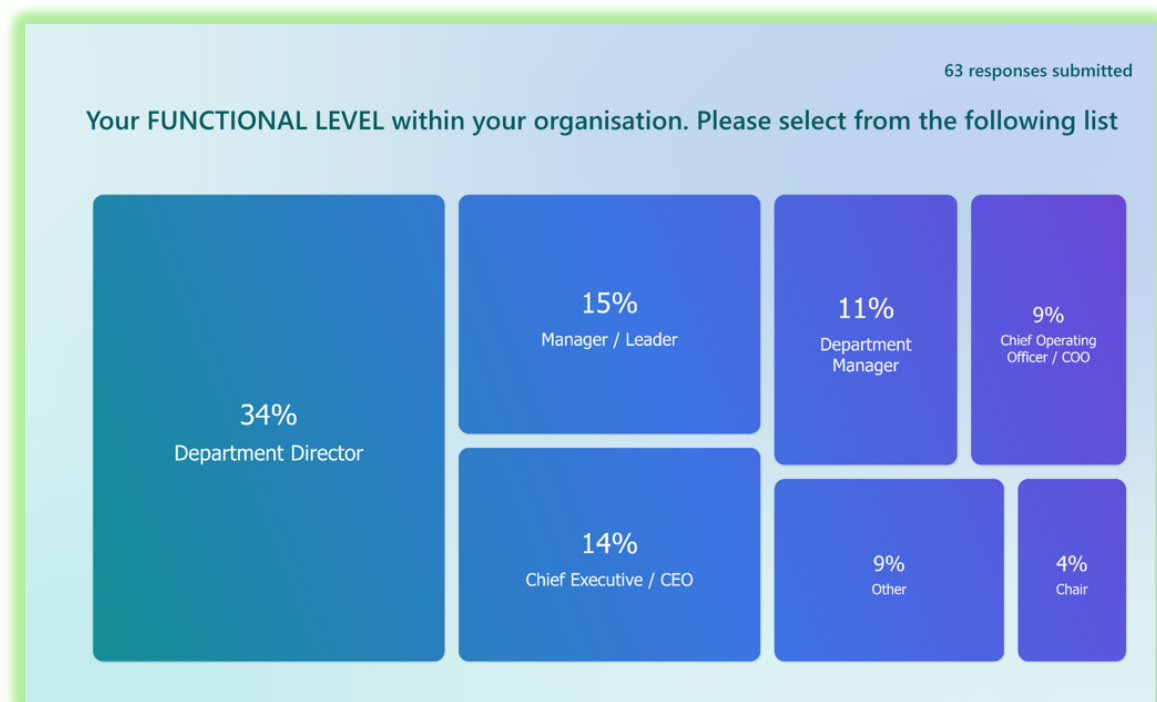
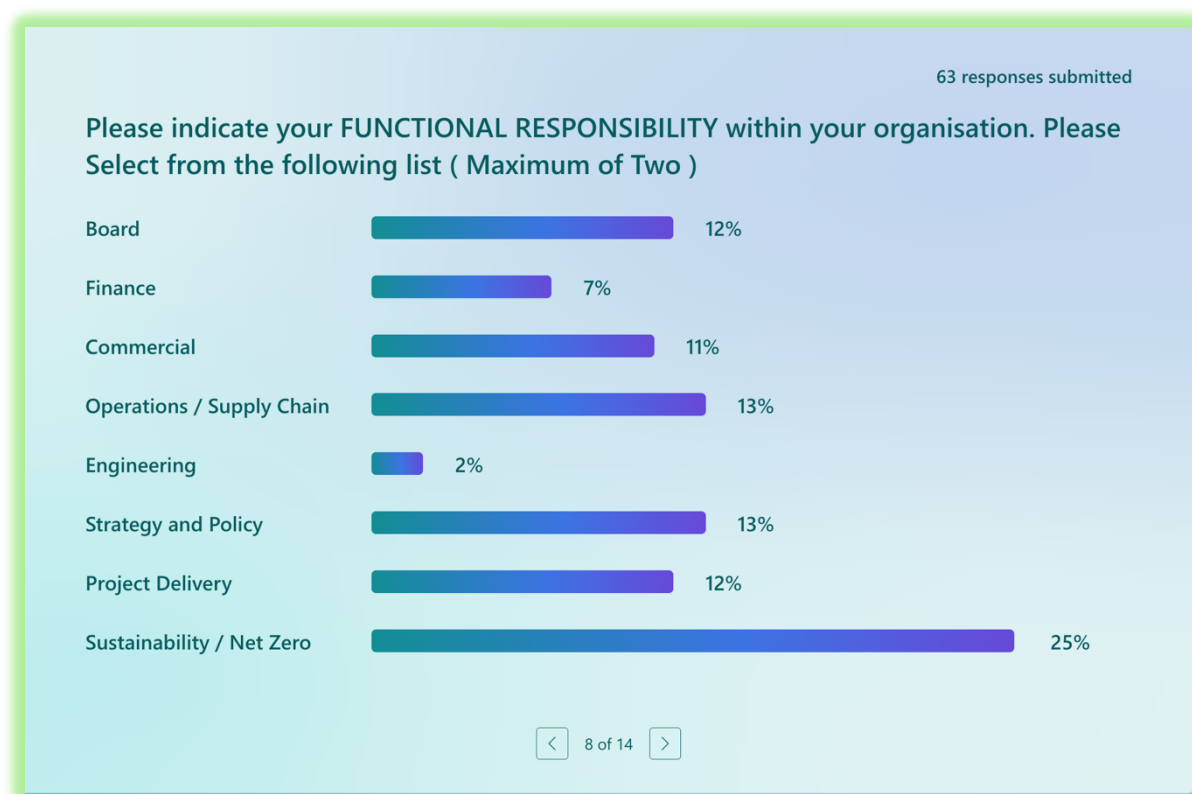


Figure 5.3 Quantitative survey: Functional responsibility



5.3.2 Qualitative data: Socio demographic summary

Table 5.2 summarises the data. The interviewees were evenly split between large and small organisations, with large corporates being the largest group. Strategic consultancies provided expertise from multiple clients, offering valuable breadth. Government, including arm's length bodies, made up about 25% of the sample. Those from LG and LEPs were well-versed in the institutional challenges of decarbonisation and net zero, discussing top-down pressure from national government and their own citizen-focused initiatives. Functionally, 57% operated at board level, and 75% were responsible for sustainability or net zero. Many interviewees had dual responsibilities, as reflected in the functional responsibility data, which allowed up to two role choices. The group was familiar with the UK and its net zero challenges, and 36% had wider international knowledge.

Table 5.2. Qualitative data: Semi-structured interviews: Contributor demographics (n = 34)

Size of Organisation	Type of Organisation*	Functional Level	Functional Responsibility*	Geography*
48% Large	28% Large corporate	18% CEO	75% Sustainability or net zero	92% UK Wide
52% Small	27% Strategic consultancy	27% Director	28% Board	7% International
	21% SME	27% Manager	20% Operations or Supply chain	36% Both
	11% Local Government	12% Owner	35% Strategy or Policy	
	6% NGO	15% Other	10% Commercial	
	6% LEP		45% Project Delivery	
	4% Financial services			
Notes * Contributors could select up to 2 responses Large > 250 employees Small < 250 employees 250-employee distinction aligns with EU categorisation (European Commission, 2021)				

5.4 Key research themes

5.4.1 Theme one: Net zero, an ambitious policy versus its organisational reality

5.4.1.1 Quantitative data question bank one: How organisations view net zero

Theme one sets the **Context** and tries to understand the gap between the ambitious policy and the organisational realities by addressing RO5, RO1 & RO2 and RQ1, RQ2 and RQ4.

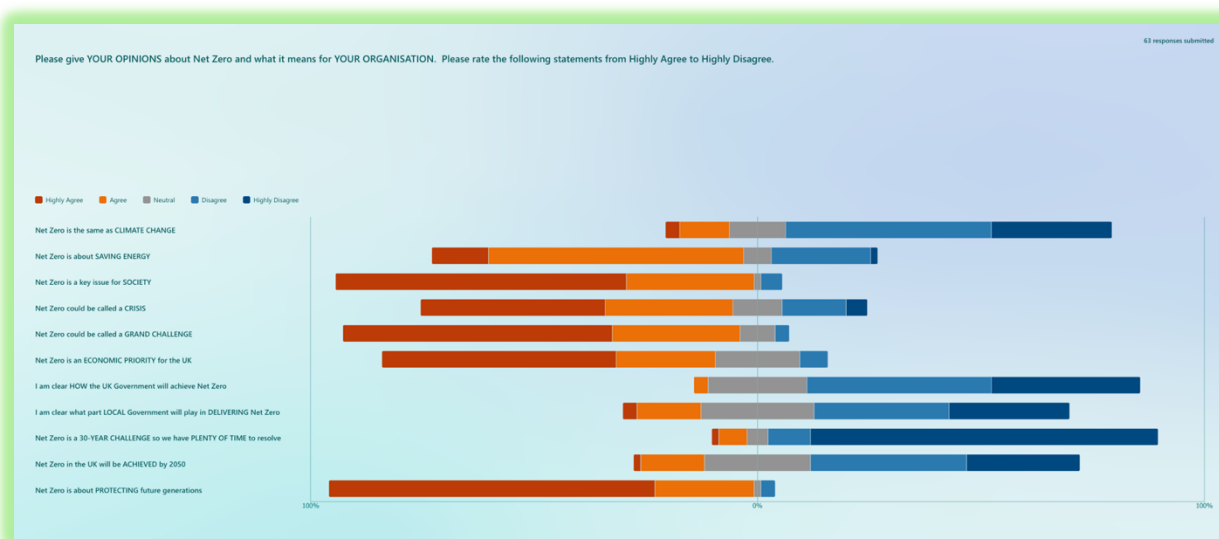
Question bank one posed eleven questions about net zero and asked contributors to rank their answers on a five-point Likert scale from highly agree to highly disagree. The results are presented in Table 5.3 and graphically in Figure 5.4. The data was extracted from Microsoft Forms and analysed in Microsoft Excel. A basic pivot table was created to categorise and analyse the data, revealing organisational size as a key differentiator. Other classifications resulted in segments too small to yield meaningful results.

Net zero is a subject fraught with tensions and conflicts between **Context** and **Outcome**. While 93% of contributors believe the net zero challenge is urgent and time-sensitive, only 15% think it will be achieved by 2050. However, 75% consider it an economic priority, 94% a key societal issue, and 95% about protecting future generations. These five questions highlight the tensions between urgency, time, economic importance, and moral responsibility. Despite its urgency, 93% of organisations are unclear about how the UK Government will deliver net zero, and over 80% are unclear about the role of LG in net zero. Both institutions are crucial to achieving net zero's outcome. Stakeholders and organisations seek leadership from the Government and clarity on a plan and individual responsibilities. Notably, there is a lack of confidence in the UK national government, underscoring the gap between **Context** and **Outcome**. The choice of language is also significant. There is a substantial gap between describing net zero as a Grand Challenge and portraying it as a crisis. Grand Challenge has higher salience, with an 89% versus 70% gap. This is particularly notable given that at this stage, Grand Challenge had not been explained as a concept but it relied on contributors interpreting the words and their meaning.

Table 5.3. What does net zero mean to the organisation?

Statements	Response Agree*	Larger Organisations	Smaller Organisations
Net zero in the UK will be ACHIEVED by 2050	15%	No Difference	
Net zero is a 30-YEAR CHALLENGE so we have PLENTY OF TIME to resolve	7%	No Difference	
Net zero could be called a GRAND CHALLENGE	89%	No Difference	
Net zero could be called a CRISIS	70%	60%	82%
Net zero is an ECONOMIC PRIORITY for the UK	75%	70%	78%
Net zero is a key issue for SOCIETY	94%	No Difference	
Net zero is about PROTECTING future generations	95%	No Difference	
Net zero is the same as CLIMATE CHANGE	14%	4%	21%
Net zero is about SAVING ENERGY	70%	56%	82%
I am clear HOW the UK Government will achieve net zero	3%	0%	6%
I am clear what part LOCAL Government will play in DELIVERING net zero	18%	23%	12%
Notes * Contributors who highly agreed or agreed. Top two boxes Large > 250 employees Small < 250 employees Words in capitals were used to provide emphasis and clarity for participants			

Figure 5.4 Net zero: Quantitative data question bank one.
[High resolution version available in Appendix twenty]



5.4.1.2 Quantitative data question bank two: Organisational responses to net zero

The second part of the quantitative study explores how organisations responded to net zero its tensions. The data demonstrates the significance of the subject and the active tensions between its **Context** and the ambitious **Outcome**. Thirteen questions were asked, each scored on a five-point Likert scale. The study investigated where net zero figures as a strategic priority, its relative importance compared to other competing priorities, stakeholder engagement, and its impact on behaviours and institutional engagement. The data was sub-analysed by the size of the organisation, with significant differences reported in Table 5.4 and graphically in Figure 5.5.

For organisations, net zero is becoming increasingly important. They are clearly trying to develop clarity about how they interpret the context versus the longer-term challenge and the eventual net zero outcome. 75% of organisations see it as a strategic priority, receiving board-level attention, especially within large organisations. The topic is more important than it was twelve months ago. To deal with net zero, 98% of organisations need partners, and 84% would consider working with competitors. However, 59% of organisations cite that the subject exceeds their organisational skillset. Operationally, net zero is seen as a cost, with over 70% viewing it that way, increasing to 78% in larger organisations. From an external stakeholder perspective, net zero is a key subject that is changing both the organisation's behaviours (84%) and their customers' (again, 84%). Fewer (65%) consider net zero to be a source of competitor advantage, although the SME sector is more positive at 76% compared to larger organisations at 55%. Finally, less than half of all organisations have discussed

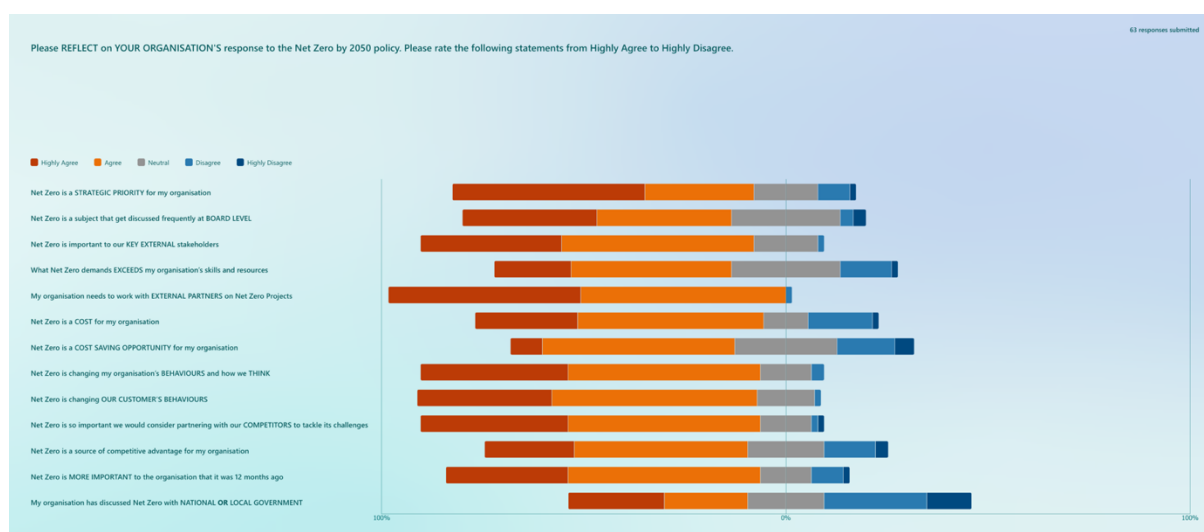
net zero with any form of Government. Only 31% of SMEs have engaged, increasing to 58% of large organisations.

The data from sections 5.4.1.1 and 5.4.1.2 helped shape the semi-structured qualitative interview guide concerning net zero Context. This will be developed further in section 5.4.1.3.

Table 5.4. How is your organisation responding to net zero?

Statements	Response Agree*	Large Organisations n=30	Small Organisations n=33
Net zero is a STRATEGIC PRIORITY for my organisation	75%	No Difference	
Net zero is a subject that get discussed frequently at BOARD LEVEL	67%	90%	79%
Net zero is MORE IMPORTANT to the organisation that it was 12 months ago	78%	92%	63%
My organisation needs to work with EXTERNAL PARTNERS on net zero projects	98%	No Difference	
Net zero is so important we would consider partnering with our COMPETITORS	84%	78%	91%
Net zero is important to our KEY EXTERNAL stakeholders	83%	90%	79%
Net zero is a source of competitive advantage for my organisation	65%	55%	76%
What net zero demands EXCEEDS my organisation's skills and resources	59%	No Difference	
Net zero is changing my organisation's BEHAVIOURS and how we THINK	84%	93%	76%
Net zero is changing OUR CUSTOMER'S BEHAVIOURS	84%	No Difference	
Net zero is a COST for my organisation	72%	78%	65%
Net zero is a COST SAVING OPPORTUNITY for my organisation	56%	No Difference	
My organisation has discussed net zero with NATIONAL OR LOCAL GOVERNMENT	44%	58%	31%
Notes * Contributors who highly agreed or agreed. Top two boxes Large > 250 employees Small < 250 employees Words in capitals were used to provide emphasis and clarity for participants			

Figure 5.5 Organisational response to net zero: Quantitative data question bank two [High resolution version available in Appendix twenty]



5.4.1.3 Qualitative data: Net zero Context

The quantitative survey results informed the key areas that the qualitative interviews explored. Firstly, Table 5.5 presents how contributors view net zero policy generally. This section discusses how the organisation is managing net zero policy as an organisation logic. For each of the broad qualitative points, an estimation is made of how many contributors agreed with the general sentiment. It can only be estimated because contributors expressed or used different words to indicate the same broad point. These points are discussed further here and developed further in Chapters six and seven.

Contributors hold strong beliefs about net zero and its reality, which contribute to the significant challenges organisations face when contending with net zero. These are illustrated by the following quotations.

Beliefs

'Medieval history can understand problems that are not sortable such as net zero' RE7 – referring to the funding problems of previous Kings of England

'The law and net zero are similar – open to multiple interpretations' RE10

'Public benefit corporations were established to address social purpose issues; perhaps net zero should be solved that way' RC14

Therefore, there is a clear need to think differently and define a new perspective on how organisations can address net zero. It is an organisational challenge, and as Grand Challenge supports, there is a need to remove blockages, curate new stories, and develop real purpose as presented in Figure 6.1. There is a need to be objective, be realist and develop robust action to accelerate the UK to net zero. This is supported by the following quotations.

Reality

‘These (net zero) issues are very complex and difficult to answer’ RC10

‘It is not easy, but it is so important’ RC15

‘We must think differently and resolve the issues’ RC23

Table 5.5 below provides specific quotes that enhance understanding of the context of net zero. Similar to the quantitative findings, a significant portion of contributors believe that achieving net zero by 2050 is an extremely challenging task. The 76% score indicates a range of similar viewpoints regarding 2050 feasibility. While some expressed outright scepticism, others held a more balanced perspective but still considered the target an extremely ambitious goal. Competing interests and self-interest pose obstacles to the policy target. While net zero’s urgency is undeniable, with over 90% viewing it as a major priority, the confused policy agenda highlights a lack of strategic leadership from the government. The policy itself is perceived as difficult to comprehend comprehensively, and its cross-cutting nature across policy and organisational boundaries suggests the need for joined-up thinking. Net zero is viewed as an economically challenging subject, and few contributors understand how to profit from it. Rarely is it seen as a moral objective, with few contributors even discussing it as an issue. However, it was evident that organisations must lead in the absence of government leadership. While achieving net zero is not always straightforward, there was a consistent message that embracing its challenges and quantifying the target enhances its legitimacy and status within the organisation.

Table 5.5. Qualitative data: Net zero Context

Broad point	% Contributors agreeing with broad point	Quotation	Role	RC
Net zero delivery is unrealistic	76%	Nobody I talk to thinks it will be achieved	Ex CEO lobby group	RC29
		I cannot see people hitting these net zero targets		
		People have their head in the sand	Department manager, co-ordinating sustainability	RC15
		NIMBYism is at the heart of net zero	CEO city council	RC27
Net zero is urgent	90%	It is not easy, but it is so important	Department manager, sustainability	RC15
Policy is confused	70%	As a phrase net zero does not mean much	Sustainability lead	RC2
		The policy restrictions: planning, environmental and financial, make net zero an unnavigable minefield	Green finance director	RC32
		It is a great sound bite, but lacks any depth, and there is a gap to reality	Local government director	RC9
		It is always about money and rarely about social issues. When will they be discussed; migration, flooding, food shortages, health	Social sustainability manager	RC14
		Net zero, is so big, it is too hard to talk about as a concept today	CEO SME in sustainability	RC10
Government needs to lead	65%	There is no leadership from government	CEO LEP	RC18
		There is no cross-department co-ordination	CEO LEP	RC7
		Net zero is so difficult. We need a lot of small fixes everywhere then hope that all these small fixes will get connected to one another	Academic	RC34
Economic issues take priority	83%	How we make money from net zero is a mystery, it just costs us	CEO SME	RC3
		Few stakeholders are willing to wait 30 years for a return	Green finance director	RC32
		The private sector is expected to do all the work, and in the end the consumer will have to pay, but do not want to pay	Sustainability director large corporate	RC5

Organisations must take the lead	90%	Net zero is a core priority for the whole organisation	Director, large corporate	RC20
		Net zero is focussing minds	Sustainability lead	RC2
		We are committed to Science Based Targets...It is everyone's responsibility – we are all bought into it	Director large corporate	RC23
		(net zero targets) It is a real currency that the senior commercial teams can use with their customers. It is a badge of progressiveness and credibility	Sustainability director	RC5
		Scope one and two we have under control, scope three is challenging	Sustainability director	
		Local authorities have declared climate emergencies, and they are starting to set their net zero targets	Department manager, co-ordinating sustainability	RC15
The table presents a range of representative quotations The research contributors' (RC) details are in Appendices twenty-one and twenty-two				

5.4.2 Theme two: Net zero, an organisational cross-boundary Grand Challenge

Chapter two explained the **C**ontext of net zero, describing it as both a Grand Challenge and an institutional logic that can shape an organisation's beliefs and practices. Net zero is complex, uncertain, and evaluative, with many tensions. Theme two explores these pressures, specifically addressing RO2, RO5, RQ1 and RQ4.

5.4.2.1 Grand Challenge

Theme one identifies that net zero is urgent, but also complicated and confusing. It clearly meets the complexities of a Grand Challenge with its inherent uncertainties and subjective perspectives (Ferraro et al., 2015). The quantitative survey established that 89% of contributors think that net zero is a Grand Challenge. This compares to only 70% who think that net zero is a crisis. Crisis is a term used widely in society in relation to climate change and therefore it is significant that Grand Challenge was preferred. The semi-structured interviews provided an opportunity to discuss Grand Challenge in more detail and to understand whether the sentiment from 'Grand' i.e. its scale, and 'Challenge' i.e. the difficulty of the task, helps to characterise net zero more accurately as a Grand Challenge.

Table 5.6 presents Grand Challenge data based on exemplar quotations themed by the Ferraro et al. (2015) characteristics: Complexity, Uncertainty and Evaluative. These quotations have been chosen because they are good examples of the general broad point being made. To negate any concerns about the author being selective about the quotes, an estimation has also been made of how many contributors qualitatively agreed with the general sentiment. It can only be estimated because contributors expressed their views in diverse ways or used alternative words in support of the same broad point.

The Grand Challenge characteristic of 'complexity' is used as a descriptor by 75% of contributors. Net zero presents actors with multiple issues they need to contend with; it is such a big subject. It can also be hard to design a road map because of its scale and complexity. Industry standards and agreed scientific based emissions targets can make the complexity easier to comprehend, group and manage.

Hahn et al. (2015) proposed that sustainability was faced with temporal and spatial tensions and net zero faces similar pressures. These create uncertainty for many organisations. The quantitative survey identified time as well as social and economic factors as important considerations for many organisations. 'Uncertainty' was discussed directly or inferred by 65% of contributors, and although lower than the 'complexity' score, it is still a strong score (Table 5.6). The quotations in Table 5.6

reflect that ‘uncertainty’ and are concerned with the unpredictability of costs and the substantial change necessary to engage with decarbonisation.

‘Evaluation’ is central to the net zero Grand Challenge. There were multiple views about the challenge and 71% of interviewees discussed how they manage and balance the multiple interpretations and meanings about net zero: economic vs moral; national leadership versus local leadership; and what evidence really means when developing a policy or a strategic agenda. Many sustainability leaders frequently have to balance and negotiate competing net zero logics and tensions with their organisational peers in order to lead an integrated and accepted sustainability agenda in the organisation.

Table 5.6 Net zero as a Grand Challenge: Its key drivers and characteristics

Complex – 75% of contributors used this broad theme during the discussions		Uncertain – 65% of contributors thought that net zero created temporal and spatial uncertainty		Evaluative – 71% considered net zero to have multiple interpretations	
Net zero, is so big, it is too hard to talk about.	RC10	The costs of achieving net zero are highly uncertain but the costs of inaction would be far greater.	RC8	Many people look at sustainability with an environmental lens, but I think about climate justice and social inequality.	RC14
These are complex issues we need to answer... But these questions are so difficult. (context (decarbonisation))	RC10	In the short term you can look at the costs and say, oh! However, it is going to be much more expensive eventually.	RC1	There is no leadership from government. Evidence-based policymaking just does not happen. Just look at net zero.	RC18 RC29
The industry is calling for this. They want a road map and a set of rules to help guide them.	RC19	We zoom in on carbon capture and say it will be awesome by 2045. But there is nobody checking whether that is reality.	RC10	I think there has been a bit of a misunderstanding that it is just a council ambition and that no one else is responsible for delivering it.	RC9
It is big. It is first about committing to the science-based targets initiative and measuring the key indicators; but its complex.	RC23	But without external scrutiny, which has not happened its ambitious, so you could argue it is due to a bit of naivety.	RC5	We see tensions between us and national government... they have a net zero target by 2050; LG have carbon neutral targets. by 2030 to 2035 which is a lot closer.	RC8

		Major structural change projects are always hard to predict and forecast.	RC33	In a few years we will start to see all these (net zero projects) fail unless there is something happening in the background; it is inevitable.	RC15
The table presents a range of representative quotations The research contributors' (RC) details are in Appendices twenty-one and twenty-two					

5.4.2.2 *Net zero crossing organisational boundaries*

Grand Challenges are complex multidimensional projects that often cross organisational, structural, and geographical boundaries. Despite their frequent use in academic contexts, including in the Boundary Spanner concept, it is unclear if organisational leaders understand the term. Grand Challenge academic research emphasises the need for multi-disciplinary collaboration: can an understanding of organisational boundaries help organisations embrace major change-based projects like the net zero Grand Challenge?

Some leaders are very aware of their organisation's boundaries and what this means for their organisation; example quotations are shown below. However, when the transcripts were reviewed in excess of two thirds did not relate to the concept or understand the advantages or disadvantages of being boundary aware.

'I have never thought consciously about boundaries – we just get on with the day job'
RC15

'Boundaries is just confusing: We do what is necessary' RC2

'Boundaries: What do you mean?' RC3

In contrast:

'We have to be highly aware of our boundaries – we are in the middle of a Venn diagram of organisations, and we need to understand the influence we can have with our partners' RC8

'My team are constantly scanning the boundaries of both our organisation and the local authorities we work alongside – that is what my two officers do... We are looking to expand our reach and establishing new boundaries and folding old ones'
RC17

'We operate a campus of experts, and each are responsible for their own spheres of influence, and they derive that from the boundaries of the organisations they work with' RC1

'They are highly skilled and really understand everyone's role and where one role stops, and the others start: it's about boundary identification' RC1

'If we are clear about boundaries it helps to identify blockers and navigate pathways' RC13

'My role is to cross boundaries, and I have never felt constrained by my job description, that is what I do' RC11

5.4.3 Theme three: The net zero MSP Boundary Spanner

Theme three is concerned with agency and the part this plays in developing stronger MSPs. It addresses RO4 and RQ3 whilst also contributing to RO2, RO3, RO5, RQ4 and RQ2. Agency was identified as a literature gap in section 3.10.2. This study is interested in boundary spanning generally, and in the context of MSPs; this section will firstly detail the data relevant to the Boundary Spanner concept, then the data that helps understand their usefulness in MSPs.

The Net Zero MSP Boundary Spanner is an agency role that spans organisational boundaries, facilitating inter- and intra-organisational field-level change. The literature review in section 3.9 highlighted the growing academic importance of the term and the role Boundary Spanners play at the meso and micro levels. While the term itself may seem academically elegant but organisationally clumsy, it provides a way of connecting agency with delivery and action. This necessitated careful calibration of its introduction into the research. The semi-structured interview guide was designed to first introduce the challenges of agency and agential change, followed by an explanation of the Boundary Spanning role and its usefulness as an organisational enabler at the system, firm, and individual levels. This narrative was then used to collect views and opinions from contributors, as detailed in Table 5.7 which segments quotations by agency, change, and finally, Boundary Spanner.

Boundary Spanner is an unfamiliar concept to most contributors. Over 80% were unaware of the term, but when explained, its meaning became clearer. Contributors could describe the role from experience, even if they did not use the exact phrase. Table 5.8 details the various terms used by contributors to describe the role and responsibilities of the Boundary Spanner. These terms were identified during the coding and data reduction process and helped develop the Six Characteristics of the MSP Boundary Spanner (Six Cs), which will be detailed in Chapters six and seven. Two contributors directly challenged the role and term. They were concerned about how legitimacy and power are distributed internally and externally to the Boundary Spanner by the organisation. Both had experienced situations where individuals had

been given authority and power but had become too dominant. This raises a valuable point about how to govern and control dominant change agents.

Table 5.7 Agency, field level change and Boundary Spanners

Agency	RC
As a sustainability manager I have agency to make a real difference	RC22
Funding and skills are critical to us delivering on net zero	RC27
Our role was to deliver the project and the expertise (Context insulating homes)	RC9
They want the road map, and they want a level playing field which everyone needs to adhere to, to enable delivery	RC20
There is a knowledge and skills gap that makes you question whether or not they are well positioned to actually push forward the agenda (Context net zero).	RC21
How can we change things on a personal level, trying to incite people not to use their cars or to use the urban transport.	RC1
I think a lot of it comes back to the question of agency, the norms, the attitudes, and their beliefs especially influential individuals and of the leadership team.	RC5
You need to challenge their beliefs their views, their norms, and their perspective. So, in that context getting to agency in the first instance is a hugely challenging issue even before you can start to think about building the right environment for multi-stakeholder partnerships.	RC5 interview 2
We need to change the system. For fighting climate change, we need change of the system.	RC11
Field level change	RC
It is about boots on the ground to make a difference, it is about practical delivery.	RC15
By using this more practical implementation standard we can help others implement net zero.	RC20
You can marshal your resources with a change plan, with certain functions going before others and experimenting.	RC36
Some of the people you see are very effective, they make change happen. A lot of it is around their personality and how they interact with people, so it is not necessarily about their title.	RC16
Net zero is not just about what a local authority does. There are many things a local authority can do, but it is the responsibility of everybody in a city, in a place in the world really, to change their behaviour.	RC9
Change must start with the business units. No amount of even top-down pressure is going to change that unless they take a very different approach and start to inquire and take a systemic approach to how do we what we have to do.	RC5
We probably are change agents just in terms of making people think about the carbon implications of everything they do and just putting in extra checks and promoting what carbon neutral involves.	RC9
Boundary Spanner	RC
They are very highly skilled individuals because they would need to be technically competent as well as having persuasion skills	RC1
I identify myself as a Boundary Spanner... the roles that I have within organisations is very much these boundary spanning roles. So, I spend a lot of time bringing commercial and legal folk together.	RC10
Then we will have enablers which are internally operationally orientated...they unlock what we need to do, that help move the businesses move forward...identifying blockers and navigate pathways	RC13

My immediate reaction is that it sounds like a powerful way of creating a community of change agents to deliver against your grand challenge.	RC4
I definitely think it is the right approach; you need people who understand enough technically but also can connect with people and organisations.	RC4
I have a natural inclination to go broad across many functions promoting connections... So, I have never felt constrained by a job description.	RC14
I would recognise that, and I think the ability of people to make a substantial change is limited by what authority they are given downwards to do that.	RC16
Having cross boundary impacts is important and planning for infrastructure, for transport, for grid capacity at a regional level is a significant role at city level for driving that action on decarbonisation.	RC27
The table presents a range of representative quotations The research contributors' (RC) details are in Appendices twenty-one and twenty-two	

Table 5.8 Boundary Spanner roles (r) and responsibilities (rs)

Central term	Similar terms
Organiser (r)	Director, Leader, Coordinator, Convener Administrator, Facilitator, Project manager, Chair
Coach (r)	Mentor, Trainer, Inspirer, Relationship builder
Delegator (r)	Project director, Assignor, Manager
Expert (r)	Designer, Knowledge builder, Technician
Communicator (r) + (rs)	Networker, Broadcaster, Liaison, Connector, Consistency maintainer, Storyteller, Clarifier, Articulate
Leader (r) + (rs)	Agenda setter, Inspirer, Director, Strategist, Aligner, Deliverer, Achiever
Motivator (rs)	Coordinator, Inspirer, Strategist, Instigator
Collaboration (rs)	Cooperation, Alignment, Partnerships, Developer
Aligner (rs)	Consensus, Maintainer, Harmony, Shared understanding, Solidarity, Simplifier

When the NVivo data was analysed, searching for a connection between Boundary Spanner and MSPs, it was hard to directly connect the two concepts. However, what did emerge was an understanding about how a Boundary Spanner could contribute to partnerships and the skills they needed to do this; in effect a role specification for the MSP Boundary Spanner emerged. This included specific responsibilities for the Boundary Spanner and the necessary behaviours required to develop effective MSPs. The literature search identified a variety of labels used by others (Table 3.4, section 3.9.4); the difference here is that the Boundary Spanner was being discussed in the context of partnerships. From the data this developed new labels and language which will be detailed here and discussed further in Chapter six section 6.5.

Boundary Spanners in the context of partnerships would:

- Be designers, builders and maintainers

- Operate best when legitimised by the organisation
- Provide authority and the power to act
- Actively build relationships and manage partners
- Be accountable for delivery and performance through leadership, communication, organisation, and project management skills

5.4.4 *Theme four: Net zero partnerships: How to enable MSPs*

Chapter three delved into partnerships, encompassing both complex MSPs and simpler DSPs. It comprehensively explored their academic foundations, proposing a net zero theoretical framework and a net zero MSP conceptual framework. By combining the key attributes from stakeholder and institutional theory with Grand Challenge and the Boundary Spanner, a set of MSP enabling **Mechanisms** was proposed. The existing literature presented a compelling case that MSPs are a key Grand Challenge **Mechanism**. Therefore, Theme four examines MSPs in detail and how their formation can be optimised. It addresses RO1 to RO5 and helps to answer RQ1, RQ2 and RQ4. Moreover, it addresses literature gap three, the lack of net zero MSP research. The evidence reveals that organisations recognise net zero partnerships as crucial, yet only 22% actively engage in net zero MSPs. Consequently, the vast majority work in simpler DSPs. This presents a challenge for net zero, as DSPs lack the scale to address a Grand Challenge of such magnitude.

5.4.4.1 *Quantitative data question bank three: Partnerships and net zero partnerships*

Question bank three aimed to understand the power of partnerships and net zero partnerships; Tables 5.9 and 5.10 present the detailed quantitative results of those ten questions whilst Figure 5.6 illustrates the results graphically.

Contributors were asked to what extent they agreed with the statements scoring their responses on a five point, highly agree to highly disagree, Likert scale. The results report agreement levels, and where appropriate the data has been sub-analysed by the size of the organisation.

This data demonstrated that partnerships are key to organisations. 87% agree, and 65% say that their importance has increased over the last twelve months. Partnership working is generally a positive experience, more so with larger organisations than smaller organisations (83% vs 69%); finding like-minded partners is harder for smaller organisations (66% vs 50%) and can add to project costs. Net zero partnerships are seen as key to the delivery of net zero because no single organisation has all the necessary skills, but smaller organisations find net zero partnerships harder to

manage than larger ones do, possibly because of power imbalances, as identified by Gray et al. (2022).

Table 5.9 Quantitative data: Partnerships generally

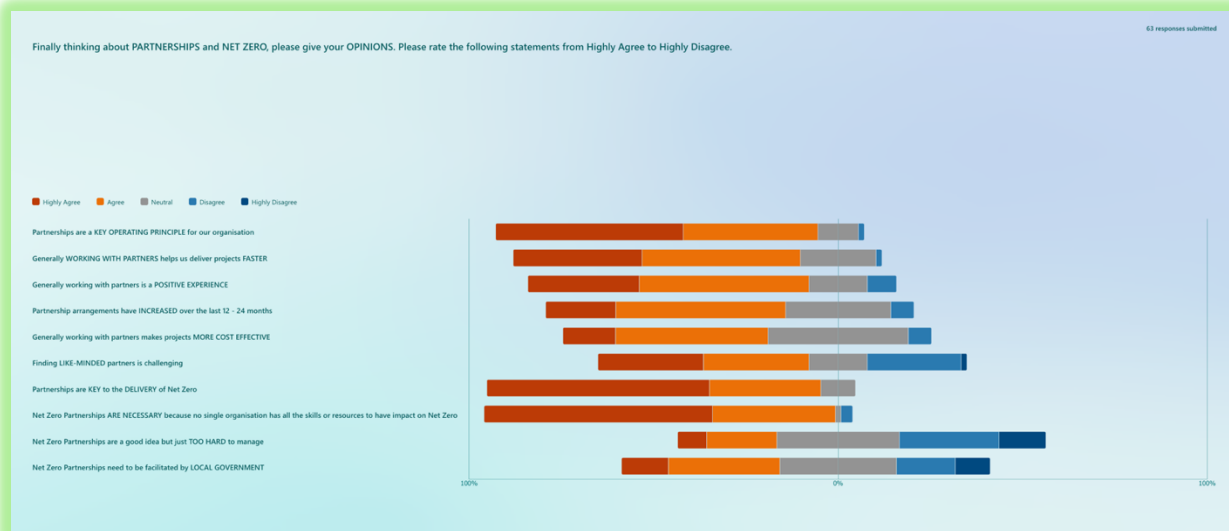
Statements	Response Agree*	30 Large Organisations	33 Small Organisations
Partnerships are a KEY OPERATING PRINCIPLE for our organisation	87%	90%	85%
Partnership arrangements have INCREASED over the last 12 - 24 months	65%	77%	55%
Generally working with partners is a POSITIVE EXPERIENCE	76%	83%	69%
Generally WORKING WITH PARTNERS helps us deliver projects FASTER	78%	84%	73%
Generally working with partners makes projects MORE COST EFFECTIVE	56%	No Difference	
Finding LIKE-MINDED partners is challenging	57%	50%	66%
Notes * Contributors who highly agreed or agreed – top two boxes Large > 250 employees Small < 250 employees			

Table 5.10 Quantitative data: Net zero and partnerships

Statements	Response Agree*	30 Large Organisations > 250 employees	33 Small Organisations < 250 employees
Partnerships are KEY to the DELIVERY of Net Zero	91%	93%	88%
Net Zero Partnerships ARE NECESSARY because no single organisation has all the skills	98%	No difference	
Net Zero Partnerships are a good idea but just TOO HARD to manage	26%	28%	41%
Net Zero Partnerships need to be facilitated by LOCAL GOVERNMENT	43%	40%	45%
Notes * Contributors who highly agreed or agreed – top two boxes Large > 250 employees Small < 250 employees			

These partnership results helped shape the semi-structured interview guide which can be found in Appendix twelve and helped to understand partnership dynamics.

Figure 5.6 Partnerships and net zero: Quantitative data question bank three
[High resolution version available in Appendix twenty]



5.4.4.2 *Partnerships are important*

The quantitative data revealed partnerships as a crucial vehicle for more effective net zero working. An impressive 87% agreed that partnerships are a key operating principle, while 91% emphasised their significance in achieving net zero. These facts solidify the title of this section, highlighting the importance of partnerships. During the interviews it was possible to explore in more detail the importance of partnerships and how they work, and really understand the motivations for partnership working. Partnerships were often driven by the need to bring together complementary skills and collaborate in larger arrangements that could deliver scale, expedite problem solving, and share risks. However, managing the day-to-day operations of partnerships, including funding and resourcing, proved as challenging as the specific problems they were formed to address.

‘Partnership is crucial in delivery of net zero...I believe that the government is doing the right thing by partnering with the private sector...Rolls-Royce’s small modular reactor programme is a good example of this’ RC26

‘You cannot do it alone. You really need partnerships; they open new opportunities and thinking’ RC1.

‘Organisations needs to work with external partners on net zero’ RC25

'Net zero as an issue is so complicated that you do need these multi- stakeholder partnerships. No one business could do it on its own. It is an opportunity for government to create the environment in which businesses can come together' RC6

'Net zero is one of the things which everyone wants to collaborate on' RC17

'We see Multi-Stakeholder Partnerships as the only way to go on this. Consensus decision-making and convening the ecosystem for action is important in net zero, more so than individual action' RC19

'Expectations are clear on both sides - what they want to get out of the partnership with regular review meetings. We have key people that they know who to speak to about particular issues. We have also got an escalation process for key issues. So that is quite a formal partnership but it works' RC9

'Decarbonising [anon] is a good example of a partnership because it was small and nimble. It was a project that was really successful and was offering support and funding for businesses to address their carbon footprint' RC15

This evidence quantitatively confirms the importance of partnerships generally and specifically for net zero. During the interviews further probing was needed to ascertain how to build strong partnerships and their type, shape, and form.

5.4.4.3 *How to build strong partnerships? What to do and not to do*

Contributors provided a range of views about how to build effective partnerships and what not to do. Convening is important: assembling and directing the participants to align their objectives and use their resources and skills wisely. Although different words were used by contributors, including 'assemble', 'devolve', 'mandate', 'nominate', 'delegate' and 'authorise', around 60% of contributors aligned with this principle. When there is a lack of clarity, or when things are perceived as overly complicated, partnerships get more challenging and fail.

'Making sure all stakeholders build trust...it is about benefit sharing...if you go in with a mindset that the winner takes all, it is never going to work...it's not going to be sustainable...we make sure everyone's needs are met and it's fair...then you engage and collaborate' RC14.

'Getting a shared vision of what you want to achieve is really hard' RC18

‘Our role is about convening partnerships and setting up partnerships to enable those landscapes to be self-sustaining’. It is about ‘convening and influencing and helping other people to see what they need to do. And I think that's really good partnership working when it works well’ RC27

‘With partnerships keep them simple, when they get complicated, they are difficult to manage and control’ RC10

‘There is a complete lack of joined up thinking and working across government and it really shows in confused messages and unrealistic deliverables’ RC18

5.4.4.4 *What are the forms of those partnerships?*

This study has discovered that only 22% of organisations are actively participating in MSPs and 78% are working in simpler DSPs. However, there is a wide spread of opinions as to what constitutes a true long-term sophisticated partnership, and the label can be used very loosely. At one end of the spectrum are effective MSPs which demonstrate action and positive impact. They require effort as illustrated by the following quotations.

‘Partnerships are more than just sharing of knowledge it’s about action and delivery’ RC8

‘Partnerships are really challenging...it requires so much effort to build an effective partnership. It is a full-time job’ RC21

At the other end of the spectrum are very transactional loose alliances that do not fulfil the academic definition of an MSP with groups comprised of well-meaning like-minded actors, meeting and talking but with little delivery. This was articulated by the following quotation:

‘The difficulty with partnerships is honing it down to a specific goal and giving everybody actions and actually making that partnership meaningful and not just a talking shop’ RC9

It appears that the label ‘partnership’ is like a comfort blanket for many organisations: saying they are part of a partnership signals positive intent, but creating a meaningful, strong, impactful MSP is actually quite difficult.

The findings have identified a range of partnership groups that are worthy of explanation.

- Genuine MSPs between three or more actor groups

- MSPs in name only
- Simple partnerships, termed Dyadic-Stakeholder partnerships (DSPs) by this thesis, are one-to-one buyer-seller arrangements
- MSPs and DSPs in co-existence; the choice is not binary

5.4.4.5 *Genuine MSPs*

This study has identified that only 22% of organisations were actively involved in an MSP. This section will describe those examples in more detail and highlight the characteristics of the organisations that embrace true MSPs.

The best example interviewed for this study is a UK social enterprise organisation which is a purpose led coffee brand. They are both a long-term participant in B-Corp certification, and an early adopter of SBTi's. They are very committed and serious about sustainability and the need to decarbonise and are passionate about social purpose. They operate an MSP shareholder model with multiple investors including a social bank, a large charity comprising twenty-one NGOs, and farmers in South America; each are deeply engaged in the business's social purpose and its long-term aims. Their 30-year business model is designed to make 'both lives better as well as coffee better' and they actively participate in MSPs to drive change in the communities they work with and in. They operate an MSP between their growers, the communities, the environment, and their customers. Their CEO (RC4) summed it up:

'We have a multi-stakeholder shareholder base, and a set of articles of association that are clear. It is not about making profit; it is about making other commitments beyond that; it is about social purpose and sustainability'

'I think the ownership structure and having a purpose led culture is central to the systemic change necessary in net zero and sustainability...without that you are going to struggle'

'We have a patient stakeholder base, and over time it is sometimes hard to get them to be more interested in the financial returns'

This business philosophy and operating model telegraphs organisational legitimacy to every stakeholder. Their head of sustainability holds the organisation to account and encourages internal colleagues to form MSPs and make other choices that ensure alignment to their core purpose. One example provided by the CEO was that they make conscious choices about who to trade with to ensure value alignment. Their experiences have shown that if this is not present it leads to trading tensions. Striving for economic benefit ahead of purpose alignment can develop inter-organisational tensions.

Other examples of MSPs were provided by participants.

‘We are a member of First Movers Coalition, and we share purchasing power and have global partnerships’ RC23

‘Zero Carbon [anon] Partnership consists of 21 organisations... it enables a wider range of stakeholders to play their part in cutting [anon’s] carbon footprint to zero’ RC28

‘Health and wellness is a key area for us, and we set up a large external partnership and it’s lasted well’ RC5

‘A good example of a complex partnership that has impact is the C40*’ RC27

[*C40 develops partnerships between cities globally]

These partnerships, and others described earlier, have common characteristics including the following, and will be detailed further in Chapter six.

- Financially strong and well resourced
- Strong governance
- Carefully chosen team members and leaders aligned to the organisational purpose
- Strong top-down legitimacy

Finally, an exemplar quotation that demonstrates why MSPs fail due to power imbalance between potential partners, and probably why DSPs are easier to shape, form and operate.

‘I have been in some precompetitive [the stage before companies directly compete with each other], multi-stakeholder partnerships with large corporations and it is not really about scale, it is about ownership. They tend to break down because of self-interest in the end. It is an issue about power’ RC4

5.4.4.6 *MSPs in name only*

There were several contributors who expressed their frustrations about MSPs being formed only to look impressive. They were ineffective and usually disbanded due to lack of delivery and impact.

‘The [anon] Climate Change Commission was run by [anon] City Council and was just a talking shop and it withered on the vine’ RC15

‘We set up [anon] Forum as a partnership, it’s about sharing experiences and no more’ RC22

‘A cross-sector organisation like the ‘Sustainable [anon] Association’ represents a number of organisations and shapes policy, but it is very informal’ RC13

5.4.4.7 *DSPs*

DSPs were frequently cited as the default position for many organisations and 95% of participants said they are involved in a DSP. They are easy to form, justify and manage and are tactical. They are perfectly acceptable forms of collaboration; except they do not have the scale to seriously impact net zero. The reasons why they are formed can be attributed to several factors.

- a) Frustrations with more sophisticated partnership arrangements that have been ineffective

‘I have been to so many meetings with many organisations in the room, but they rarely get beyond talking to acting’ RC3

- b) Deep-seated concerns about how difficult it is to meet the needs of multiple partners and the power imbalances between powerful stakeholders and those less influential.

‘MSPs are only for large corporates or even countries’ RC1

‘MSPs are difficult to create, afford and operationalise for my organisation, and I suspect many SMEs’ RC6

‘Local authorities and similar organisations assemble meetings to talk about great ideas and interesting projects, but they rarely have the financial resources to deliver ... Everyone in the room is looking for money...we seem to talk around the subject and agree to meet again and then when we do, we repeat the same stuff ... it is frustrating, so we tend to do our own tactical work’ RC21

‘We see a shocking lack of collaboration across organisations because the smaller organisations don’t really have the capacity to operate at a level where collaboration is feasible’ RC21

‘Power imbalances undermine partnerships – sophisticated partnerships can succeed or fail dependent on who has power’ RC29

‘Companies are nervous about big partnerships and sharing information because of losing competitive advantage’ RC21

5.4.4.8 *MSPs and DSPs in co-existence*

Occasionally it is helpful to have both MSPs and DSPs operating at the same time in the organisation; it is not a binary choice but about being situation specific with clarity about objectives and outcomes.

RC5 works for a £1.2bn, sophisticated matrix-based manufacturing organisation. They cited examples of both simple partnerships and more sophisticated ones, both co-existing within the same organisation for rational and valid operational reasons. Commercial sensitivity and ringfencing required a simple DSP to be created between the organisation and one customer; involving other organisations would not have been appropriate.

‘It actually benefits the business to have simpler dyadic partnerships, it allows us to have commercial insulation, and they can be differently executed’ RC5

However, when it was agreed at board level to instigate a large corporate study into one aspect of sustainability a wide-ranging stakeholder engagement exercise was commissioned. This resulted in an MSP involving internal cross-functional experts and multiple external expert organisations. It was resourced properly, financially and people, and was given top-down legitimacy. The judgement was that it was commercially important, and a return on the significant investment could be anticipated.

Net zero ‘is so complicated that you do need these multi-stakeholder partnerships in order to address this issue’ RC5

5.5 The component attributes from stakeholder and institutional theory

Net zero creates many competing tensions for the organisation, some are stakeholder-based, others institutionally embedded. The quantitative data and the themes that have preceded this section have already touched on some of those attributes, especially urgency, but this section will specifically isolate the purer meaning from both stakeholder and institutional theory and explore how their net zero effects are perceived by the contributors. Tables 5.11 and 5.12 present a set of representative quotes to illustrate those practical organisational tensions. Table 5.11 concentrates on stakeholder theory and its urgency, legitimacy, and power component attributes (R. K. Mitchell et al., 1997), whilst Table 5.12 presents the institutional theory derived isomorphic behavioural drivers: coercive, normative, and mimetic (DiMaggio and

Powell, 1983). Sections 3.5 and 3.6 explained each of these in detail. For each attribute an estimate is provided of how many contributors cite the attribute as a key net zero organisational tension. The word ‘key’ is important: the aim was to determine whether it was a priority issue for the organisation. As a headline, stakeholder attributes were of higher priority than institutional attributes; although not overtly stated, it was perhaps easier to identify stakeholder ‘pressures’ than institutional ones.

5.5.1 Stakeholder attributes

Thirty-two of the thirty-four contributors (95%) said that stakeholder management was the key task they undertook in their role. Actively managing stakeholders facilitated their agenda, ensured organisational alignment and provided organisation legitimacy. Stakeholder power was cited as an important stakeholder attribute by 71% of contributors. Whether directly or indirectly, the contributors had experienced an effect by stakeholders that had influenced their sustainability agenda. Fourteen of the contributors (42%) had been in a situation where they had been told to act in a particular way with no debate. This ‘power over’ situation was an uncomfortable reality. Stakeholder urgency was of lower importance with only 34% citing it as a key stakeholder attribute.

Table 5.11 Stakeholder theory organisational attributes

Component Drivers					
Urgency		Legitimacy		Power	
There is so much to do. These objectives might be five, ten or fifteen years out, but you must go through them to get to your grand challenge because it is a highly connected ‘whole pie.’	RC15	To have the permission within the organisation from the board down, to create that sort of culture change is very powerful.	RC10	My role is about understanding stakeholder power in the organisation, it is not about box ticking it is about action	RC22
We are thinking about the survival of our bank and having a sustainability strategy with clear objectives is critical and we can be more stable	RC11	The leadership culture is visible. They have this open vision of what they want to do. You can trust that we are going to do something together.	RC23	The venture capital markets are investing significantly into climate start-ups. The numbers are increasing. They will have considerable influence in the future	RC3
Net zero has long-term competitive advantage	RC33	It is very important; I think it is fundamental	RC14	The bigger companies need to see a financial gain, the minute they see that they will move in this space.	

but has first mover disadvantage				The UK can turn what is a global threat into an economic opportunity from net zero while protecting the planet for generations to come	RC30
The table presents a range of representative quotations The research contributors' (RC) details are in Appendices twenty-one and twenty-two					

5.5.2 Institutional attributes

Inter- and intra-organisational isomorphic dynamics were harder to isolate but nevertheless still considered to be a driver of beliefs and behaviours by interviewees. Coercive influence resulting from legislation, regulation and standards was seen as the most important institutional attribute with 40% citing it as key. Two good examples were cited by contributors. RC29, the CEO of a lobby organisation, discussed how their members were dealing with the Scottish Deposit Return Scheme. This scheme was coercively enforced by the Scottish government against the will of many organisations. The lobby organisation said the policy was unworkable, expensive and did not deliver sustainability benefits. Their advice was ignored, and the scheme collapsed, costing the Scottish taxpayer £300m. The consequence, over and above the significant financial penalty, was a deterioration in trust between the institution and its key stakeholders. This illustrates that coercive policymaking power needs to be used wisely having assessed all the available evidence and listened to expert stakeholder advice. The second example, contributed by RC31, illustrates how a coercive institutional requirement has been translated into an enabling organisational **Mechanism**. The turnover-dependent EU CSRD sustainability directive requires organisations to report a wide range of emissions and sustainability metrics as part of their organisational reporting and financial risk responsibilities. This directive has normalised the need for sustainability reporting and legitimised sustainability and decarbonisation as a core organisational priority. RC31 contributed that to many sustainability managers its coercive nature has been welcomed as an enabling **Mechanism** that has quickly embedded sustainability into the organisation as a 'business as usual' activity rather than as a discretionary task.

The net zero normative landscape including its social pressure, the need to demonstrate moral leadership, and the tension between economic and ethics was discussed by over 70% of contributors. However, only five contributors (15%) viewed the net zero moral case as being more important than the economic one. Mimetic behaviour was a difficult attribute to engage with contributors. The three quotes (Table 5.12) were the most obvious occasions where contributors followed other competitors

or wished to set the market norm. However, its relevance was lost on most contributors.

Table 5.12 Institutional theory organisational attributes

Component Drivers					
Coercive		Normative		Mimetic	
Standards work better in tandem with regulation as part of what we call our co regulator standards. It works better by promoting efficiency, it saves costs and boosts growth.	RC19	I feel like my job is not head of morality. It is more like you are the standard-bearer and you get judged by your personal actions and whether you are credible or not	RC22	It is about habit-forming and shaping the agenda for others – the builder led the way as an example to others. He had the (1 st mover) advantage	RC15
The fact that this legislation exists means that delivery of the policies is integral to government action.	RC26	We cannot be seen as preaching we need to deliver and benefit the world. Be a very strong supporter for decarbonization without becoming too moralistic about it. Our suppliers see that as important	RC23	Aligning investors to the same sustainability agenda is key but challenging.	RC14
Ultimately you need governments, you need the right frameworks, and we need the right policies to move at the scale and speed that we want.	RC31	We are a leader both in terms of policy development but also regarding delivery when compared with international peers.	RC26	I would say politically in Derbyshire the commitment is strong, so I think the signals to organisations to follow are strong	RC16
The table presents a range of representative quotations The research contributors' (RC) details are in Appendices twenty-one and twenty-two					

To conclude this section, the attributes from each of the theories are useful drivers in the net zero agenda and do inform RO2, RO3 and RQ2. However, it is a small sample, and further work would be needed to categorically prioritise which attributes are key.

5.6 Summary of key findings

The key findings are assembled under the headings **Context**, **Mechanism** and **Outcome**, supported by Table 5.13 which presents a summary segmented at a macro system, meso organisational and micro agency level.

5.6.1 *Net zero Context and Outcome*

Only 15% of quantitative contributors thought that net zero will be achieved despite 93% seeing it as an urgent challenge: 76% of the qualitative contributors believed that delivering net zero was unrealistic. 75% saw it as a strategic priority for their organisation and receiving board level discussion, and 78% said it was more important than twelve months ago: this was corroborated in the qualitative interviews. Both sources confirm that partnerships are key to net zero because the skills necessary exceed their organisation's skill base and net zero is fundamentally changing their organisation and stakeholder behaviours. Clarity is needed from both national and LG but 70% of contributors consider the policy to be confused and requiring clearer strategic leadership. Net zero's economic considerations are paramount with 83% citing it as a priority organisational issue as well as an economic opportunity for the UK. Overall, there is considerable scepticism about the UK delivering net zero and how it is being strategically managed. Despite this, organisations are actively working on how to decarbonise and see the challenge as increasingly important.

5.6.2 *Mechanisms that shape the net zero logic*

The **Mechanisms** that shape the net zero logic are explored in the quantitative survey and expanded on in Themes two, three, and four. Partnerships are central; more specifically, MSPs are key to the ROs, the CQ and the four supporting questions. An important finding identified that only 22% of organisations were involved in net zero MSPs, but 95% were actively involved in simpler net zero DSPs. This is surprising and uncomfortable considering the academic evidence in favour of MSPs.

Net zero is identified as urgent but also complicated and confusing. The characterisation of net zero as a Grand Challenge with its inherent uncertainties and subjective perspectives was confirmed quantitatively and qualitatively. The concept of Grand Challenge was well received throughout the study and the principle of overcoming barriers and developing enablers was welcomed as helpful by contributors to the study. Net zero definitely crosses functional and organisational boundaries but the concept of organisational boundaries was a misunderstood term. Agency is about action and delivery, and every organisation is concerned with this. The concept of the Boundary Spanner was not initially understood but when explained was positively

received; it may be academically elegant, but it is organisationally clumsy. Relating Boundary Spanners to MSPs resulted in a unique way of thinking about the Boundary Spanner role and how they can help to design, build and maintain MSPs.

Partnerships are key to societies' Grand Challenges and in Theme four this was explored in detail both quantitatively and qualitatively. 87% of contributors to the quantitative survey considered partnerships to be a key operating principle and 76% considered working with partners to be a positive experience and helping deliver projects faster. For net zero, partnerships were even more important at 91%. Contributors to the qualitative interviews provided examples of a range of partnerships from true MSPs operating effectively; those in name only, often symbolic and merely a 'talking shop'; through to simple DSPs, which were far more common. Forming effective MSPs demanded alignment of culture and vision and worked best when the objectives were clear. The best MSP-aligned organisation completely embraced the principles of MSP at every opportunity, but this example was rare. DSPs were seen as far easier to operationalise and justify to internal stakeholders. Finally, the study assessed the importance of the component attributes from stakeholder and institutional theory. Stakeholder management was paramount to net zero with 95% of contributors citing it as a key task. 71% were conscious about stakeholder power and gaining legitimacy. Institutional attributes concentrated on the coercive power from rules and regulations, whilst the morality of net zero was of lower importance and mimetic behaviour was found to not be relevant to contributors.

Table 5.13 Macro system, meso organisational and micro agency research key findings (* highly agreed or agreed – top two boxes)

Macro system level (PEST)	Meso organisational level	Micro agency level
Political - Only 15%* believe that <i>net zero by 2050</i> will be achieved. 97%* do not see how UK will achieve net zero. 3%* do see how net zero will be achieved. 82%* do not understand the role of LG in net zero. 'There is no leadership from government' RC7 'It's a great sound bite, but lacks any depth, and there is a gap to reality' RC8 - There is a lack of urgency and delivery (CCC 2023) Economic 75%* see net zero as an economic priority for UK. 30%* say that net zero is more than just saving energy. 84%* of organisations would work with competitors to resolve net zero. 'The private sector are expected to do all the work, and in the end the consumer will have to pay, but don't want to pay' RC5 Socio-Cultural 'Nobody I talk to thinks it will be achieved' RC29 94%* view net zero as a key societal issue. 70%* call net zero a crisis. 89%* call it a Grand Challenge. 93%* agree that we do not have a lot of time. 'It is always about money and rarely about social issues' RC14 'NIMBYism is at the heart of net zero' RC27 Technological 95%* believe that innovative technologies will be required to achieve net zero.	General Organisational Issues 75%* see net zero as a strategic priority. 67%* state that net zero gets discussed frequently at board level. 59%* say that net zero exceeds their skills and abilities. 78%* say that net zero is more important than a year ago. 'Net zero is important, but we have so many competing priorities' RC16 'We find it hard to recruit and retain people who are skilled in net zero' RC15 Institutional Pressures - Only 44%* have discussed net zero with national or Local Government. Stakeholder Pressures 92%* of organisations had worked on a net zero project in last 12 months. 83%* state that net zero is important to key external stakeholders. 98%* must work with external partners on net zero projects. 84%* believe net zero is changing their behaviours. 'Few stakeholders are willing to wait 30 years for a return' RC32 Ethical Responsibilities 96%* believe that net zero is about protecting future generations.	Agency including Partnerships 87% agreed* that partnerships were a key operating principle for their organisation. 91% agreed* that partnerships were key to the delivery of net zero. - Only 22% were actively involved in MSPs. 95% were actively involved in DSP's. 98% agreed* that net zero partnerships are necessary because no single organisation has all the skills or resources to have impact on net zero. 64% agreed* that their partnerships had increased over the last 12 months. - Of these, 77% were organisations that employed over 250 people. 'I am responsible for net zero, but I am a symbol and not taken seriously' [anon]. 'Net zero needs to be legitimised as a strategic and key organisational role' RC9

5.7 Testing the findings.

The supervisory team, who are also experts in the field, have had full oversight of the research during the last three years. They frequently tested and challenged the author to improve the validity of the findings, leading to adjustments and changes being made accordingly.

The ultimate test of these findings would be to construct an experiment with an organisation interested in designing net zero MSPs and undertake a live project or an observational and participation-based study. While this is an opportunity for further work, it falls outside the scope of this study.

Chapter four section 4.9.2.3 detailed how the thesis intended to validate the findings to protect against confirmation bias and more positively, to ensure high quality. The original multiple paired interview approach proved too ambitious; an alternative approach was designed. Following a request to the contributor database, two detailed follow up interviews were held. This low quantity is acknowledged as not ideal, but their views about the work were helpful. Each interview was used to test the principles that emerged from the conceptual framework and the four key themes. The areas covered during the validation interviews are detailed in Figure 4.5 and referred to in section 4.9.2.3. The two contributors were RC4 and RC5. They were provided with a summary of the findings prior to the interviews. The two interviews provided reassurance about the direction of the work. They made helpful suggestions about how to make the conceptual framework more specific. Furthermore, they commented on their own experiences of net zero policy, how the subject is communicated within their organisation, the potential benefits of how Grand Challenge adds structure to net zero, and reiterated the challenges of designing, building and maintaining effective MSPs and the ease of DSPs. Their comments reinforced many of the key findings detailed in this chapter. RC4 offered the following comment, and is included as personal reassurance for the author.

'It's wonderful that you are choosing to contribute to the Grand Challenge, as you call it...I think some of your working would be really wonderful to implement...I mean, this work is like manna from heaven for me...This is my kind of gig...this is my kind of stuff'

Is this stage of the work worthy of inclusion and discussion? To undertake no validation interviews would have been wrong. It would also be arrogant to assume that the sample is perfect, and there is no researcher or contributor bias. Throughout the narrative, the author has been transparent about how to mitigate and minimise bias. Undertaking only two follow up interviews to test the findings is a limited but acceptable approach.

Finally, when the author attended the 2024 Economist Sustainability Conference the findings were discussed informally with multiple individuals and their views taken into consideration to help challenge author bias. Valuable background information was obtained about organisational decarbonisation which contributed to Chapter two. However, the opinions about the findings have been omitted from this section because the informal situation was not methodologically robust.

5.8 Validity and reliability

Section 4.12.3 challenged whether the author's work could be trusted and asked whether the data and the findings actually measure the concept under consideration (Clark et al., 2021, p. 156).

Throughout the fourteen months of research, the author was highly conscious about recruiting and engaging with experts who could talk knowledgably and honestly about the subject and who were happy to share their real-world experiences. The results reported in this chapter have been an accurate representation of what they said. 'Triangulation' (Clark et al., 2021) between the quantitative study and the qualitative interviews has also been an important way of maximising the reliability of the findings. This approach is viewed as a critical step prior to drawing any conclusions and underpins trust in this study.

Whether the data and findings actually measure the concept, is addressed by section 5.7. The author totally accepts that, in an ideal world, the findings would have been more fully socialised and tested with more experts, but the author feels that the testing has been appropriate, and this has been confirmed by the supervisory team.

5.9 Chapter conclusions

Chapter five has presented the research findings from both the quantitative survey and the qualitative semi-structured interviews. The data has been demographically profiled and then themed. Where possible, the identified quotations have been quantified to measure their commonality. Section 5.6 has summarised the key findings and Chapter six will fully discuss these findings. The chapter will engage in a wide-ranging discussion and integrate the data findings with the literature to deliver interpretation and meaning about the net zero Grand Challenge and MSPs.

Chapter 6 Discussion

6.1 Introduction

This chapter delves into the concept of ‘meaning’, blending Chapters two and three with Chapter five. To uncover ‘meaning’, two levels of taxonomy are employed. The **Context, Mechanism, Outcome (CMO)** concept developed by Pawson (2006) focusses on **C** and **M**, whilst the four key research themes identified in Chapter five connect the literature to the findings. The chapter explains what needs to happen to enable MSPs and the role of two causal mechanisms: the Grand Challenge brand and the Boundary Spanner, which acts as an MSP designer, builder, and maintainer. The aim is to develop the general net zero MSP framework into a more detailed and net zero specific one, which will be presented in Chapter seven. As a reminder, the general net zero MSP conceptual framework (Figure 3.2) and the four key themes (Table 4.2) are represented below.

Figure 3.2 Net zero MSP conceptual framework Source: Author’s work

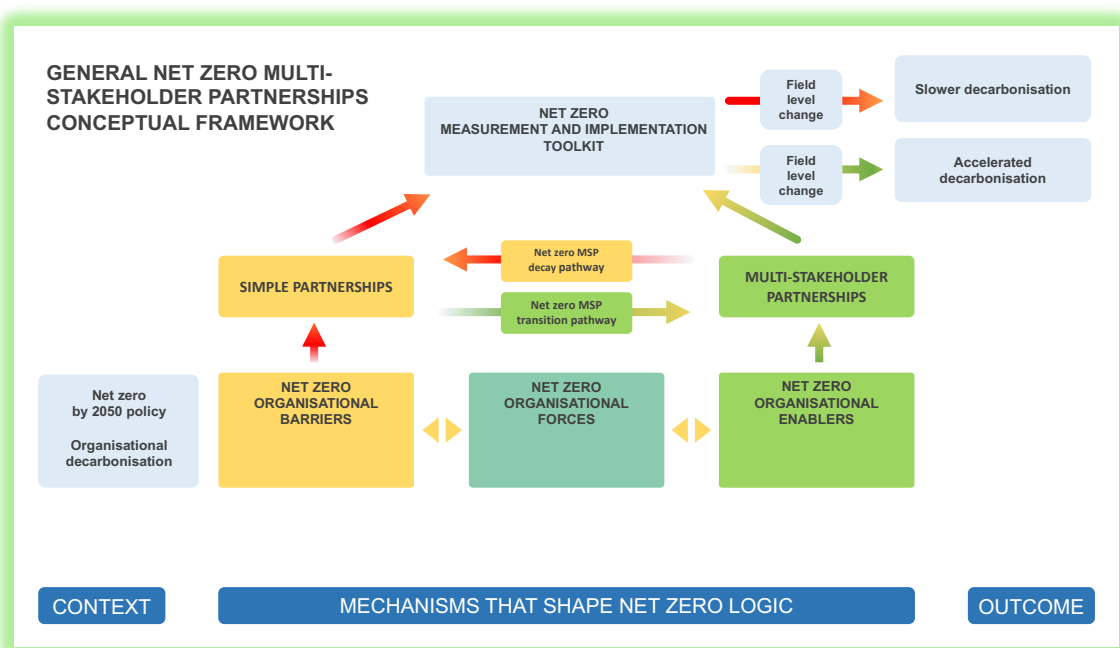


Table 4.2 Four core themes

Theme	Topic	Description
One	<i>Net zero by 2050</i>	Net zero: An ambitious policy versus its organisational reality
Two	Grand Challenge	Net zero: An organisational cross-boundary Grand Challenge
Three	Boundary Spanner	The net zero Boundary Spanner
Four	MSPs	Net zero partnerships: How to enable MSPs

This chapter divides into three parts. Part one, **C**ontext, delves into the challenges of the net zero policy paradox. It combines the literature and contextual data from Chapter two with the quantitative and qualitative data presented in section 5.4.1. Firstly, the chapter examines the UK's net zero public policy from a stakeholder perspective. It explores how organisations view, interpret, and operationalise this policy. To provide insight into the practicalities of decarbonisation, five organisational vignettes, based on contributor research, are presented. These vignettes illustrate stakeholder pressure, organisational power, operational agency, competing institutional logics, and the economic realities of net zero. Part one argues that there is a significant gap between the policy ambitions of the environmental state (ES) (Duit, 2016) and organisational reality. This gap explains why the UK is behind its *net zero by 2050* transition pathway. The chapter concludes that ES and its key stakeholders must be more closely aligned, and collaborative partnerships play a crucial role in achieving this agenda.

Part two, **M**echanism, discusses the central section of the net zero MSP framework. **M**echanisms explain how 'complex systems work' (Pawson et al., 2004, p. 1) and in this study they 'explain the underlying causal **M**echanisms' (Parra, 2023, p. 860) and the enablers that shape the net zero logic and facilitate effective net zero MSPs. Part two discusses Themes two to four. Theme two, net zero as a Grand Challenge, develops the idea that Grand Challenge (Dorado et al., 2022; Ferraro et al., 2015) has some stakeholder saliency. However, it suggests that this concept can be further developed into a powerful brand and a more powerful enabling **M**echanism with causal powers to assist organisations to overcome obstacles and facilitate net zero's challenges. Theme three, the net zero MSP Boundary Spanner (Williams, 2002), adapts its historical meaning from a 'specialist who negotiates the interactions between organisations' (van Meerkerk, 2014, p. 36) into a net zero MSP designer, builder and maintainer. This agency role is central to an interventionist approach to change (Pawson, 2006, Chapter 2) and can help to build effective net zero MSPs. Finally, Theme four, net zero partnerships and how to enable MSPs, builds on the key finding that DSPs are more common than MSPs when addressing the net zero Grand Challenge. DSPs do not have the capacity to effect change at scale therefore a DSP to MSP transition pathway is necessary. This develops a way of ensuring that MSPs endure and furthermore do not decay back to DSPs.

Part Three briefly discusses the **O**utcome and how field level change and competing logics can assist organisations to break free from the ES and help deliver net zero.

To assist the reader, it is helpful to return to the ROs and RQs and illustrate how they align because, both in this chapter and in Chapter seven, the thesis must ensure that they have been delivered.

- RO1 Establish the importance or otherwise of net zero partnerships and how far those partnerships fulfil the characterisation of MSPs as described by experts including Gray & Purdy (2018).
- RO2 Use the insights from the research in combination with appropriate academic theories and concepts to identify the barriers and enabling **Mechanisms** of net zero MSPs. This will advance net zero MSP academic and practical contribution.
- RO3 Construct a net zero MSP conceptual framework that advances academic understanding about net zero MSPs, making them less ‘messy and confusing’ (Gray & Purdy, 2018, p. 199), to contribute to accelerating the UK to net zero.
- RO4 Understand how agency can help to build stronger net zero MSPs by overcoming barriers to accelerate decarbonisation.
- RO5 Identify how organisations are engaging with decarbonisation and net zero and develop policy and practice recommendations to help them decarbonise faster.

Research Questions

The CQ is:

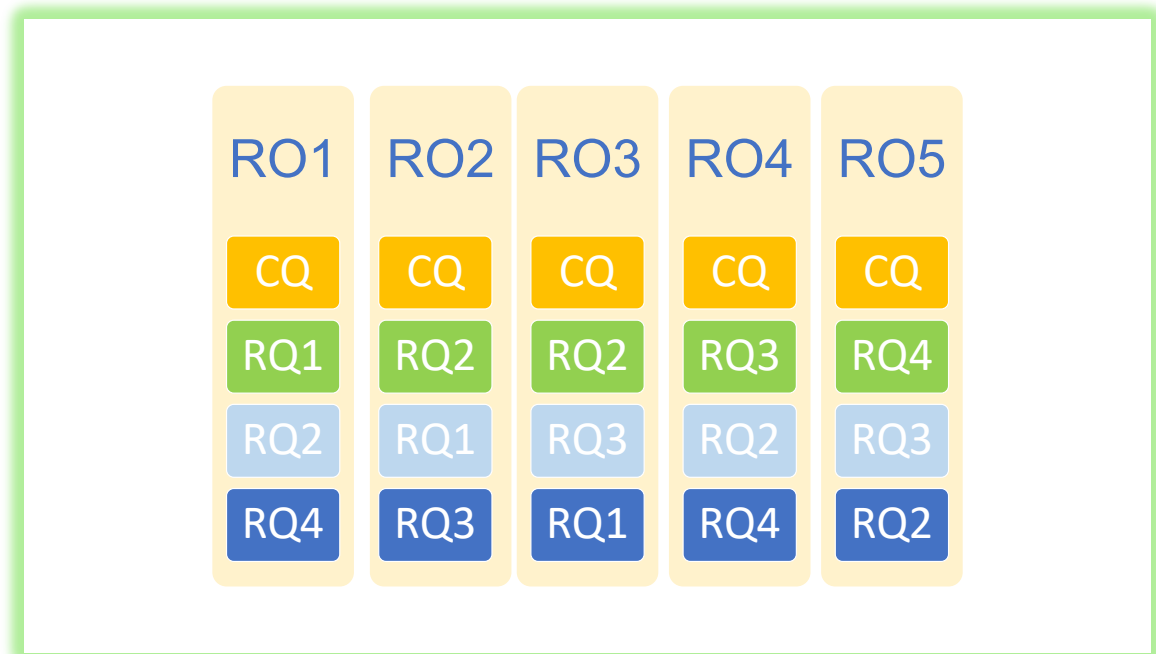
How do the enabling **Mechanisms** of effective net zero Multi-Stakeholder Partnerships shape the net zero organisational logic, why do they matter, and how can they be used to respond to the *net zero by 2050* policy Grand Challenge?

There are four supporting RQs:

- RQ1 How can organisational MSPs tackle the net zero Grand Challenge and its policy ambitions?
- RQ2 How can the real and perceived structural organisational barriers of net zero MSPs be overcome and be used as enablers to build more effective net zero MSPs?
- RQ3 How is agency important, and how can the change agent role, as a key organisational enabler, be legitimised and contribute to effective net zero MSPs?
- RQ4 How can organisations reconfigure themselves to adapt to the ambiguity of net zero, and participate in effective net zero MSPs?

How the ROs align to the CQ and the RQs is represented below.

Figure 1.3 Alignment between ROs and RQs
(descending priority order)



Part one **Context: Net zero, organisational decarbonisation**

6.2 Theme one: Net zero, an ambitious policy versus its organisational reality

Box one **Theme one: Key evidence**

Policy ambition

Chapter two sections 2.7 to 2.10. Chapter five section 5.4.1. Appendices two to four

- *Net zero by 2050* is enshrined in UK law
- Ambition was increased in 2019 to 100% reduction in GHG emissions
- 2024, UK is behind its *net zero by 2050* transition pathway

Organisational reality

Chapter five section 5.4.1.1 to 5.4.1.2 . Tables 5.3 to 5.5. Appendices five and six

- Only 15% think net zero will be achieved
- Only 3% understand how the UK Government will achieve net zero
- 75% see net zero as a strategic organisational priority
- 78% consider net zero to be more important than twelve months ago
- 'Nobody I speak to thinks it will be achieved' RC29
- 'It's a great sound bite but lacks any depth' RC9

6.2.1 *The Environmental State (ES) and the UK net zero public policy paradox*

The UK is experiencing a net zero paradox. Policy led by the ES is abundant as shown by the multiplicity of institutional reports published between 2008 and 2024, summarised in section 2.10 and detailed in appendices two and three. However, delivery led by the multiplicity of stakeholders is slow. The outcome of this paradox is that the UK is behind its *net zero by 2050* transition pathway and is 'off track for net zero' (Climate Change Committee, 2024, p. 9). Significant questions must therefore be asked about the role of the ES and how the net zero policies are being interpreted and implemented by organisations, and how from a theoretical perspective stakeholder and institutional theory can be used to maximise organisational impact.

Environmental management is an 'integral function of the modern state' (Hatzisavvidou, 2020, p. 96), and its prime responsibility is to deliver impactful environmental solutions and address the challenges of climate change. This threat is a management issue for the nation state and the concept of the ES with its 'four faces' (Duit, 2016), is an elegant way of characterising those governance responsibilities: policy regulation; resourcing; administrating agency; and education. Both Duit et al. (2016) and Hatzisavvidou (2020) identify that the ES has limitations. Its top-down approach ignores the critical role that stakeholders must play in this large transformational project, and this author agrees with that perspective based on the research findings. Many contributors interviewed for this thesis felt confused by what the state was asking of them. Even LG, as the second tier of Government who should be the institution most connected to the state, felt remote from the national net zero agenda. As suggested in section 2.11.1, the 'old ES' needs to be reinvented. In the 'new ES' responsibilities are more widely distributed through wider stakeholder collaboration and MSPs. Theme four develops this idea further. The ES must take a long-term perspective, providing stability over that term to generate stakeholder confidence. The ES should therefore intensively work with the multiplicity of stakeholders, potentially in partnerships, to build that confidence. This idea will be now developed in detail.

The net zero Grand Challenge is clearly a difficult project for organisations, net zero's key delivery agents. The evidence assembled in Chapter five supports this. Only 15% thought that the UK would achieve net zero, yet 94% thought it was a key issue for society, and 95% agreed that it was a moral issue concerned with protecting future generations. Core to the delivery scepticism is government's ability to translate policy into action. Despite the abundance of policy, for example in one day in 2023 over 2500 pages of net zero policy was published, only 3% of contributors were clear how the UK Government would achieve net zero, and 93% thought that as a nation we were running out of time. Organisations are clear about the urgency of the task but lack clarity about the roadmap to get there. The tension between policy and delivery is important. In some areas, for example the transition to renewable energy, delivery has

been strong. But in others, for example planning and housing, less so. The success of delivery is built on organisational and financial confidence and a belief in long-term stability and economic return. Contributors to this research have highlighted that taking a long-term perspective whilst maintaining a consistent policy direction would encourage private sector investment and accelerate the UK faster to net zero. Furthermore, if LG and national government were strategically aligned that would also improve the chances of more aggressive decarbonisation delivery. Making net zero a statutory responsibility of LG was suggested by contributors but comes with many legal, structural and financial obstacles and perhaps that is too ambitious. However, as an absolute minimum, national and LG need to agree how to work more closely together maximising LG's local citizen and organisational knowledge. The qualitative evidence identified that engagement with the UK Government was hard. LG tended to operate in isolation; RC8 said 'we do not have regular discussions with government' whilst RC29 expressed frustrations about net zero leadership, with key people in government frequently changing which undermines consistency. Overall, many thought that net zero was not sortable and is a confused policy agenda that lacks leadership. It can therefore be concluded that closer organisational alignment including MSPs would probably lead to improved net zero impact.

From a theoretical perspective one way to deliver this is to return to organisational theory and the key ideas that were developed in Chapter three. Theoretical interpretation revealed how stakeholder and institutional theory can be used to achieve closer stakeholder alignment and improved collaboration. Sections 3.5, 3.6, and 3.7 delved into the key attributes of each theory and the enhanced power that arises from their combined application. Figure 3.7 further developed this by presenting a model based on aligning their attributes as positive enabling forces. Furthermore, section 3.8 and Table 3.3 expand upon this idea, demonstrating how stakeholder and institutional theory can be effectively deployed to maximise the impact of MSPs. By learning from this thinking and the underlying work by Child et al., (2019), He et al., (2020) and Lee & Mi Dong, (2011), it is possible to identify the benefits that come from stakeholder and institutional alignment. From a net zero perspective this approach has the potential to maximise organisational collaboration and accelerate organisational decarbonisation.

Additionally, the political environment has substantially changed since net zero was imagined. In Chapter two, sections 2.7 to 2.9, that landscape was detailed. This flux has created tension and a divide between institutions and organisational stakeholders. Net zero sentiment has been affected by other Grand Challenges including Covid-19, economic instability and deglobalisation. These competing logics have fundamentally changed geo-political power structures. The UK has also had its own challenges with Brexit and a very fluid political system since 2015. The lack of political consistency and clarity has undermined UK net zero organisational confidence. Sections 2.9.4 and 2.9.5 detailed that evidence. In the face of this turmoil, the UK's net zero strategy has

become muddled and consequently the UK are off track to hit the *net zero by 2050* target. In 2024 the new Labour led UK Government signalled that net zero is a strategic priority, but, as this thesis has highlighted, accelerated delivery is needed rather than more policies and political rhetoric.

The ES probably also has to decide what role net zero plays in the broader state growth agenda over and above the tangible benefits that emerge from decarbonisation. The 2015 Paris Agreement is an extremely ambitious agenda. The *net zero by 2050* policy is an attempt to roll back Planet Earth from its addiction to fossil fuel energy production. The industrial revolution was a transformational age for humanity. It marked a shift away from an agrarian society to an industrialised one driven by steam power, steel production, and energy consumption. However, it has come at an atmospheric cost. Over the last one hundred- and fifty-years Planet Earth has experienced an increase in atmospheric CO₂ emissions from 0.54 billion metric tonnes in 1870 to 37.8 billion metric tonnes in 2023 (Statista, 2023b). Reducing GHG emissions to *net zero by 2050* and reconfiguring how energy is produced and consumed is the new industrial revolution. It is a green revolution, a global sustainability project that requires equivalent innovation and human ingenuity to that exercised in the late 1800s. To decarbonise industrial production, reengineer supply chains, radically alter human consumption and dramatically change citizen behaviour is more than a revolution, it is a Grand Challenge. But that is the opportunity for the UK ES. The UK has experienced deindustrialisation (Kitson & Michie, 2012) over the last century and contributors to this study, including the CEOs of the LEPs, are using net zero as a driver of economic growth by attracting regional investment and jobs. The ES has a responsibility to deliver high-impact positive environmental outcomes as well as economic prosperity. That is an integral function of the modern state (Hatzisavvidou, 2020, pp. 94–98). Therefore, why can't the UK ES embrace this new green industrial revolution and reindustrialise the UK through green innovation?

The above discussion illustrates the divide between the ES, its institutions, and its key organisational stakeholders. There is a benefit in aligning the key attributes from stakeholder and institutional theory, as detailed in sections 3.7 and 3.8, to deliver maximum organisational power in support of net zero. The alignment of those attributes can facilitate co-operation and partnerships making decarbonisation acceleration possible. Key stakeholders from top-down institutions through to SMEs need to be focussed on the same strategic objective. At present that is not the case. There is a clear divide between top-down policy and the realities as experienced by organisations and this supports the assertion that the UK is living in a net zero paradox: policy is abundant, yet delivery is slow. The next section will discuss how organisations are contending with the net zero institutional logic.

6.2.2 *Net zero's organisational reality*

Organisations are faced with many competing institutional logics, and these create a range of barriers and enablers (Besharov & Smith, 2014; Caldera et al., 2019; Olesson et al., 2023). Those logics shape the organisational belief systems and create a shared understanding about what constitutes legitimate goals and how the logic is pursued. Net zero is an organisational logic, as was outlined in section 2.4 and discussed in section 3.6.1; its reality and complete truth can be hard to establish. How the net zero logic is understood and implemented by organisations is a challenge and this section discusses the findings from Chapter five to present net zero's organisational realities. It will start by detailing five organisational vignettes that are assembled from the contributor interviews. They help to explain how organisations are interpreting net zero meaning and highlight some of the key organisational tensions. Following the vignettes, Chapter five findings will be further discussed.

6.2.2.1 *Organisational vignettes*

Chapter five presented evidence in support of the four research themes. The five vignettes that follow will add further colour and depth to the subject. They have been carefully selected from the contributor interviews because they best illustrate a number of the key ideas and issues that this thesis is highlighting. They demonstrate a variety of approaches open to organisations when addressing decarbonisation. They range from a total commitment to reducing emissions, being organised in ways that facilitate MSPs and delivering a social-led sustainability purpose, through to organisations that experience external pressures, financial constraints, superficial engagement, and challenges regarding how to prioritise decarbonisation when the organisation is faced with multiple competing logics.

Vignette one: Demonstrating complete commitment to organisational decarbonisation

This global engineering business designs and manufactures construction equipment. They are highly aware of the negative risks to their operating model should they not totally engage with decarbonisation and net zero. They also possess significant global power to reduce emissions. They are highly influenced by society's institutional norms and the policies from global and national institutions. They have actively embraced each of these pressures and have also recognised the forces each has on their organisational boundary and reconfigured their business operating model accordingly. Furthermore, they are reimagining what the organisation needs to do to survive long-term.

The European Purchasing Director (RC23) presented their evidence.

'98% of our emissions are scope three, and by 2040 we will be net zero. It is led from the CEO down...it is our responsibility and our purpose to do zero emissions...It is the responsibility of everybody because we all bought into this transformation'. RC23

Their corporate intent is clear. It is a top-down, board-level sponsorship agenda and central to the DNA of the brand and the business operating model. This is further supported by:

'So it is a critical area for us, it's high on every agenda and every single meeting'. RC23

The need to decarbonise is seen as an external boundary threat. The business has innovated into new technical areas, thus extending its organisational boundary. Multiple competing institutional logics have emerged as they transition from diesel engines to renewables. The business has had to reinvent itself and they have broken old path dependencies.

Supplier partnerships are critical to the organisation to allow them to innovate as well as manage their scope three emissions. 'We work with our existing supplier base as integrated partners. We ask about their sustainability plans, and we need to understand what the carbon equivalent footprint of every single part of the supply chain is' RC23

Vignette two: Demonstrating inter- and intra-organisational MSP alignment

This UK beverage company was established over 30 years ago. In that time they have formed long-term partnerships with farmers and adopted the purpose: 'better lives, better planet and better tasting products'. They have achieved B Corp status. It was refreshing to interview RC4, the CEO of this MSP-owned organisation who are completely comfortable about reducing their environmental and carbon footprint whilst also growing the business.

Their key shareholders are a large institutional investor, whose priority is to invest in socially responsible businesses, a large charity, employees, and global suppliers. It is a true MSP arrangement.

RC4, their CEO for the last ten years, was proud of what the business had achieved but also realistic about its challenges. The shareholder structure creates an environment that is highly orientated to their social-purpose-led agenda, and he believed that this structure is very rare. But it does create growth problems because finding likeminded acquisition targets is rare.

Finally, RC4 commented on the agency of the team. Employees come in to work committed to the values of the business and their agency is directed in ways that build this commitment. RC4 sees this tangibly in the way they work with each other, the type of individuals they attract when recruiting, the way they build partnerships with others, and the business culture. In the end what benefits is the planet and society. By being committed to B Lab certification scheme, and by measuring their carbon reduction impact through SBTis, the business has been able to strongly demonstrate legitimacy and their unwavering commitment to net zero and the wider sustainability agenda.

Vignette three: Demonstrating that stakeholder sentiment can quickly change

A sustainability director from a multibillion-dollar private organisation primarily supplying private label food products to a range of European retailers was interviewed twice over a twelve-month period. These two interviews provided evidence demonstrating the claim that sustainability sentiment can change fast; it is a highly dynamic subject with pragmatic realities resulting from changing stakeholder forces and macro changes to the commercial landscape.

The first interview contributed directly to the evidence base. The second interview followed a request to all of the semi-structured interviewees to participate in critiquing and validating the consolidated results and conclusions. This contributor was one of two who kindly offered further time. See section 5.7.

In 2023 this family-owned organisation was committed to sustainability and the UN SDG goals. That purpose-led culture was very strong across the organisation. Their objective was to be net zero by 2035 and 90% of their emissions are scope three. To reduce their emissions requires a high level of external co-operation and partnerships and this is both time-intensive and expensive. This agenda provided significant power and legitimacy to the Sustainability Director, RC5. He had permission to engage with other business leaders across twelve manufacturing sites and develop decarbonisation plans. During 2023 and 2024 the cost-of-living crisis became urgent with energy prices and raw material prices increasingly rapidly. Their retail customers demanded control over price inflation and this placed significant pressure on their supply partners. The casualty was the pace of the sustainability and the decarbonisation agenda.

Twelve months on, a new sustainability business leader is in place. Their focus is ensuring that the business is operating responsibly. This encompasses health and wellness, packaging, food waste, societal issues and net zero. Although net zero is not off the agenda it has been deprioritised and its legitimacy reduced. Stakeholder power has been applied, and a more economically pragmatic business agenda has been adopted in the face of substantial economic forces.

Circumstances do change and organisations need to be flexible and pragmatic. This vignette highlights that even the most environmentally committed organisations, even private ones who are more insulated from shareholder and investor pressure, will change direction when external forces are applied.

Vignette four: Demonstrating superficial motivations, verging on greenwashing

This vignette provides a different perspective on legitimacy, power, and influence.

The SME is family-owned and operates in the UK leisure and retail sector. They appointed a sustainability manager reporting to the manufacturing director. It was a new role for the business. They recognised they must do something in sustainability but were unclear exactly what. By creating a new functional head the leadership team were signalling net zero commitment and legitimacy to every stakeholder. They were taking sustainability and decarbonisation seriously. In the words of the role holder RC22:

‘The company needed somebody to come in, but they didn't know what that person needed to do...and I have to say the expectations were low’ RC22

The interview was undertaken when RC22 was only 12 months into the role, so still early in shaping stakeholder expectations. Her realism was very honest ‘I am working in the interest of the business knowing that it's never going to get us to net zero’.

When this was probed in more detail it was clear the issue was centred on temporal imbalance; short-term priorities frequently overriding longer-term ones. ‘I get sucked into the short-term issues as opposed to being able to tackle the long-term challenges’.

The interview also highlighted stakeholder cynicism, indicating there was a long way to go before stakeholders would be aligned to the decarbonisation agenda.

‘I was with the commercial team and they opened up about my role. It was an interesting assessment of what net zero and sustainability meant culturally within the organisation; they assumed I did not have electricity at home, I used candles, ate no meat, and never used products that consume packaging. They may not have been serious, but it identified underlying prejudices ...We have a lot to do’.

Net zero is a stated organisational priority but appears to be superficial and possibly in name only. They clearly wish to do the absolute minimum and avoid managing competing institutional logics. The business may be quite different in a few years as their net zero confidence grows from positive successful experiences, but it is questionable whether RC22, acting as a change agent, will endure that process.

Vignette five: Demonstrating that commitment is not enough; legitimacy and money are also needed

RC8 is a net zero manager in a progressive Local Government organisation. The local authority have one of the most ambitious decarbonisation targets in the UK, if not Europe, and they aspire to be net zero well ahead of the 2050 target. They strive to deliver this through strong stakeholder engagement and external partnership building

However, they are limited in what they can do because of severe central-government-imposed budget cuts over the last ten years. This has reduced their ability to accelerate local decarbonisation even though they want to. Decarbonising is not a local statutory responsibility for this or any other LG organisation, but they choose to aggressively decarbonise because it has wider social benefits to the local community. Examples include: decarbonising transportation by investing in new forms of public transport and encouraging citizens to use the local bus, tram and train network; insulating public sector housing to reduce energy wastage and improve public health; and strengthening the planning rules and guidance to local domestic and commercial developers, particularly in their choice of energy efficient materials.

Their perspective was that they look down rather than up; 'we are not having regular discussions with government'. This means that when it comes to strategy and prioritising, they define their own priorities. RC8 was directly involved in the development of the local authority decarbonisation action plan which involved significant public and partner consultation. Some elements of what was aspired to were not possible because they would need primary statutory legislation and national government intervention.

Finally, RC8's and his department's status in the organisation is important to understand. Over time the decarbonisation team have become more removed from the CEO, and that is seen as a weakness. It is still a very public and visible priority for the organisation, but its legitimacy has been diluted driven by the perception that it is less important than other functional areas.

Vignette conclusions

Organisations are faced with some difficult choices and net zero's reality can be hard to understand and operationalise. These five vignettes detail committed organisations who have recognised the need to urgently change and embrace decarbonisation as an external boundary threat, whilst others have retreated from the decarbonisation agenda when faced with other competing logics.

Vignettes one and two are aligned. Both organisations have fully embraced sustainability and net zero. Both passionately believe in collaboration and the power of partnerships. MSPs are an important way for each to innovate, manage their scope three emission, and build a more sustainable business model. They are fortunate that their shareholders and key stakeholders believe in this agenda and that legitimacy has allowed their respective business models to be reimaged. Vignette two demonstrated how a thirty-year-old organisation has totally embraced the principles of being a social-led organisation whereas the organisation in Vignette one has been forced to adapt and change their business model because of the external threat. In both instances, a recognition that aligning positive stakeholder forces with the institutional forces has allowed the businesses to reinvent themselves and be more successful. Section 3.7 discussed the organisational power that can emanate from combining theories, as illustrated graphically in Figure 3.7. These two vignettes demonstrate how the theory can be applied in practice to deliver great benefit and transformational change.

In the face of stakeholder pressure and financial reality, Vignette three demonstrates the power of external stakeholders and other competing logics. What seemed an organisation totally committed to net zero changed extremely fast when economic reality threatened the financial security of this long-established business. When their largest customers made demands, they had no choice but to change track. What had seemed like a very secure sustainability plan changed very quickly to a diluted version that was all about cost saving. When an external threat is applied to the organisational boundary it can have substantial consequences.

Vignettes one and two as well as three, prior to the external threat, each demonstrated a total commitment to sustainability. They were clear what they needed to do and executed accordingly. Vignette four demonstrates the opposite. The sustainability manager appointment was in reality virtue signalling by the organisation. They could not provide legitimacy nor power to the appointee to enable them to deliver what net zero would require. Arguably the appointment acted as a destructive internal force that undermined the credibility of sustainability.

Vignette five demonstrates that economic power is particularly important in net zero and this was also evident with Vignette three and to a lesser extent Vignette four. Unless the net zero agenda is properly resourced it is extremely hard to make progress and have impact. Net zero is a long-term agenda that needs resourcing over the long-term. LG have so much influence to deliver decarbonisation, yet they are severely limited by resources. Furthermore, the status of the net zero agenda is signalled by who or where it responds to. In an ideal organisation net zero is part of everyone's role, but that takes time and in most organisations sustainability will respond into an organisational leader. Vignettes three, four, and five each illustrate the legitimacy,

status and impact consequences when sustainability is functionally more remote from the CEO and their direct authority.

6.2.2.2 *Organisational meaning*

Despite only 15% believing that net zero will be achieved on time, 75% of respondents to the quantitative survey considered net zero a strategic organisational priority (Tables 5.3 and 5.4). This confirms the status of the policy and demonstrates that net zero is strategically important organisationally even if they do not believe it will be achieved nationally. It is also a board level subject and gets more discussion than it did twelve months ago (Table 5.4, Questions 2 & 3). Despite some of the concerns expressed in section 5.4.1.3 there is clear evidence that net zero is important to the organisation. This can be explained from two different points of view. Firstly, from a coercive perspective: Many organisations must legally report on their emissions, a state-led requirement which is increasing globally; furthermore, to work with many large organisations it is mandatory to supply emissions data to allow them to quantify and manage their scope three position. Secondly, from an external stakeholder point of view net zero has become a normalised subject. 83% of respondents confirmed that point, rising to 90% with large organisations (Table 5.4, Question 6). Net zero has become a salient stakeholder subject and evidence was provided that having a clear net zero emissions reduction strategy demonstrates legitimacy to potential new investors, partners and employees.

Table 5.4 Question 3 demonstrates that larger organisations, more than smaller organisations, are more engaged in net zero than twelve months ago. For larger organisations the increasingly coercive environment is likely to be driving that agenda at least in part, whilst for many SMEs the 2022/3 period was challenging as a result of Covid-19, the energy crisis, and significant inflationary pressures. These multiple and competing short-term priorities probably did not allow SMEs any further scope to invest in net zero emissions reduction programmes beyond what was absolutely necessary. Two SMEs (RC3 and RC23) said they did not have the extra resource or financial capacity to engage any deeper in net zero.

Net zero is also seen as an organisational behaviour changer. As was reported by RC20 and RC2 and recorded in Table 5.4, net zero is becoming a core priority for the whole organisation (75%) and is focussing every stakeholder on net zero as a priority (83%). However to achieve this, organisations are having to manage the tensions in corporate sustainability by approaching problems from different perspectives, breaking previous path dependencies, and adapting to how others, including customers, are responding to net zero. 84% supported this perspective, increasing to 93% with larger organisations (Table 5.4, Question 9), whilst 84% said they would even consider working with competitors (Question 5). Theory explains and supports these claims and evidence. Chapter three identified the work of Hahn et al. (2015) and

the spatial and temporal tensions that organisations experienced when faced with the substantial challenges that sustainability presents. To break free from previous ways of thinking it is necessary to disrupt organisational routines and it does take time to form novel approaches. Additionally, Lee & Min Dong (2011) identified that it was important to combine stakeholder theory with institutional theory to select appropriate sustainability strategies and this also takes time. Carefully selecting who to work with, including competitors, is also part of this process and how stakeholders and institutions are managed can build a more effective sustainability organisation. Finally, recognising organisational boundaries is important as a number of the vignettes identified.

What is unclear is whether decarbonisation is a source of competitive advantage or just a cost to be absorbed. Smaller organisations more than larger ones think it has competitive advantages: 76% vs 55% (Table 5.4, Question 7). This is likely because the smaller organisations interviewed are specialists in net zero and own proprietary IP, whereas the larger organisations were broader and more generalist. 72% of all organisations saw the demands from net zero as an organisational cost (Question 11); understandable considering the extra resources, physical and people, required to measure, track and report the data.

It is useful to analyse what effect net zero is having on organisational purpose. Net zero is only one part of sustainability, as has been discussed already, and therefore cannot take the whole credit for many organisations enshrining the principles of sustainability and decarbonisation into their corporate social purpose, and for one organisation interviewed for this study, its articles of association (RC4). But net zero is a very public and arguably easier to understand headline than sustainability and is overtly forcing organisations to ensure stakeholders are aligned to its agenda. By adopting SBTis and signing up for B Corp status, organisations are signalling serious intent. Net zero and sustainability embedded in the organisation's culture, mindset and corporate social purpose is powerful; in the words of RC5 'net zero is a badge of progressiveness and credibility'.

6.2.2.3 *Organisational decarbonisation recalibration is possible but problematic*

When faced with the net zero Grand Challenge and its complexities, urgency and uncertainty (Ferraro et al., 2015, p. 365) organisations find it hard to rethink every aspect of their own organisation: culture; operations; structure; and legitimacy. Many organisations think it is satisfactory to force-fit sustainability into a conventional functional-based organisation, as evidenced by contributions from RC22 and RC5 who both found it is hard to make decarbonisation progress when others in the organisation are not fully aligned to the strategy. By appointing a sustainability leader, publishing a plan and demonstrating some annual decarbonisation progress, many organisations think they have fulfilled their commitments to net zero. But as already discussed, net

zero requires a significant organisational recalibration. In the words of Ferraro et al. (2015), Grand Challenges need robust action (2015, p. 369) and actors may have to 'see themselves in different ways and change their ends' (2015, p. 369). Vignettes one and two demonstrate that this is possible.

When an organisation commits itself to independent external scrutiny of its sustainability strategy it is making a bold and public statement about its belief in the principles of business and planet being able to mutually coexist. Several organisations interviewed over the last three years have taken this approach. RC23, RC4 and RC19 each work for such organisations and report that although the process is difficult, when achieved it inspires everyone. The effort involved in gaining B Corp, SBTIs or ISO 14001 and 59000 status is significant and has immediate and ongoing financial and resource implications. RC19, who works for a global organisation responsible for setting the standards, recognised that achieving ISO accreditation is significant but his experience was that adopting the standard helped change the sustainability organisation culture, as shown in Vignette two.

Being inspiring and setting an example are key to the complex and difficult challenges involved in decarbonising. It is all too easy to avoid the problem and create 'predatory delay' (Nyberg et al., 2022a, pp. 3–4) by making excuses or waiting a few more years before facing up to the significant challenges involved in understanding, and then actually decarbonising, supply and value chains. RC2 cited examples where his clients found it difficult to justify the costs of net zero and put off making the necessary decisions. Eventually they had no choice, either for legal or practical energy saving reasons, and they became convinced about the merits of decarbonisation. RC14 provided an example when working for a global energy producer where the public agenda versus the internal agenda were quite different. Their public commitment to net zero was contrasted by the internal agenda which was all about how to slow down the transition to net zero because of the economic consequences. For this reason, RC14 decided to leave the organisation. Vignette one illustrates that when an organisation is prepared to reinvent themselves, embrace a radically ambitious net zero change agenda, strive to think differently and break previous path dependencies (de Groote & Kammerlander, 2022) radical change is possible. There is no doubt it is an organisational challenge that requires strong long-term leadership, significant resilience to external influence and massive patience as net zero is a twenty-five-year challenge; this was evidenced by RC23 and the leadership shown by his CEO and board. Effecting change sustainably can be slow but does have organisational and planetary benefits. However, even committed organisations can find that recalibrating a complex organisation can be difficult and create organisational boundary pressures: a good example of this was contributed by RC2. When their organisation was challenged by one of their largest customers to significantly reduce costs it was necessary for them to reassess the importance of net zero and decarbonisation. This led to the subject being deprioritised and the sustainability director exiting the

business. Net zero was removed as a strategic priority and incorporated into a range of other competing logics. For net zero to be achieved it requires a supportive set of stakeholders even when an external boundary threat condition is applied.

Net zero is clearly prone to multiple interpretations and when combined with the long timescales involved, provides actors with significant room for manoeuvre around facts, rules, and evidence-based decision-making. Organisations frequently have to make compromises, but using net zero as the prime motive to avoid those decisions is arguably cynical (McLachlan, 2024). Unfortunately, net zero and decarbonisation is littered with that cynicism. Vignette four illustrates this. There is sometimes a significant gap between actors' lofty net zero aims and what they actually do, driven by self-interest. Deontology as developed by Kant (1785) is simple; just follow the rules. The problems are, net zero is an abstract subject and open to multiple interpretations, and many agents are creative and evasive in what they do, how they do it and how it is presented because they have their own agenda. RC29 cited examples when engaging with national government in which political self-interest overruled the facts. It was almost impossible to influence and shape policy. Politics does interfere with net zero and the facts. The UK CCC used rigorous evidence-based decision-making as a way of advising the UK Government; in effect by developing 'rules'. However, the UK Government chose through 2023-24 to be flexible with that advice despite the CCC's legal responsibilities. In both years the UK High Court found the Government guilty of breaching their net zero legal duties and the government were instructed to rethink the *net zero by 2050* transition pathway. This demonstrates a lack of stakeholder and institutional alignment arguably creating an impression of 'the rules are there to be broken.' This supports the argument developed in sections 3.7 and 3.8 and the evidence from section 5.5 regarding the benefits bestowed when the key attributes from stakeholder and institutional theory are aligned, and the problems that arise when they are not.

6.2.3 Theme one conclusions

This theme demonstrates that there is a significant gap between net zero's policy ambitions and organisational reality. The net zero paradox between the abundance of policy and the slowness in delivery highlights why the UK is behind its net zero transition pathway. There is a clear disconnect between the ES and its key organisational stakeholders and, despite successes since 2018, it is generally accepted that the UK must accelerate decarbonisation to achieve *net zero by 2050* (Climate Change Committee, 2023; Climate Action Tracker, 2024). Organisations are struggling to understand what the ES require of them and how they are meant to balance net zero with other competing logics and net zero's financial realities. The ES and its key stakeholders must be more closely aligned and collaborate more closely. By maximising the power that comes from aligning the key attributes from stakeholder and institutional theory MSPs are more likely to form and from that faster

decarbonisation can result. This will be further developed thematically in Part two **Mechanisms**.

Having discussed the complexities of the net zero **Context**, the next challenge is to gain a deeper understanding of ‘what works’ (Pawson, 2006, p. 21). This is a causal question, so we need to understand both the theory (stakeholder and institutional) and the underlying **Mechanisms**. By blending these together, it is possible to identify the enabling **Mechanisms** that can facilitate effective net zero organisational decarbonisation.

Part two **Mechanisms that shape net zero logic**

6.3 Introduction

This section will concentrate on the central pillar of the **CMO** model, causal **Mechanisms**. **Mechanisms** are the framework’s engine room. They power and fuel the system, and collectively inform how the multiple interconnections of the net zero MSP conceptual framework model work. **Mechanisms** explain ‘what it is about the system that makes things happen’ (Pawson, 2006, p. 23). The examples used by Pawson included substances, initiators, agents and structures. This thesis has applied and interpreted those as the causal **Mechanisms** that enable the net zero logic, and included the key attributes from stakeholder theory and institutional theory, as discussed in section 3.5 and 3.6, as well as Grand Challenge and Boundary Spanners. Together they work to ensure that net zero MSPs can be designed, built, and maintained. Grand Challenge will be discussed in Theme two and the net zero Boundary Spanner acting as an MSP designer, builder and maintainer in theme three. In Theme four Multi-Stakeholder Partnerships will be fully detailed. Net zero MSPs can be thought of as the perfect strategic **Mechanism** for organisations looking to decarbonise because they provide the scale, expertise and resources capable of accelerating decarbonisation. However, they can decay to simpler DSPs should those organisational enablers either be weak, in opposition to each other, or be broken; and the MSP to DSP decay **Mechanism** will be explained.

6.4 Theme two: Net zero, an organisational cross-boundary Grand Challenge

6.4.1 *Introduction*

Chapter two mounted a strong and detailed case for characterising net zero as a Grand Challenge by using and critiquing existing literature (Brammer et al., 2019; Carton et al., 2023; Dorado et al., 2022; Ferraro et al., 2015; George et al., 2016; Seelos et al., 2023). Despite its recent academic criticism, particularly by Carton et al.

(2023), section 2.3 developed the argument why describing net zero as a Grand Challenge had even more potential. Furthermore, in Chapter three, section 3.10.1, net zero from an organisational perspective was academically underrepresented and identified as a literature gap. Following the thematic analysis process in Chapter 4, Theme two was identified. This section will now discuss the literature and the findings in support of that theme. It will firstly develop the ontology of net zero and then discuss why characterising net zero as an organisational cross-boundary Grand Challenge brand with causal power to overcome obstacles is organisationally helpful. Box two presents Theme two's key evidence.

Box two Theme two: Key evidence

Net zero Grand Challenge

Chapter two. Chapter five section 5.4.2. Table 5.6. Appendix one

- 89% of organisations see net zero as a Grand Challenge
- Only 70% see net zero as a crisis
- Complexity 'Net zero is so big it's probably too hard to talk about' RC10
- Uncertainty 'The costs of net zero are very uncertain' RC8
- Evaluative 'Evidence-based policymaking does not happen' RC29

Cross-boundary challenge

- 'My role is to cross boundaries' RC11
- 'We have to be highly aware of our boundaries when working with our partners' RC8

6.4.2 The realism-based ontology of net zero as a Grand Challenge

Realism, as detailed in Chapter four, section 4.2.2, is 'objective and exists independently of human thoughts' (Saunders et al., 2009, p. 119). In this sense reality is in direct opposition to idealism (2009, p. 214). It is helpful to describe the nature of net zero's reality and its ontology from the findings and wider research. By identifying subject beliefs, which can be independent of the observer, and what needs to occur in reality, a perspective is offered.

For many years in the UK net zero has been a subject influenced by idealism when a more realistic narrative could have been beneficial. For example, vocal social movements, such as Just Stop Oil and Extinction Rebellion, have idealistically advocated radical agendas and adopted extreme protest methods, both of which have not been credible nor well received by the UK public. Furthermore, the UK Government

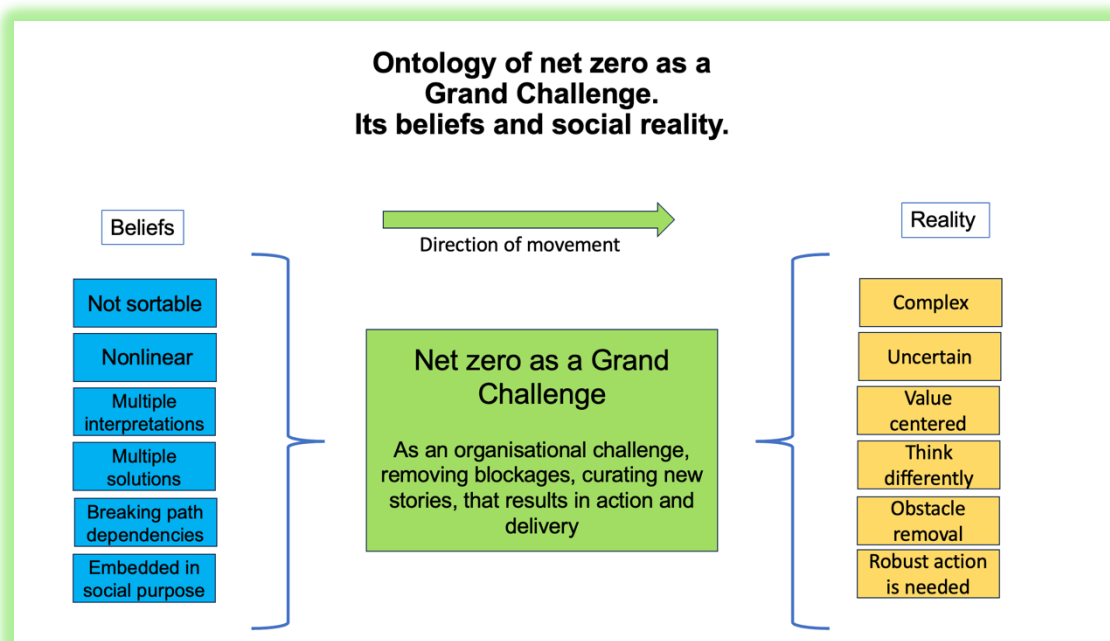
has also failed to promote or deliver the benefits of net zero, creating significant stakeholder and institutional misalignment. This has led to net zero becoming a highly polarised and political topic, with multiple conflicting narratives. LG contributors to this research have been smarter and more creative, presenting net zero as a benefit-led agenda and in so doing have made attempts to bridge the divide between beliefs and reality. For example, LG in [anon] have tackled decarbonisation as a health improvement and energy reduction agenda by lowering pollution and reducing energy bills through better insulated homes. This general point is supported by Bailey et al. (2021) who argue that there is a need to reframe the discursive interventions to accommodate new thinking, because existing approaches are not working. What is required, therefore, is a new perspective based on objectivity and challenge; this is what framing net zero as a Grand Challenge aims to provide.

During the research and its analysis, an understanding about the nature of the net zero reality, and what can be known about that reality, started to appear. A set of beliefs associated with what the net zero Grand Challenge entails was blended with the realities and knowledge of what net zero means to individuals and organisations. This has made it possible to build an ontological picture about the nature and reality of net zero as a Grand Challenge. Furthermore, it demonstrates how the attributes of Grand Challenge in the Context of net zero depend on each other for their existence. For example, complexity can be addressed by overcoming obstacles. The new ontology of net zero as a Grand Challenge is shown below in Figure 6.1 which separates its beliefs from its reality and suggests how that transition could be addressed.

Section 5.4.1.3 identified that many contributors held strong beliefs about net zero: it was not sortable; it had multiple interpretations; it was necessary to think differently; and net zero was about having an organisational social purpose. Describing net zero as a Grand Challenge with its complexities, uncertainties and obstacles potentially redefines many beliefs and reframes them in a more realistic, approachable and manageable way. The author would suggest, when combined with net zero as a Grand Challenge, a start has been made in defining the ontology of net zero from an organisational perspective, fully accepting that more detailed and empirical work is needed.

Figure 6.1 The new ontology: Net zero as a Grand Challenge

Source: Author's work



6.4.3 Net zero as a Grand Challenge has stakeholder saliency

Section 5.4.2 and Table 5.6 presented the Grand Challenge empirical evidence and based on those positive findings the thesis advocates that there are many benefits in reframing net zero as a Grand Challenge. 'Grand' demonstrates the scale of the problem whilst 'Challenge' conveys that net zero is difficult, verging on a fight. As RC10 stated 'net zero is so big and too hard to talk about'.

Grand Challenge resonated well with contributors both as a descriptor of net zero and as a fresh new way of representing net zero to the organisation. 89% accepted that net zero was a Grand Challenge, far exceeding net zero's description as a crisis (70%), and 94% thought net zero was a key societal issue. Considering at this stage in the study the detail of Grand Challenge had not been explained, this is a strong finding. The more commonplace, populist, 'crisis' language was seen as less useful and perhaps underplays the scale of net zero. Immediately, the 89% score supports Grand Challenge as a credible concept.

During the in-depth interviews Grand Challenge was not initially understood. However, when its theoretical scaffolding was explained with a focus on complexity, uncertainty and being evaluative in nature, its relevance became immediately apparent and was well received. Table 5.6 detailed that 75% of contributors used 'complexity' as a broad theme during the interviews whilst 65% thought that net zero created uncertainty and

71% considered net zero to have multiple interpretations. These are estimates because the language was located around these attributes whilst not always using the exact words.

When framed as a pragmatic organisational challenge that is non-linear, and one that aims to remove blockages, tell stories, and develop novel and creative solutions that facilitate innovation, a light-bulb moment occurred. Net zero and decarbonisation were seen as a subject requiring agility and flexibility. There was no linear logical process where solving one issue easily led to the next. It was necessary to think laterally and respond to issues as they appeared. For example, RC10 experienced a situation where they thought that a particular net zero issue had been resolved only to find that they needed to return to the issue when a task further through the project uncovered an unexpected result that influenced the original net zero issue. Sometimes the non-linear nature was frustrating, but RC11 said it was just part of the sustainability and net zero challenge.

6.4.4 The Grand Challenge brand concept and its value to MSPs

A label and a brand are quite different (Guzman, 2005). A brand has value and a clear identity whereas a label stands for little. Grand Challenge is a label but by using its key component attributes it could be a strong brand, and one used by organisations when working in partnerships to demonstrate the scale and complexity of the problem and provide identity to the MSP. The MSP Boundary Spanner can own this process, helping build the importance of Grand Challenge in an MSP context. However, this research has identified that Grand Challenge is not a term widely used by organisations. It does resonate well when explained, but more effort needs to be put into building its brand value.

Significant academic effort has already been applied to defining Grand Challenge as explained in section 2.3. In particular, and relevant to MSPs, Dorado et al. (2022) argued that Grand Challenge is a strategic term that can be used by business to provide clear direction and overcome obstacles. Ferraro et al. (2015) described the three facets of a Grand Challenge which actors must address. By applying this work to MSPs it is possible to reframe how Grand Challenge can be used in an MSP context and can build its brand value. Grand Challenge can join the organisations together, provide a common purpose and identity, clarify what they individually and collectively need to do to tackle the challenge and communicate to others the scale and complexity of the problem they are working on. Table 2.4 summarised the Grand Challenge component attributes, and their benefit to MSPs. This is further explained below using evidence from the findings. By understanding net zero's obstacles, it is possible for organisations working in MSPs to be more agile and work together on the problem more effectively. Frequently actors, both in this research and more widely in society, frame net zero and climate change as sortable and resolvable. However, this thesis

would contest that this is positively unhelpful because it sets up a false expectation. Since the 2015 Paris Agreement there is little evidence to suggest that decarbonisation is being sorted. The linearity of ‘diagnosis and resolution’ (Dorado et al., 2022, p. 23) is either naive or an untruth. There is a need for a different approach. Defining net zero as a Grand Challenge, recognising it has obstacles that need to be overcome, and using this as a **M**echanism to help build a net zero MSP, is a positive way forward. Those obstacles will now be detailed and related to the evidence.

6.4.4.1 *Curation obstacles*

Vignettes three and four illustrate how difficult it can be to explain to stakeholders what net zero entails and what is required from them. Curation can be used as a way of overcoming stakeholder obstacles and reimagining the future. Many contributors engage in curating sustainability stories as a way of communicating to their cross-functional stakeholders. Team members from multiple disciplines find it a straightforward way to relate to the subject. For example, RC8 used it extensively within her peer group to inspire colleagues. It allowed them to visualise the scale and complexity of the sustainability challenge. RC17 found that in decarbonisation workshops building stories was a strong way to easily articulate the future sustainability project and keep it manageable in size. This technique is arguably even more important in complex MSPs where a compelling story and reason to believe in the net zero MSP need to be established and embedded in a compelling way. If the story can be strongly curated it makes it easier for the MSP participants to overcome objections and obstacles and communicate the relevancy of the MSP back to their own organisations. Applying this technique to Grand Challenge constructs a new way of presenting, explaining and characterising net zero. It is perhaps a way of overcoming organisational blockages and encouraging cross-functional and cross-boundary partnership working. Curating a net zero Grand Challenge story could build brand identity, meaning and common purpose and glue multiple organisations together when they are working in MSPs.

6.4.4.2 *Governance obstacles*

The management of stakeholders was cited by multiple contributors as difficult and time consuming, but essential. Vignettes one and two demonstrate the benefits of getting this correct. In Vignette one the whole organisation was reinvented because every stakeholder had been included in the business transformation project. The CEO had empowered their board to overcome obstacles and create a business structure that could respond to the new normal of electric vehicles. Vignette two demonstrated that if an organisation gets its governance structure correct from shareholders to customers it is possible to have a successful and sustainable business that is both relevant and compelling to customers and can achieve robust growth. These vignettes

demonstrate that governance obstacles can be overcome by ensuring there is common ground between stakeholders, establishing win-win strategies, and developing partnerships.

6.4.4.3 Sensemaking obstacles

Thinking differently can be an important key to unlocking difficult problems. MSPs bring together organisations with different experiences, skills and ways of working; by utilising that expertise on the challenges of net zero it is potentially possible to innovate, approach the problem from a new perspective and decarbonise faster. Both the CEO of a large city council, RC27, and the CEO of a LEP, RC7, cited examples where multiple organisations were assembled to ‘crack’ a specific net zero problem. RC27 described bringing together over twenty local organisations to tackle how to get EV charging embedded in the city. RC7 frequently assembled working teams from local organisations to bid for government contracts; their different perspectives helped contribute to successful completion.

6.4.4.4 Adaptation obstacles

Van Wijk et al. (2019) demanded that social innovation was urgently needed to confront social problems; this is true for net zero. Adaptation can overcome previous obstacles and build new systems or modify existing ones. In a net zero MSP situation this task is far easier because of the scale of the MSP, its cumulative skill levels, combined resources and expertise. It can bring together organisations with a shared interest in this re-engineering approach. Innovative decarbonisation solutions can be developed by breaking previous path dependencies, and in this way the net zero MSP can adapt to net zero and its realities as a social Grand Challenge. RC6 cited that they had encouraged business units to collaborate and help each other decarbonise the overall supply chain.

6.4.4.5 Complexity

Net zero is a complex problem. ‘It is so big, it's probably too hard to talk about’ RC10. Net zero MSPs are ideally placed to address this. By breaking the complex challenge down into manageable components, the overall problem can be more easily digested by the organisations participating in the net zero MSP. The tasks can be allocated to the best qualified organisations. RC29 described how when trying to tackle a complex packaging recycling project they had to break the overall project down into separate tasks. Those tasks were allocated to experts across the member organisations who had specialist skills. This prompted an innovative approach to the project.

6.4.4.6 *Radical uncertainty*

Net zero's uncertainties and ambiguities create doubts and dilemmas for all concerned. Stakeholders are unpredictable, as was shown by Vignettes three and four. Actors find it difficult to visualise what the future holds. It is one of the responsibilities of the net zero MSP to help alleviate those concerns by articulating net zero's challenges and future issues. By working in partnership, the net zero MSP can construct a fact-based perspective on the challenge and through this build credibility and legitimacy which can be used to manage other stakeholders. Vignettes one and two demonstrate clarity whereas Vignettes three and four demonstrate how uncertainty and ambiguity undermine net zero's aims.

6.4.4.7 *Evaluative with multiple interpretations*

The politics of net zero demonstrate how different political persuasions can present net zero as an economic saviour and a way of ensuring energy security or as unnecessary cost that the UK cannot afford. The public domain evidence confirmed those findings. The primary evidence uncovered organisational examples. For example in Vignette four, despite convincing evidence presented to the organisation by RC22, colleagues viewed the data in a separate way and the board deprioritised the decarbonisation project in favour of other competing logics. It is all too easy for detractors to challenge the assumptions and deprioritise a net zero project in favour of more easily understood logics. Perhaps by using the Grand Challenge brand, it is possible to construct well-reasoned, more fact-based perspectives. In this way the risk of subjective interpretations is minimised.

In conclusion, developing the net zero Grand Challenge as a brand arguably has real potential. By recognising and overcoming obstacles organisations can be better placed to address net zero's difficulties. Furthermore, to advance the likelihood of effective MSPs obstacle avoidance has to be taken further. A net zero MSP must methodically address each of obstacles and create alternative and compelling ways to tackle them. When this has been achieved Grand Challenge can be used as an enabling **Mechanism** of the net zero MSP, helping secure both its future and the grand social challenge of net zero.

6.4.5 *Net zero as a cross-boundary cross-functional Grand Challenge*

Grand Challenge has the potential to be a powerful multi-disciplinary, cross-functional **Mechanism** and enabler that crosses organisation boundaries and helps build MSPs. One of the significant academic criticisms of Grand Challenge was its propensity to be subject myopic. Carton et al., (2023, p.4) contested that further research on Grand

Challenge must build a multi-disciplinary approach. This thesis has firstly followed this advice through the variety of actors interviewed, assembling evidence from national government, MPs, LG, large, diversified multinationals, smaller corporates, SMEs and NGOs. Net zero is a subject that demands this variety because opinions and perspectives vary so much. RC17 cited evidence that when multi-disciplinary colleagues were assembled to address a sustainability challenge the results were better. This is in contrast to UK Government: Here there is a complete lack of cross-functional working with responsibility for net zero and decarbonisation delegated to individual departments. The Cabinet Office set up a cross-government committee to specifically address this issue and operate as convenors, but that committee never met. By becoming more cross-functional and coordinated, government could deliver more effective policy and communicate that policy more consistently. By ensuring that decarbonisation is a subject everyone in the organisation must be involved in, businesses can integrate net zero into their core purpose. This multi-functional and multi-disciplinary approach will break down barriers and ensure that net zero as a Grand Challenge is a cross-boundary subject. This will be further accelerated by contributing to the development of MSPs, by definition, cross-boundary, collaborative arrangements.

6.4.6 Theme two conclusions

Net zero as a Grand Challenge has causal power. By characterising net zero as a Grand Challenge and a powerful net zero MSP enabler, and by understanding the ontology of net zero Grand Challenge, it has been possible to build a case for its use as an MSP Mechanism and in so doing address Grand Challenge's critics. Grand Challenge is not well understood by organisations, but to overcome that problem Theme two has developed Grand Challenge into a meaningful brand that can help organisations understand its value and also add value to net zero MSPs. This can be achieved by using the Grand Challenge academic scaffolding and addressing each of its key component attributes. The net zero Grand Challenge may not be sortable, but it is addressable by overcoming obstacles and facing up to its complexities, uncertainties and multiple interpretations.

6.5 Theme three: The net zero MSP Boundary Spanner

6.5.1 Introduction

The net zero Boundary Spanner is an agency enabling role with causal power to design, build and maintain MSPs. Their job is key, both as the owner of the actions that are central to the contract between the principle and agent, but also as the owner

of the change process which is key to the net zero Grand Challenge. Agency theory is concerned with the principle-agent 'problem' (Mitchell & Meacham, 2011), and the multiple boundary related issues that are associated with contractual and non-contractual relationships between stakeholders (Bendickson et al., 2016, pp. 177–178). The Boundary Spanner is heavily engaged in these relationships both inter- and intra-organisation. It is a practical, exciting role and one that could improve an organisation's ability to delivery faster decarbonisation through collaboration and MSPs. Literature gap two (section 3.10.2) identified that the Boundary Spanner had not been researched as part of net zero or MSPs which makes theme three relevant and contemporary. This theme will analyse the academically elegant term Boundary Spanner and in so doing will directly address RO4 and answer RQ3. Furthermore, Theme four will help to address RO2, RO3, and RO5 as well as help to answer RQ2 and RQ4. Box three presents the key evidence in support of Theme three.

Boundary Spanner describes the ability of an agent to scan the organisational horizon and work across organisational boundaries (Williams, 2013). But the author's assessment is that Boundary Spanner is organisationally clumsy and needs to be redeveloped and modernised. This can be done by redefining it as a partnership designer, builder and maintainer, making it ideally placed to build effective net zero MSPs. From this follows an analysis of the traits and behaviours of the sustainability professionals who have contributed to this study. They are not Boundary Spanners, but they are organisational leaders who experience the realities of decarbonisation and sustainability. Understanding their traits and behaviours can help contribute a better understanding of the complete Boundary Spanner role which has emerged from the data reduction in the form of the Six Cs of an MSP Boundary Spanner. Net zero can only be delivered through the agency of individuals acting collectively in organisations. By highlighting inspirational actor examples and their traits and behaviours a fuller picture can emerge about the characteristics and the emotional and technical skills of an MSP Boundary Spanner.

During the research there was a stark realism that many organisations think of net zero and decarbonisation as a siloed function and a cost rather than viewing the benefits that come with cross-functional engagement and partnerships that span organisation boundaries. That is why net zero is a Grand Challenge and the Boundary Spanner is an enabler. This research has a role to inspire and uncover situations where best practice can deliver the vision for the net zero Boundary Spanner as a designer, builder and maintainer of MSPs. This theme endeavours to provide this vision by critiquing existing academic thinking, reporting on how the concept was received by contributors, and reimagining how the MSP Boundary Spanner could be operationalised.

Box three Theme three: Key evidence

Boundary Spanner

Chapter three section 3.9. Chapter five section 5.4.3. Table 5.7 and 5.8. Appendix ten

- 'I haven't heard of it, but I get it completely' RC14
- 'As a sustainability manager I have agency to make a real difference' RC22
- 'They are very highly skilled individuals because they would need to be technically competent as well as having persuasion skills' RC1
- 'My immediate reaction is that it sounds like a very powerful way of creating a community of change agents' RC4
- Legitimacy is key 'I think the ability of people to make a big change is limited by what authority they're given downwards to do that' RC16

6.5.2 Boundary Spanner: Academically elegant, organisationally clumsy

Section 3.10.2 identified the Boundary Spanner as a literature gap and an opportunity to build contribution. Huggins & Thompson (2022) suggested there was a growing interest in how agency and agents can break old path dependencies and build both 'economic and social development' (2022, p. 1). The work of Williams (2002) and van Meerkerk and Edelenbos (2018), although separated by sixteen years, has built a foundation for the Boundary Spanner definition and the importance of actors who can scan organisational environments and connect processes and actors across organisational boundaries. Their work is academically elegant and effectively articulates in a purist sense what the Boundary Spanner is and does. But it lacks organisational relevance and specificity about the part the Boundary Spanner can play today to help organisations with their net zero challenges. To overcome this, the Boundary Spanner term needs redeveloping and modernising. This theme is supported by evidence in Table 5.7.

Net zero presents organisations with some unique challenges, specifically its ambiguity, nonlinearity, lack of solutions, and a Grand Challenge with no obvious end point. This makes the net zero Boundary Spanner role a hard one. It can be perceived to be a scientific, factual, evidence-based role, but it must go further because net zero is also a subject that requires significant attitudinal change. It is about reconfiguring individuals' beliefs and values. This makes the net zero Boundary Spanner role a meaningful one that requires agency on multiple levels. At a macro system level there is a need to negotiate multiple competing logics. At the meso level, the inter- and intra-organisational dynamics must be well specified and understood. At a micro level,

individual, one-to-one, effective agency with colleagues is essential to effect the necessary change. For these reasons, the net zero Boundary Spanner is a role with real meaning.

Although the term has increased in interest over the last decade, as was shown in Figure 3.8, surprisingly this study suggests that it has not managed to gain any awareness with organisational leaders, despite having so much potential as a functional role. This research found that the term or label was not familiar to any of those interviewed and needed to be fully explained. Even at a basic level the word 'Spanner' was viewed as an unlocking tool which is correct but fails to convey any relevant meaning when used in combination with 'Boundary'.

'I haven't heard of it, but I get it completely' RC14

'I'm trying to think about this new term but I'm wondering if we, [anon], are a boundary spanning organisation in itself' RC19

It may be academically elegant, but it is organisationally clumsy. The language, the role, skills, mentality and function demand attention. The Boundary Spanner has the potential to be a multi-talented and highly skilled agent, far removed from the street-level bureaucrat definition coined by Lipsky (1980) and this research proposes that the definition and the role can be modernised, rebranded and reorientated to 2024's contemporary challenge: that of collaboration and partnership building. The Boundary Spanner has power and agency to affect structural change and has the potential to be an enabling **Mechanism** in net zero MSPs.

For these reasons, Theme three is both about the old language of the net zero Boundary Spanner and the new language of the net zero partnership designer, builder and maintainer. Considerable credit and recognition must go to Williams, Van Meerkerk, Edelenbos and others who have contributed to defining what a Boundary Spanner is, as was detailed in Table 3.4. However, if the new focus on net zero partnership designing, building and maintaining is to flourish, Boundary Spanner enquiry must go even further. It must enable a problem-orientated, impact-focused approach to reimagining the future of a low-carbon economy planet Earth and facilitate organisational change that operates across organisational boundaries through net zero MSPs. This presents an opportunity for further research building on this thesis. The contribution from this study will be to redefine the Boundary Spanner and reorientate it to an MSP designer, builder and maintainer thus making the term academically and organisationally relevant, and furthermore, integrating the Boundary Spanner with MSPs and net zero. However, this work must move away from developing just another organisational label. It must have real meaning because the role, as an enabler of effective net zero MSPs, has only one objective: to ensure

organisations can accelerate decarbonisation and help deliver net zero. To ensure that happens there are two questions to answer:

- What does the net zero Boundary Spanner role entail?
- What must the organisation do to ensure the success of the net zero MSP Boundary Spanner?

These questions will be answered by firstly describing some inspiring sustainability leaders; this will start to shape what a Boundary Spanner role could look like. Secondly, four observed traits and behaviours will be detailed, again identified during the interviews and through the coding reduction process. Thirdly, the Six Cs of an MSP Boundary Spanner will be detailed. These Boundary Spanner characteristics emerged from the data reduction and coding process which are shown in Table 5.8. Finally, Section 6.5.7 will address what the organisation must do to facilitate the net zero MSP Boundary Spanner.

6.5.3 Inspiring sustainability leaders

By describing some inspiring sustainability leaders encountered over the last three years, it is possible to use their examples as evidence to help scope out the skills and behaviours a modern-day organisational Boundary Spanner should possess. In combination with section 6.5.3, this adds to the skills identified from previous academic research as presented in Table 3.4.

One of the important moments from the research was delivered by a senior CSO from a global electronics business. For him, success was to develop a corporate strategy that was sustainable, not a standalone sustainability strategy. In so doing he would work himself out of a job. The conference audience immediately applauded this small but significant statement. His assessment was that sustainability had to be central to everyone's job, be part of the corporate purpose and the organisational DNA. He talked about how he achieved this internally by demonstrating passion and knowledge for the subject, by building allegiances between internal functions, and by externally working with aligned partners who could help the organisation decarbonise faster. He demonstrated horizon-scanning awareness, partnership building skills and a realistic approach to how obstacles could be overcome.

RC4, CEO of an MSP-orientated beverage business, is also a good example of an organisational leader who completely embraces the need to integrate the needs of business with those of the planet. His leadership epitomises how a commitment to sustainability, decarbonisation and the need to deliver net zero can deliver social good and be totally ingrained in the culture of the organisation. He actively encourages his

colleagues to build partnerships internally and externally as a way of working cross-functionally and cross-culturally. Furthermore, his role as the CEO allows him to visualise what the future of the organisation could look like from the perspective of Planet Earth. He uses this as a way of providing permission to others in the organisation to embrace sustainability and think about their impact on the organisation's boundaries as well as on the planet.

To be balanced, other examples from this study treat decarbonisation as just another organisational function. They demonstrate how difficult it is to ingrain net zero into the entire organisation: for example, the evidence contributed by RC5 and RC22 who each expressed the frustrations of organisations who had moved away from decarbonisation as a strategic priority, or those that were superficially committed to decarbonising.

6.5.4 Common sustainability actor traits

Having facilitated over thirty-five semi-structured interviews, attended seven days of conferences and observed many online seminars, it is possible to describe the styles and behaviours of those working on the practical challenges of net zero. Four common traits have been identified: Passion; Knowledge; Pragmatism; and Commitment. This claim is supported by Table 6.1 which highlights some relevant quotations and the explanations that follow.

Table 6.1 Example quotations: Sustainability actor traits

Trait	Quotation	Cited reference
Passion	'I like the blend of thinking far more holistically about the planet, social peace and benefits'	RC14
	'I had a real passion for the kind of greater cause'	RC9
Knowledge	'We are working on building a robust evidence base to underpin the plans'	RC17
	'I've done that since the start so that I'm one of the few people who've not moved, and I have the experience'	RC18
Pragmatism	'There has to be a shared vision of what you want to achieve to get anything done'	RC18
	'I need to be pragmatic and realistic in order to manage stakeholders'	RC15
Commitment	'I start to translate all my ideas fully into very tangible and measurable business actions and	RC10

	talk to every person I can find to sell the idea so I can get action' 'I get them to publicly commit to implementing net zero in procurement practices – that is what I do'	RC20

Passion. To engage with others about any subject, passion is required. It tends to motivate others and demonstrates knowledge and confidence in the subject. The energy that emerges from passion can be positively infectious to others. During the research, when discussing sustainability and climate related issues with engaged actors, they exhibited significantly elevated levels of passion. This is because they fundamentally believe in the cause they are working for; to them it is far more than a job, it is a privilege to be involved in the fight to be net zero and environmentally sustainable. However, there is a watch-out. To others, that passion can potentially be interpreted as being evangelistic and purist and be seen as a negative trait. It is important to be aware of this and manage behaviours and language accordingly. Overall, this agency is powerful and extremely helpful when *selling* sustainability to other stakeholders.

Knowledge. Grand Challenge encourages a multi-disciplinary approach and consequently there is a need to have a depth of knowledge not just of one's own subject but those of others. This is a skilled role based on experience. Net zero is a complicated multi-disciplinary subject that is part scientific, part operational, part communication, which requires a variety of skills and experiences. Actors were often very experienced and had transitioned into sustainability from operations or marketing. For example, RC14, currently working for an NGO, previously worked in a global energy business in marketing and operations across two continents; and RC10, who runs a sustainability energy consultancy, had previously been an engineer and undertook an MBA at a leading USA business school. Decarbonisation requires actors to be comfortable and confident dealing with many other functional professionals. They need to be able to empathise with them about their day-to-day realities as they reduce emissions in their functional area.

Pragmatism. This is also a key academic component of Grand Challenge. This study's research indicated that sustainability professionals tend to be pragmatic individuals focussed on finding practical solutions for success. Having a sense of realism, level-headedness and being matter-of-fact are absolutely necessary in net zero because of its flexible, non-linear nature. Rather than being idealistic purists, concerned with what society and organisations theoretically should do to decarbonise, they tended to be agile and flexible thinkers. The interviews demonstrated their ability

to think round a problem, rather than adopting a highly linear approach to finding the solution.

RC8, whose evidence was included in Vignette four is one example. Without primary legislation or central funding to be able to enforce his local decarbonisation ambitions RC8, who leads the local authority decarbonisation team, had to take a less linear route to achieve practical success. They decided to tackle key social issues that could impact lower emissions. This included engaging with local businesses and charities to help them promote the benefits of home insulation and energy efficiency through educational workshops.

Another example was from RC29, the CEO of a lobby organisation. His reality was that recycling levels needed to be improved, but his organisational members were not aligned, so a policy could not be developed. RC29 tackled the challenge pragmatically by undertaking two small-scale trials with smaller member organisations. These proved successful in practice which demonstrated to the larger and more influential organisations that the strategy was workable, leading to the adoption and presentation of policy proposals to government for consideration.

Commitment. This trait demonstrates a real bond, an emotional and practical connection to what net zero is about and the benefits it will bring to both the organisation and society more widely. The relationship with sustainability was likely to be embedded in a strong belief system, as indicated earlier about passion, but is deeper than that: it is about full-on commitment to what net zero and sustainability requires. It was observed that the individuals were usually highly socially concerned and would do anything necessary to identify and resolve problems that had wider societal benefits.

6.5.5 The Boundary Spanner role

The discussion from the previous two sections helps to construct the role of the Boundary Spanner in combination with the findings from Table 5.7 and Table 5.8. Although the Boundary Spanner term was not familiar to many there is evidence about the importance of the Boundary Spanner as an agency role who affects field level change. Those working on the challenges of net zero and decarbonisation see that they:

‘Have agency to make a difference’ RC22

And that

‘We need to change the system’ RC5

As agents that operate at the interface between internal functions and external organisations, given permission and legitimacy by their organisation and partners to roam freely, forming new ways of thinking, working, and delivery, then they can affect field level change.

‘It’s about practical delivery’ RC15

and

‘We probably are change agents’ RC9

The research used the closest fit academic description of a Boundary Spanner (section 3.9.1) to help participants relate to the Boundary Spanner role, particularly their cross-boundary partnership-building function. Once this had been explained, the term was well received and furthermore, many could identify themselves as Boundary Spanners, at least in part. There are extra elements that need further examination.

For this role to operate at maximum efficiency requires the net zero Boundary Spanner to be very experienced, possess a wide range of skills, and have a track record of delivery. Furthermore, they must be supported by the organisation, who must be fully committed to the function and the role by tangibly demonstrating legitimacy through support and resources. This contrasts with the example described in Vignette four.

Those interviewed for this research who came closest to fitting the van Meerkerk and Edelenbos (2018) Boundary Spanner description were multi-skilled and very experienced. They were comfortable with the level and intensity of internal and external stakeholder engagement necessary to effect change and lead the decarbonisation agenda, and with managing ambiguity. They could demonstrate career experience in previous roles orientated to organisational change and transformation (RC 4, 5, 7, 10, 13 and 18). They were also agents and experts in their field, possessing strong technical knowledge and superb interpersonal skills: they were articulate, convincing and engaging. They were excellent at persuading others to reassess or change their mindset. They scanned the net zero sustainability horizon frequently for opportunities and networked widely.

‘I identify myself as a Boundary Spanner... the roles that I have within organisations are very much boundary spanning...I spend a lot of time bringing commercial and legal folk together’ RC10

Many leaders who operated as Boundary Spanners did not recognise themselves as culture breakers (Williams, 2002, p. 113), nor was their input always recognised by others. Their contribution to effective cross-boundary working, facilitating inter- and intra-organisational co-operation and acting as change agents, was significant but

frequently overlooked by others and sometimes blatantly undermined. Those net zero and sustainability leaders interviewed for this research were constantly having to build both their own organisational legitimacy and the legitimacy of net zero in the organisation. Often, this was because they did not respond to a senior-enough decision-maker in the organisation, which made it challenging to build visibility and credibility.

'I think the ability of people to make a big change is limited by what authority they're given downwards' RC16

Role title is a principal issue, usually indicating the level of strategic importance given to the subject by the organisation. 'Sustainability' or 'Carbon Reduction' Manager, Leader or Director were titles frequently assigned to the individual. They were often from a PR or marketing background which over time had developed from a communication task to a wider strategic and sustainability role. Van Meerkerk highlighted the importance of information flow and being able to connect actors and organisations together, and a Harvard Business Review article reported that the Chief Sustainability Officer is now becoming a strategic role seated in the leadership team, which supports the level of seniority, authority and ability to be an effective enabler of information and facilitator of relationships (Eccles, 2023). However, conversely, some large global organisations have recently been reversing that trend with sustainability being removed as an executive leadership role. This is evidenced by HSBC, sparking concern about whether they would be rowing back on their climate commitments (Furness, 2024). The Boundary Spanner role benefits from seniority and the authority to act because they must have permission to freely roam across the organisation affecting change and have the credibility to engage externally with other organisations.

Financial resources and overcoming intrinsic prejudices are further obstacles. This research has found that those managing net zero and decarbonisation frequently are not budget responsible, as evidenced by RC13. They have to go 'begging' for financial resources, relying on others to support the investment case. This was often seen as an organisational weakness and a sign of lower organisational legitimacy. In addition, they sometimes had to overcome perceptions that their role was that of a preacher or evangelist disconnected from the realities of the organisation. That was hard to overcome but evidence-based, rational discussions did assist in overcoming prejudices.

6.5.6 Boundary Spanners as net zero MSP enablers

Building on the role and traits from the previous three sections, it is now possible to design a net zero MSP Boundary Spanner. If the Boundary Spanner's role, personal and professional characteristics, and organisational legitimacy are combined then the

MSP Boundary Spanner can facilitate cross-boundary partnerships and effective MSPs.

Firstly, the Boundary Spanner must be capable of designing partnerships by judging which organisations are culturally aligned and possess similar shared objectives, enabling them to work together. This requires numerous meetings, a deep understanding of how organisations operate, and the honesty and openness of the MSP representatives. Secondly, building a strong and lasting partnership is crucial. Complementary skills and resource availability are key. The net zero MSP Boundary Spanner must understand the necessary skills for the task and identify partners who can contribute best in a complementary manner rather than competitively. Additionally, the Boundary Spanner must gain an honest appraisal from the MSP participants about resources, both people and financial, and how they will be deployed throughout the MSP's life. This assessment may change, but honesty from both partners and the Boundary Spanner is essential. Maintaining the longevity of the MSP depends on the skills of the contributors as well as the Boundary Spanner. The Boundary Spanner will use their IQ, EQ, and management abilities to drive the partnership forward. This requires determination, patience, persuasion, strong leadership, and excellent project management skills. The aim is to design and build scalable MSPs, which can accelerate decarbonisation. The net zero MSP Boundary Spanner has the potential to deliver this, but the organisation must also play its part.

6.5.7 What must organisations do to develop the net zero Boundary Spanner?

This research presents a convincing case that without the Boundary Spanner organisations will struggle to design, build and maintain net zero MSPs, deliver change and accelerate to net zero. Boundary Spanners operate across organisational boundaries, and they must navigate the three discontinuities created by the boundaries, those of identity, politics and multiple logics (Kislov, 2014). However, unless the organisation plays its part in ensuring that the operating environment is optimised, the Boundary Spanner role may be highly limited or potentially fail. Therefore, the organisation role in net zero needs to be explained to fully answer Theme three and RQ4.

As was shown by Vignettes one and two, and to a lesser extent three, if the organisation defines its sustainability identity strongly and demonstrates a complete commitment to decarbonisation and net zero, wider legitimacy will develop across the organisation. It is wholly necessary that the organisation moves beyond symbolic political signalling; the engagement must be deep and meaningful. That can be delivered through a B- Corp certificate and SBTis as two examples, and it can be part of the organisational DNA, enshrined in corporate purpose or, even better, in the Articles of Association. Being clear about why they exist and how they can balance

the needs of business with the planet is key. From this, real action and delivery will occur, and the Boundary Spanner will be effective.

The CEO and leadership team must also manage power structures and imbalances, and navigate stakeholder politics (Gull et al., 2023). Strong and clear communication is key to giving the Boundary Spanner the power and influence to succeed, as demonstrated by Vignette one and RC23's evidence. Additionally, at the two sustainability conferences, many presenting CEOs demonstrated a strong commitment to net zero and the broader sustainability agenda. When the organisation leader demonstrates sustainability and environmental legitimacy, the role of the Boundary Spanner as the change agent is significantly easier. RC23 experienced the benefits of this through the CEO's legitimacy, which has led to new and stronger partnerships and a transformational purchasing decarbonisation agenda which has turned suppliers into partners.

Managing the tensions between the economics of net zero and the moral case for it is challenging, especially considering the imperative need for organisations to make money. However, if an organisation can create a net zero environment that balances both tensions, the Boundary Spanner's job becomes easier. For example, establishing different financial rules for net zero projects and recognising their longer-term nature and impact can help achieve this balance. RC31, a leader in social change, developed a new strategic approach to establishing and managing sustainable land use community partnerships. This success as a partnership Boundary Spanner inspired others in the organisation to build on the model, and the case study has been used with external stakeholders to attract new funding.

Decarbonisation needs to be a shared responsibility for everyone in the organisation. Organisations are often functionally orientated and prefer departments. This research has shown that sustainability is often a discrete department, leading to a silo mentality. When decarbonisation is seen as another department's responsibility, the role of the Boundary Spanner becomes more challenging. The example of the CSO who aimed to work himself out of a job highlighted the potential to develop strategies to change the net zero stakeholder agenda and focus every department on decarbonisation, breaking down silos.

Theme three has established the case for the reinvention and modernisation of the Boundary Spanner, a role established a decade ago. This new and powerful role is central to the success of net zero MSPs, and will design, build, and maintain these MSPs. Building on these insights, the following section recommends a core set of responsibilities and behaviours that the net zero MSP must adopt to underpin their success. These are known as the Six Cs of the MSP Boundary Spanner and they emerged from the data analysis, indexing and reduction process as described in sections 4.9.3 and 4.9.4.

6.5.8 The Six Cs of the MSP Boundary Spanner

As the interviews progressed, and the Boundary Spanner role was explained, it became evident that to modernise the role of the Boundary Spanner they would need to develop new skills and appropriate behaviours. This could facilitate wider collaboration and make net zero MSPs a realistic possibility. These responsibilities and behaviours (summarised in Table 6.2) build on the general traits and behaviours identified in the previous section and the data reduction process from the NVivo analysis. The Six Cs of the MSP Boundary Spanner is the resulting new contribution which emerged from thinking further about the data in Table 5.8.

Table 6.2 Six Cs of the MSP Boundary Spanner

Responsible for building MSPs	Boundary Spanner's MSP behaviours
Continuity	Convening
Consistency	Collaboration
Clarity	Consensus

Continuity. The MSP Boundary Spanner must ensure that an unbroken and consistent path is followed throughout the lifespan of the MSP. The net zero Grand Challenge is an ambiguous and nonlinear subject, requiring obstacles to be navigated and solutions found. Despite these management challenges, the MSP Boundary Spanner's responsibility is to maintain net zero MSP continuity over the long term by ensuring organisational stability and the MSP's survival.

Consistency is crucial. A frequently changing MSP agenda is detrimental to individuals and organisations. The MSP Boundary Spanner's responsibility is to ensure consistency and stability. The constantly shifting political and policy agenda between 2016 and 2024 exemplifies the chaos that arises when consistency is absent; it resulted in the undermining of organisational confidence in net zero. While net zero is an ambiguous subject, some operational flexibility is necessary. However, upholding the partnership's core objectives and delivering consistency are vital. Maintaining the same MSP Boundary Spanner throughout the partnership can help achieve this.

Clarity is vital to the success of the partnership. When MSPs are clear about their net zero priorities, it is easier to navigate the key steps in the process. This clarity allows MSPs to communicate their aims, deliverables, and timescales to stakeholders, gaining their support for the required financial and human resources. The MSP Boundary Spanner leads this process.

The MSP Boundary Spanner is the **Convenor**, responsible for bringing all participants together and ensuring everyone's voice is heard and contributes. The role involves encouraging open and honest discussion to ensure the MSP benefits from everyone's

skills and experience. World-class convening is crucial to an effective MSP, and the Boundary Spanner must be empathetic to tensions, capable of resolving conflicts, and ensure progress is being made.

Collaboration is central to any MSP, and the MSP Boundary Spanner plays a crucial role in facilitating it. By allocating tasks based on skills and available resources, they act as team manager and project leader. Their primary responsibility is to maintain effective relationships and ensure that all stakeholders focus on seamless collaboration.

Gaining **Consensus** and a general acceptance of an opinion or collective decision among a group is a difficult objective, but for the MSP, it is one of its key objectives as it leads to stakeholder alignment, reducing conflict. Net zero, as previously identified, is a confusing and ambiguous subject: nevertheless, the Boundary Spanner must work to ensure consensus is delivered.

6.5.9 Theme three conclusions

This theme explored the reinvention and modernisation of the Boundary Spanner as a net zero MSP designer, builder, and maintainer in addition to being a boundary-spanning, horizon-scanning, organisation-connecting bureaucrat. The theme directly addressed RO4 and RQ3 as well as contributing to the development of other ROs and RQs. It emphasises the necessity that academic elegance is matched by organisational elegance. This has been accomplished, following the coding and data reduction process, through the development of the net zero MSP Boundary Spanner role and the subsequent understanding of its key traits, behaviours, operational characteristics, as a causal **Mechanism**. The theme introduced and discussed the Six Cs of the MSP Boundary Spanner and also addressed the critical role of the organisation in ensuring the effective operation of the net zero MSP Boundary Spanner. When in a supportive environment, they can become a powerful, effective leader capable of roaming across organisational boundaries and designing, building and maintaining strong net zero MSPs. If this commitment is lacking or superficial, the net zero Boundary Spanner will fail.

6.6 Theme four: Net zero partnerships: How to enable MSPs

6.6.1 Introduction

Theme four explores net zero MSPs and partnerships more broadly, contributing to many of the ROs and RQs. Literature gap three (section 3.10.3) also identified that

MSPs had not been researched in the context of net zero nor from the perspective of understanding its barriers and enablers.

As detailed in Chapter five, DSPs emerged as the default collaborative arrangement for many, so Theme four will also discuss the dynamic nature of DSPs and MSPs. By understanding the organisational transition from DSPs to MSPs a detailed net zero MSP conceptual framework can be developed, which was central to RO3. This will be presented in Chapter seven as part of the conclusions. Box four presents Theme four's key evidence.

Box four Theme four: Key evidence

Multi-Stakeholder Partnerships

Chapter three. Chapter five sections 5.4.4. Table 5.9 and 5.10. Figures 3.1 and 3.2 Appendix 7

- Only 22% of those researched were participating in MSPs
- 78% were working in DSPs
- 87% see partnerships as a key operating principle
- 98% of organisations need to work with external partners
- 65% have experienced more partnerships in last twenty-four months
- 56% agree that finding like-minded partners is challenging
- 91% say partnerships are key to net zero

Key interviewee quotes:

'You can't do net zero on your own – you need partners' RC1

'Net zero is one thing that everybody wants to collaborate on' RC17

Yet:

- Simpler DSPs are more common than MSPs (78% vs 22%)
- MSPs are hard to design, build and maintain. Power imbalance, time, costs, skills.
- MSPs are perhaps only suitable for sophisticated organisations

6.6.2 Partnerships generally

Partnerships, whether personal or professional, require significant effort and hard work, but they can be incredibly rewarding. For organisations, partnerships offer a unique opportunity to address complex challenges that might remain insurmountable if working alone. By collaborating with like-minded actors, organisations can share risks, resources, skills, and rewards, fostering a mutually beneficial relationship. This

is a collaborative form of governance (Dentoni et al., 2018). However, it is important to acknowledge that partnerships are not always straightforward. It is often said that 'it takes two to tango', meaning both parties are equally responsible for a successful partnership. There must be a strong alignment of minds and culture, agreement on aims and objectives, and a complete commitment to the collaborative arrangement. If these values are not aligned, things can go wrong. Semi-structured interviews revealed that the initial stages of a partnership are the most critical. It is evident early on whether the partnership will last, and it can take multiple meetings with several prospective partners to find the right partner. This becomes even more challenging when multiple partners are involved in MSPs. It is a maths challenge as well as an organisational one. With only two organisations, only one relationship needs to be nurtured. However, with n organisations, the number of relationships (R) is expressed as $R = (n \times (n-1))/2$. For example, in a six-organisation MSP, fifteen relationships need to be managed, which is a demanding task.

Sections 5.4.4.1 to 5.4.4.4 detailed the core partnership findings, and this data revealed the significance of partnerships, with 87% of respondents agreeing that partnerships are a key operating principle for their organisation and 91% believing they are crucial to achieving net zero. As RC1 said, 'you cannot do it alone'. However, during the semi-structured interviews, it became evident that partnerships were often the simpler DSPs rather than more sophisticated MSPs. While MSPs are widely promoted as a key solution to global challenges like climate change and net zero, (Brouwer et al., 2015; Dentoni et al., 2018; Eweje et al., 2021; Gray & Purdy, 2018), and may be a best practice ambition for many organisations, only 22% of research participants actively participate in an MSP. Outside global organisations and large corporates, where sophisticated webs of relationships (van Meerkkerk, 2014, p. 14) exist and MSPs are more feasible, DSPs are the norm. 'MSPs are only for large corporates or even countries' said RC1, whereas DSPs are easy to form, justify and manage. Notably, 89% of those interviewed reported participating in simple DSPs (including those operating both MSPs and DSPs). While these partnerships are transactionally important to the organisation, they fail the scale and delivery test for a Grand Challenge as significant as net zero.

Section 5.4.4.5 described the differing forms of partnerships. Genuine MSPs were rare (22%) and required a set of common characteristics including strong governance, and legitimacy as well as patient stakeholders and deep resources. Examples were cited where success had followed this support, but genuine MSPs that are sophisticated, have longevity, and deliver results are rare. MSPs can also be a way of virtue signalling and in name only; they often do not achieve anything and easily break down. Section 5.4.4.6 detailed examples of this. The default partnership for the vast majority of contributors were DSPs because they are operationally easier and governance-light. Section 5.4.4.8 detailed a hybrid situation where MSPs and DSPs can coexist. This interesting dynamic, which was experienced by a large multinational, allowed them to

deliver operational scale through the MSP, whilst also managing commercial sensitivity through the intimacy and controlled surroundings of a DSP.

The allure of working in partnership with another organisation is undeniable, with 78% of respondents reporting that partnerships help them deliver projects faster, 76% finding them generally valuable, and 65% recognising their growing importance. Nevertheless, 57% of respondents acknowledged the challenges associated with finding like-minded partners. In five of the ten quantitative partnership questions from question bank three, larger organisations scored more positively than smaller organisations and there was a significant difference with four of those questions as shown below in Table 6.3.

Table 6.3 Quantitative comparison of large versus small organisations: Significant questions

Statements	30 Large Organisations	33 Small Organisations
Partnership arrangements have INCREASED over the last 12 - 24 months	77%	55%
Generally working with partners is a POSITIVE EXPERIENCE	83%	69%
Generally WORKING WITH PARTNERS helps us deliver projects FASTER	84%	73%
Finding LIKE-MINDED partners is challenging	50%	66%
Notes Large > 250 employees Small < 250 employees		

This data demonstrates that large organisations are increasingly using partnerships as a positive organisational arrangement, and they help them to deliver projects faster. Larger organisations appear to be more engaged in partnerships and are better equipped to operationalise them than smaller ones. They are structurally more sophisticated and more comfortable working in matrix style structures geographically, functionally, or by category. Furthermore, the gap between larger and smaller organisations sheds light on the specific difficulties that arise when collaborating with organisations of differing sizes and organisational sophistication. Smaller organisations struggle to have the necessary resources to participate in partnerships and they can be challenging to manage. This was confirmed during the semi-structured interviews. 'Partnerships are really challenging...it requires so much effort...it's a full-time job' RC2.

The answer to question four in Table 6.3 is particularly telling: large organisations find it easier to find like-minded partners than smaller organisations. This could be due to a number of reasons including the reward and recognition of working with large organisations, but it could equally be a coercive issue. The theory supports this. Larger organisations do have a dominant position over weaker partners; this allows them to

be highly selective in who they work with and how that relationship operates; smaller organisations may experience a 'power over' situation (Lukes, 2005), and power imbalance or asymmetry (Gray et al., 2022), which can create tensions and barriers that need to be overcome. For instance, before any partnership arrangement can commence, larger organisations may be more demanding from a process and legal perspective, requiring more complex supplier procurement systems and legal contractual arrangements. This was the case for RC10, a small sustainability business trying to work with a multinational US energy business. Despite the significant and long onboarding process, RC10 ultimately decided that the credibility and benefits of working with the larger organisation outweighed the coercive pressures.

The main headline that emerges from this overall analysis is that there are some obvious reasons why DSPs are the dominant organisational arrangement, despite not having the scale to tackle the large Grand Challenges. Therefore, ways need to be developed to facilitate the transition from DSPs to MSPs and this is the role of the enabling Mechanisms of Grand Challenge, stakeholder theory, institutional theory and the Boundary Spanner

6.6.3 The emergence of net zero partnerships; but they need to be genuine MSPs

Sustainability centred MSPs were uncovered during the research but they are quite rare. A good example is from the public sector. A large UK city council has been working with over twenty local partners to develop a net zero MSP focussed on reducing transportation GHG emissions across the city-wide network. Their results have been promising, decarbonising the city faster than was otherwise possible. This has been achieved through careful partner selection, clear and realistic objectives, effective convening by the council, and timely governance. Other examples were found within large multi-national organisations including those organisations represented by RC4, 5, 8, 16 and 23. Those organisations possessed specific characteristics: organisational sophistication; scale; the ability to cope with asymmetric power relationships (Gray et al., 2022). Furthermore, they also owned significant human and capital resources to allow them to prioritise decarbonisation ahead of other logics.

Across the UK, the research found evidence that the awareness about net zero partnerships is increasing, as will be shown. Hopefully this trend will lead to an acceptance that net zero partnerships are critical to the decarbonisation agenda and can help accelerate the UK to net zero. However, they must have scale to deliver net zero, as previously discussed, and sometimes the word 'partnership' is very loosely used; a clear distinction between DSPs and MSP is not made. This is a weakness in the thinking and an opportunity this thesis aims to fill.

The following examples draw attention to the need for MSPs. The Skidmore (2023) report advocates partnerships as key to securing net zero and specifically recommends that SMEs need be supported to create sustainable partnerships (2023, p. 89). The Climate Change Committee has always been supportive of partnerships and in 2023 commissioned 'The Power of Partnership Report – Unlocking business action on net zero' (Advisory Business Group for the UK's Climate Change Committee, 2023), which proposes a partnership framework encouraging government and business to work together in cross-cutting initiatives to 'accelerate the net zero transition' (2023, p. 17). A further example is the not-for-profit organisation Forum For The Future, a well-resourced organisation which builds scalable collaborations and networks that address complex interconnected challenges like poverty and climate change. They advocate that these systemic challenges can only be solved by 'working together to solve common problems' (Forum For The Future, 2024).

LG contributors passionately believe in net zero and decarbonisation and MSPs are their default position when trying to start any net zero delivery project. By working with the private and non-profit sectors in MSPs many of their social and infrastructure projects can be more readily addressed at scale. However, the private sector organisations interviewed for this research characterised them differently. Fundamentally, partnerships work most effectively when they are well resourced both financially and with human capital. Multiple private sector contributors were frustrated that they would attend an LG MSP meeting and the LG organisation would be unclear how the programme was going to be financed. A second meeting would then be held and still the funding had not been resolved. The result was MSP disintegration. The partnership would end or the MSP would fragment into smaller DSPs.

6.6.4 Net zero partnerships

Section 3.10.3 identified that net zero MSPs is an under-researched subject in the UK and therefore this thesis's opportunity is to deploy its primary research to build subject contribution.

From the quantitative results, there is an acceptance that net zero partnerships are key to achieving net zero because no single organisation has all the skills to deliver net zero. Institutional actors stated that they must work with the private sector to deliver net zero and it was clear from two Members of the UK Parliament, who contributed to this research, that building cooperative partnerships with experts in business was central to the UK's 2023/4 government net zero strategy.

The private sector is clear that net zero is a partnership-centric subject: 'Net zero is one of the things which everyone wants to collaborate on' (RC17). The desire is clearly there; the problem is the process. Net zero is so complicated and encompasses so many different elements, yet specificity is so critical. This author has experienced that

when researching the subject and trying to isolate the problem, and organisations do as well. It is easy to enter into a net zero discussion with grand ambitions only to find the realities quite different. Partnerships are complex and multidimensional, but one important skill is about expectation management to align organisation goals. Establishing a clear set of expectations at the start and building trust is critical, and the deficiencies in both areas, combined with a lack of specificity, make MSPs extremely hard to start and maintain as evidenced by RC18, RC14 and RC10 in section 5.4.4.3. As a reminder, this demonstrated that building trust and a shared vision were essential as was developing a benefit sharing mindset that clearly stated the tangibles and added value likely to result from the partnership.

Every partnership experiences these challenges: but why are net zero MSPs particularly hard to establish and maintain? The evidence provided by interviewees suggest four key reasons.

Firstly, the timescales involved. The CEO in most organisations lasts on average between five and seven years and net zero is a twenty-five-year challenge. Unless the key organisational stakeholders, primarily the shareholders, are committed to the long-term decarbonisation challenge, legitimacy is undermined.

Secondly, organisations have many priorities or competing logics. It is easy for net zero to be deprioritised. It is often hard to demonstrate an acceptable net zero ROI and if a partnership lacks specificity and clarity of objectives, or is difficult to operationalise and execute, then it is hard for the organisation's representative to demonstrate that this MSP is an effective use of time and resources. The result is that commitment is withdrawn, and the partnership undermined.

Thirdly, skills and experience are key but are frequently lacking because those with appropriate net zero skills are hard to recruit and retain. Contributors to the research said that today this is a serious challenge. This thesis has proposed that the Boundary Spanner is a key net zero agent because they have the skills to design, build and maintain partnerships. Net zero requires both technical and organisational skills and this makes the Boundary Spanner a special individual and in high demand. If the partnerships are not resourced with the correct people, and the Boundary Spanner is one of those, then however much enthusiasm or commitment is demonstrated by the participants, the likelihood is the MSP will fragment because of delivery failure.

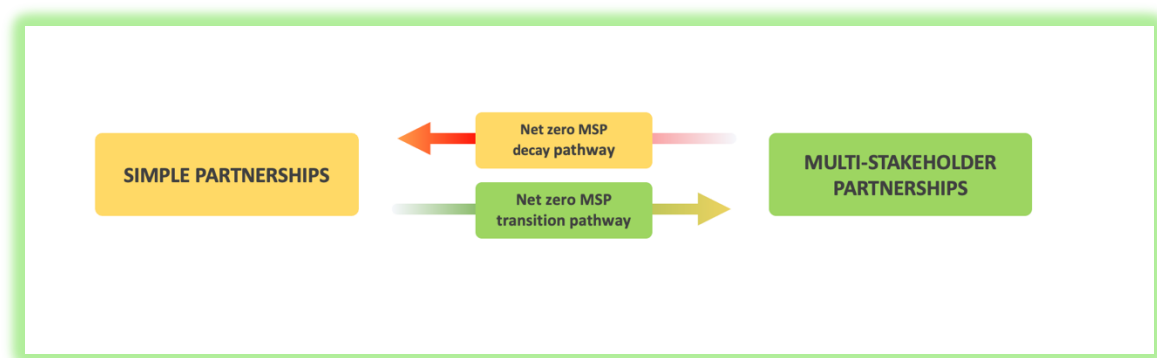
Finally, DSPs can be convenient and significantly easier to form; they do not have the scale to accelerate decarbonisation, but sometimes they are just pragmatic solutions. DSPs are more realistic and achievable for most organisations regardless of their size or level of sophistication. DSPs still require some basic rules to be followed, for example objectives need to be established, success criteria must be defined, governance structures put in place, and stakeholder alignment is necessary. However,

they are more transactional in nature and quite tactical. Contributor RC5 provided an example when it was just a lot easier to sort something by creating a DSP than creating a complicated MSP. The DSP could be formed more easily without involving the senior leadership team and could quickly tackle the problem and then disband once the issue was resolved. However, it must be remembered that DSPs do not have the scale or capacity to seriously attack a Grand Challenge.

6.6.5 *The DSP to MSP transition: How to ensure MSPs succeed*

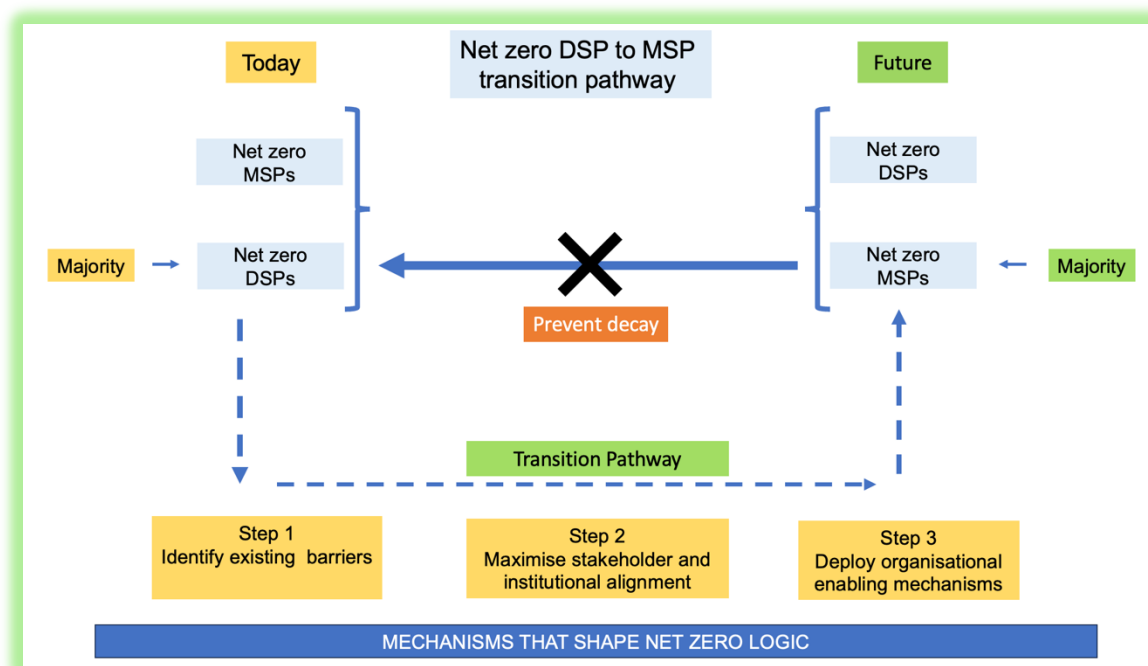
This thesis has undertaken a wide-ranging exploration of the **C**ontext of net zero. It has discussed some of the key organisational **M**echanisms that need to be used to overcome the organisational barriers that are frequently encountered with a challenge as large as net zero. Themes one to three have proposed a number of those **M**echanisms to help develop MSPs and this theme has so far discussed the importance of partnerships and the vital role that MSPs play, but has also identified that in reality DSPs are the dominant organisation arrangement. DSPs as a concept is inspired by Wren and Simpson (1996), who investigated the transactional interactions between sellers and buyers. This dyadic work is helpful because their model identified the interactions between those parties; some of them positive enablers, others closer to barriers including power imbalances. Therefore, as part of developing a deeper understanding of partnerships and how MSPs can be encouraged, it is important to think about how to transition DSPs to MSPs. This section will develop a partnership route map from DSPs to MSPs. Figure 6.2 illustrates the redesign process, concentrating on the **M**echanisms stage of the **CMO** framework. It uses the author's general net zero MSP conceptual framework (Figure 3.2). The central part of that framework identified the dynamic relationship between simple partnerships and MSPs which as a reminder is shown below in Figure 6.2. Simple partnerships can be transitioned to MSPs, but equally MSPs can decay back to DSPs if the organisational conditions are not correct. To promote the net zero MSP transition (green) three steps are proposed and the net zero DSP to MSP transition pathway is shown in Figure 6.3

Figure 6.2 DSP — MSP dynamic relationship



- Step 1. Identify existing barriers
- Step 2. Maximise stakeholder and institutional alignment
- Step 3. Deploy the organisational enabling Mechanisms

Figure 6.3 The net zero DSP to MSP transition pathway



Step 1 is to identify existing barriers within the organisation. The findings in Chapter five illustrated real-life examples from sustainability leaders that inhibit decarbonisation: multiple competing priorities and logics and availability of resources were key barriers. Table 5.6 identified the realities of net zero as a Grand Challenge with 75% of contributors being concerned about net zero's complexity, 65% about uncertainty and 71% about net zero's multiple interpretations. The temporality of net zero creates 'predatory delay' (Nyberg et al., 2022a, pp. 3–4) by making excuses or waiting a few more years before facing up to the significant challenges. Central to each of these issues is organisational purpose. As Vignettes one and two demonstrated, if the organisation can agree that sustainability and net zero are core to the organisation and its purpose then that alignment facilitates stakeholder engagement and action. Changing the agenda from financial to social-purpose-led unlocks the potential for new organisational and commercial opportunities. Net zero is frequently concerned with economic benefits, for example saving energy. But it is equally important to reframe the conversation to a social benefit, purpose-led, value-driven agenda focused on why rather than how.

Step 2 focusses on the theoretical attributes from stakeholder and institutional theory as presented in sections 3.5 to 3.8. Power, urgency, legitimacy and the pressures from the institutional attributes: coercive; normative; and mimetic; each need to be managed and maximised. Evidence from Chapter five, section 5.5, cited that 95% of contributors considered stakeholder management to be key to their role. Managing power relationships and ensuring that legitimacy is maximised is so important. As Gray et al. (2022) identified power imbalance leads to partnership breakdown. Stakeholders must be organisationally aligned and attitudinally there must be an acceptance that MSPs are appropriate for the organisation and can be culturally accommodated. Previous path dependencies must be broken, and new fresh thinking deployed. This is easier if the organisation's cultural purpose is changed. From that, genuine differentiation, competitive advantage and anti-isomorphism emerges. The institutional attribute pressures are undoubtedly hard to optimise and maximise but applying coercive pressures in ways that can be beneficial to the net zero agenda, and engaging in the tension between net zero as an economic challenge versus its ethics, are important.

Step 3 builds on Themes two and three as well as MSPs from this theme. Net zero as a Grand Challenge is an enabler and overcoming obstacles is key. The net zero Boundary Spanner can deliver significant agency. They can design, build and maintain the MSPs because firstly, they have the legitimacy from the organisation, and secondly, they have the necessary skills as detailed in Theme three. It is recognised that there are other enabling **Mechanisms** including financial and human capital, but to transition DSPs to MSPs relies on the key enablers from Themes two, three and four.

For MSPs to survive and prevent decay back to DSPs delivery is paramount because legitimacy is derived from that and stakeholder engagement secured. The skilled net zero MSP Boundary Spanner plays a key role in that agenda. Other competing logics will emerge but if the net zero delivery is strong there is a higher chance that the net zero MSP will endure.

6.6.6 Theme four conclusions

MSPs in the **C**ontext of net zero was identified as a literature gap and Theme four set out to understand what net zero's organisational barriers were and how net zero MSPs could be enabled. It was a surprise that only 22% of organisations were actively participating in genuine MSPs with 78% opting for simpler DSPs, but this evidence alone signals that designing, building and enabling MSPs requires care, attention and patience. Therefore, understanding how MSPs can be enabled is an important subject to understand. The semi-structured interviews confirmed the quantitative data. Power imbalances, aligning shared objectives, justifying effort to other stakeholders, demonstrating impact, and the costs involved were all cited as barriers to MSPs. MSPs

are fundamentally a complicated organisational arrangement and simpler DSPs are easier to operationalise, but they do not address net zero and the scale of this as a Grand Challenge.

The literature supports the case that MSPs are the gold standard operational configuration for Grand Challenges, for example (Brouwer et al., 2015; Dentoni et al., 2018; Gray & Purdy, 2018), yet they are difficult to operationalise. The causes include the lack of sophistication of the organisation, their many competing logics and the significant resources required. Partnerships are being promoted as an effective way to address net zero, which is encouraging, but the fundamental issue is what the shape of those partnerships are and, as this research has discovered, they are predominantly DSPs not MSPs. To transition to MSPs, and equally to prevent MSP decay, there is a need to follow the partnership transition route map. Net zero as a Grand Challenge and the net zero Boundary Spanner are two enablers with causal power to overcome organisational barriers making it more feasible for DSPs to be promoted to MSPs.

Part two has assembled an extensive discussion about the causal **Mechanisms** that can build strong and long-lasting net zero MSPs (Green route, Figures 6.2 and 6.3). The Grand Challenge brand and the net zero MSP Boundary Spanner are two examples of **Mechanisms** that can support net zero MSPs and prevent them from decaying to DSPs. In combination with other decarbonisation tools, they can help to secure the **Outcome** of *net zero by 2050*.

Part three **Outcome**

6.7 Accelerating to the net zero **Outcome**

As discussed widely in this chapter, net zero is complex and challenging. Parts one and two have discussed the Context of net zero and Mechanisms underpinning the success of net zero MSPs. The Outcome of net zero by 2050 is equally challenging and necessitates transformative changes at the field level and modifications to the institutional logics of key actors. Only through changes to these logics will net zero be achieved. These logics are highly influential, and the author echoes the thinking from the 1990s; institutional theorists encouraged actors to be reflexive, goal-orientated, and capable. They should certainly take broad policy direction from the ES but break free, become institutionally unconstrained, and instead of looking at stability, look at change (Alvesson and Spicer, 2019, p.208). However, if the UK continues on its current decarbonisation trajectory, it will miss the net zero by 2050 Outcome, which may have serious social and economic consequences.

Only 15% of contributors believed the UK would hit its net zero target, and only 3% were clear about the government's strategy. This suggests that something must

change. Human ingenuity is capable of delivering step-change, system-level innovation, and these technologies may well accelerate decarbonisation. However, organisations themselves have the capacity to decarbonise faster if they choose to do so and accelerate to net zero. This will only come about by organisations reframing sustainability, particularly decarbonisation, from an economic cost and short-term ROI-driven project to a long-term benefit led one. This does not mean organisations should be commercially naïve; it simply means they must not selectively ignore their moral and normative responsibilities at the expense of capitalist voracity. To deliver *net zero by 2050*, organisations will have to directly affect field-level change by modifying their thinking and working practices. Net zero MSPs are central to this. By understanding the barriers and embracing net zero's enabling **Mechanisms**, a route can be navigated through the complex net zero landscape.

For completion, every sector, including for example agriculture, aviation, and built environment, has its own unique and sector-specific decarbonisation tools that can be deployed to reduce emissions. Organisations play a part in every sector, therefore the proposals contained in this thesis can contribute to their thinking, assisting them to deliver their sector-specific targets.

6.8 Chapter six conclusions

This chapter set out to develop 'meaning', weaving together the literature and empirical evidence, and explaining how net zero MSPs can be designed, built, and maintained. By using the **CMO** structure in combination with the four key themes the chapter navigates its way through the complexities of net zero and how net zero MSPs can be encouraged. The chapter conclusions are segmented between those that are empirical and those that are academic.

6.8.1 Empirical conclusions

The UK has a serious net zero issue. Unless the country accelerates its decarbonisation activity it will miss the *net zero by 2050* target. The CCC challenged the UK Government to address this issue and other expert organisations including Climate Action Tracker and The Carbon Trust agree. The ambitious policy is difficult and over the last two decades, since it was originally proposed, the UK has undergone meaningful change politically, socially and economically. This research has presented a thorough **Contextual** examination of the UK's net zero policy, critiquing it in the context of the reality of 2024. Organisations view net zero as important. 75% see it as a strategic priority, yet only 15% think it will be achieved. Despite this, organisations are prepared to change their ways of working and break free from previous approaches to try and address net zero's issues. 84% said they would even consider working with competitors. However, further needs to be done.

Theme one established the net zero public policy paradox and the gap between net zero as an ambitious ES led policy and its organisational reality. Urgent action is required to help organisations accelerate their net zero ambitions. The divide between policy and reality is fundamentally located in the confidence gap between the ES and organisations. The political landscape over the last decade has been highly destabilising undermining organisational confidence. With a new UK Government that confidence may well return but the ES needs to consider how it encourages wider stakeholder engagement and partnerships could play a part in that.

Organisations take net zero very seriously despite the political context and the thesis has demonstrated through real organisational examples a range of private and public sector organisations who are addressing, and sometimes backsliding from, net zero's complexity. The five vignettes identify a range of challenges organisations face. Supportive stakeholders help considerably, but when faced with external boundary pressures, organisations can change their mind very quickly about net zero's importance in favour of more short-term economic imperatives. The perfect organisational configuration is when net zero and sustainability are ingrained in the fundamental DNA of the organisation's purpose, centred on the belief that there is a mutual benefit for the business and Planet Earth. In this way every member of the organisation has permission to drive the sustainability agenda.

Organisations have many conflicting and competing logics and, when faced with other short-term priorities, it is easy to deprioritise decarbonisation. There is an urgent need to reimagine the future, break previous path dependencies and face up to the real and difficult challenges that accelerating decarbonisation requires. It is all too easy to think that net zero and decarbonisation are too hard to sort, which can result in an organisation doing only the absolute minimum.

Themes two, three and four developed the **Mechanisms** to facilitate faster decarbonisation. These have both practical and academic relevance. MSPs are crucial to the UK's ambition to be *net zero by 2050*. They have the scale and capacity to facilitate multiple organisations working in partnership to accelerate the UK to net zero. They are seen as the key way to address society's net zero Grand Challenges (Ferraro et al., 2015; George et al., 2016; Lees & Djordjevic, 2024), yet only 22% of organisations are actively participating in net zero MSPs indicating that there are barriers to participating in MSPs. MSPs are an important organisational response to the challenges of decarbonisation but the difficulties involved in designing, building and maintaining them cannot be underestimated. This chapter has analysed and discussed how the barriers can be overcome through a range of enablers.

DSPs were identified as being an easier organisational arrangement and Theme four presented a DSP to MSP Transition Pathway supported by the enabling **Mechanisms** of net zero as a Grand Challenge brand from Theme two and the net zero Boundary

Spanner as an MSP designer, builder and enabler from Theme three. Net zero as a Grand Challenge was firstly deconstructed into its academic key attributes and then rebuilt into the Grand Challenge brand. This was achieved by arguing that if organisations overcome net zero's obstacles and address its inherent complexities, ambiguities, uncertainties and multiple interpretations, the net zero Grand Challenge brand can become a powerful MSP enabler. The net zero Boundary Spanner can add to the strength of the net zero MSP by designing, building and maintaining net zero MSPs and this role was clearly articulated and specified.

6.8.2 Theoretical conclusions

A realist approach has been taken through the chapter. The **CMO** model (Pawson, 2006) and further work by Pawson & Tilley (1997), Pawson et al. (2004), and Jagosh (2020), have been employed to highlight how to ensure net zero MSPs endure by using a range of enabling **Mechanisms** with causal power. CMO has been a powerful and useful way to think about the net zero organisational Grand Challenge and has helped isolate, describe and unlock the literature gaps.

Section 3.10 detailed these literature gaps. The purpose of this chapter has been to explore the gaps, build research meaning, and contribute to the academic landscape. This has been done in the following ways.

The ES is a powerful idea made even more so by embracing MSPs. There is a net zero paradox between the abundance of policy and its slow delivery which points to a weakness in the thinking. How the ES connects to its key stakeholders needs to be redesigned and the gap resolved. In the face of other competing logics organisations are misaligned to the needs of the ES and it has been suggested by this thesis that the gap between policy and reality can be addressed through the alignment of the key component attributes from stakeholder and institutional theory and also by encouraging MSPs.

Adopting a realist-orientated **CMO** approach to evidence-based policymaking (Pawson, 2006), has been further developed and combined with the idea of barriers and enablers (Caldera et al., 2019). Key enablers have been identified and this has made it possible to design a transition pathway between DSPs and MSPs. The pathway and framework identified enabling **Mechanisms** with causal power, and this chapter has developed their meaning. It has explained the forces emanating from stakeholder and institutional theory and detailed how they need to be aligned and deployed as enablers for maximum effect. Furthermore, there are two additional enablers that help build strong MSPs. Firstly, describing net zero as a Grand Challenge brand overcomes obstacles and other barriers. Net zero is ambiguous, non-linear and open to multiple interpretations, and its scale can be daunting. There is a need to reimagine how organisations can address net zero in ways that overcome the

barriers and encourage the formation of scalable enabling **Mechanisms**. Grand Challenge has been redefined as the Grand Challenge brand and by combining theoretical approaches (Dorado et al., 2022; Ferraro et al., 2015) a powerful **Mechanism** has been created that will help organisations reimagine how they can address Grand Challenges. The net zero Grand Challenge brand has the potential to facilitate multifunctional working and align every stakeholder on the challenges of net zero. This demonstrates that the thesis has responded to the request by Touboulis & McCarthy (2020) to modernise Grand Challenge and unearth new social **Mechanisms**. Secondly, agency is key and the net zero Boundary Spanner can be the enabler of strong cross-boundary partnerships. Previous work by Williams (2002) and van Meerkerk and Edelenbos (2018) has been supplemented by reinterpreting the boundary spanner's meaning in the context of net zero MSPs as a designer, builder and maintainer.

Chapter seven will now provide a set of conclusions and recommendations including a presentation of the detailed net zero MSP framework.

Chapter 7 Overall conclusion and recommendations

7.1 Introduction

This closing chapter will outline the thesis's core conclusions and detail the complete net zero MSP conceptual framework. Following this, the thesis's ROs and RQs will be revisited to ensure they have been addressed. The thesis's recommendations will then be detailed, both those related to policy and those related to the organisation. The latter have been developed into a step-by-step Net Zero Organisational MSP Playbook which can be used by academics to help build MSP centric organisations. The chapter concludes by summarising the thesis's academic contribution and outlining areas for future research.

Net zero is a complex subject and open to many competing organisational logics. This Grand Challenge require actors to challenge themselves and the organisations they work for to think and act differently. The scale and urgency of the net zero Grand Challenge necessitate significant imagination and ingenuity to navigate its complexity. If existing organisational structures and ways of working can be reimaged and net zero's problems mitigated, there is a real chance that the *net zero by 2050* policy can be delivered. However, if stakeholders continue to create excuses and 'predatory delay' (Nyberg et al., 2022a, p. 3), and deprioritise net zero in the face of other competing logics, future generations will rightly point to the early twenty-first century as the age of decarbonisation negligence.

When considering how to understand the subject, synthesise the knowledge, and build a picture about net zero, inspiration was taken from the work of Pawson et al. (2004). Their realist approach to large scale social problems, specifically health, was concerned with the interaction between theory and social interventions and how 'various combinations of context and circumstances can amplify or mute the intervention theory' (2004, p. iii). From this their **C**ontext, **M**echanism, and **O**utcome framework was developed. This approach, including how the **CMO** elements interact, have been central to this thesis. Furthermore, Pawson's thinking has helped unlock how net zero's organisational enabling **M**echanisms can be understood and deployed to design, build and maintain net zero MSPs.

Three years ago, this thesis was granted permission to reimagine the future (Adam, 2008; Adam & Groves, 2007). The thesis had to challenge previous path dependencies (de Groote & Kammerlander, 2022) and consider what is required from the ES (Duit, 2016), its institutions, and the central net zero delivery unit, the organisation, to accelerate decarbonisation. This concluding chapter will deliver a set of conclusions and recommendations about net zero MSPs, in the hope that they will

be embraced by academics and organisational leaders alike to accelerate the UK to *net zero by 2050*.

7.2 Core conclusions

MSPs are challenging to assemble and intensive to maintain yet their power to effect change at scale is undeniable. Many individual organisations believe they are alone in the fight against climate change and the net zero Grand Challenge is a solo performance. In reality, more powerful net zero solutions are available when organisations collaborate in orchestras. This thesis aims to change this mindset by proposing a new pathway to designing, building, and maintaining net zero MSPs. Due to the scale and complexity of the challenge net zero's success will only be achieved through organisations working together, and Multi-Stakeholder Partnerships are central to that.

In 2024 net zero MSPs are not the organisational norm which is a problem for the next zero Grand Challenge. This research has found that only 22% of organisations are actively involved in MSPs. Organisations are committed to net zero; 75% see it as an important priority. However, the surprise from this research is that multi-stakeholder organisational collaboration, in the fight to decarbonise, is underutilised because there are many difficult and challenging barriers that get in the way. However, that should not be an excuse and this thesis proposes that MSPs are made easier through a range of enabling organisational **Mechanisms**.

The philosophical and theoretical foundation of this work is strong. A realist approach, understanding that net zero is a value-laden subject and open to multiple interpretations based on differing beliefs and expectations, does make the subject messy. However, by combining stakeholder theory with institutional theory and elements of agency theory, the thesis has synthesised and unlocked a more powerful theoretical cocktail capable of identifying a clearer pathway to the net zero MSP. The thesis has found multiple reasons why MSPs are not the natural organisational arrangement. By identifying and reimagining the enabling **Mechanisms** of Grand Challenge and the Boundary Spanner this study has addressed some of the organisational barriers and helped to define a new conceptual net zero MSP framework.

7.2.1 *Theme one: Net zero, an ambitious policy versus its organisational reality*

Frequently, actors, both in this research and more widely in society, frame net zero and climate change as sortable and resolvable. However, this thesis contests that this is unhelpful because it sets up a false expectation. Since the 2015 Paris Agreement there is little evidence to suggest that decarbonisation is being sorted (Climate Action

Tracker, 2024). The linearity of 'diagnosis and resolution' (Dorado et al., 2022, p. 23) is either naive or an untruth. There is a need for a different approach.

The UK's net zero Context was designed in 2008 and upgraded in 2019 as an ambitious policy; the UK would be *net zero by 2050*. However, in 2024 this ambitious political policy lacks organisational credibility. This research has found that only 15% think that net zero will be achieved and only 3% understand the pathway to 2050, yet 75% see it as a strategic priority. This is a significant issue. The research has provided evidence from many organisations about their net zero realities including five organisational vignettes in section 6.1.9. When faced with competing logics, some prioritise sustainability and net zero, embracing its multidimensional challenges to change organisational culture and build a collaborative eco-system. Yet others cannot handle the long-term nature of the challenge alongside short-term economic pressures and readily deprioritise net zero if resources or skills are scarce.

The UK Government are legally mandated to deliver net zero but over the last sixteen years political and economic instability have created uncertainty and undermined organisational confidence. Consequently, organisations and investors are hesitant of investing in the UK's green economy, as was highlighted by the outgoing head of the CCC (BBC, 2024; FT, 2024). The new UK Government elected in 2024 would appear to be addressing net zero policy with urgency and seriousness. Their ambition is for the UK to be a Clean Energy Superpower and accelerate to net zero (HM Government, 2024c). That notwithstanding, this thesis proposes that the UK is experiencing a net zero paradox. Policy led by the ES (Duit, 2016), is abundant yet delivery led by the multiplicity of stakeholders is slow. This is due to the disconnect between the ES and organisations; this needs to be sorted. The ES needs to be redesigned and deeper and wider stakeholder engagement is key. Partnerships allow this to happen and MSPs allow this to happen at scale. The net zero Grand Challenge is clearly a financially, operationally and morally challenging logic for many organisations, but organisations are so vital to net zero's delivery that the ES's thinking and approach need to be modified. Section 2.11.1 and section 6.2 proposed that a new ES should supersede the old ES. The old ES ignores the critical role that stakeholders play in its success (Duit et al., 2016; Hatzisavvidou, 2020). The transition from an exclusive state-led process of environmental management to an inclusive, devolved 'web of relationships between multiple organisations' (van Meerkerk, 2014, p. 14) aligns well to the UK's new political direction and this thesis's core principle, the power of organisation collaboration in net zero MSPs. In addition, LG could also adopt extra net zero responsibility; a principle advocated by the CCC and others (Climate Change Committee, 2020; Local Government Association, 2024) and confirmed by this research. For the net zero paradox to be resolved, and the gap between the ambitious policy and its organisational reality to be closed, significant work is required by both the ES and organisations. The principle of collaboration and MSPs aligns well with this ambition.

7.2.2 Theme two: Net zero, an organisational cross-boundary Grand Challenge

Net zero is a value-laden subject and open to multiple interpretations, making it a hard subject to understand and navigate. It exists independently of human thought, beliefs and knowledge and has causal power to affect and disrupt other structures including organisations. Consequently, organisations are forced to consider how the *net zero by 2050* policy impacts their organisational boundaries and how they should react. Inevitably, some form of value judgement must be taken to interpret net zero's meaning. Both Grand Challenge and the Pawson **CMO** taxonomy (Pawson, 2006; Pawson et al., 2004; Pawson & Tilley, 1997), are centred in realism. Based on this philosophical position, Grand Challenge was identified as an important **Mechanism** as part of the net zero MSP agenda.

Grand Challenge's academic core is strong (Ferraro et al., 2015; Gray et al., 2022; George et al., 2016; Brammer et al., 2019; Easter et al., 2023). By identifying obstacles, addressing complexity, uncertainty and its multiple interpretations, Grand Challenge is an ideal net zero **Mechanism** and this thesis is a strong advocate of the concept. Furthermore, the thesis has developed its meaning in the **Context** of net zero and MSPs increasing its enabling power. This demonstrates that the thesis has responded to the request by Touboulis & McCarthy (2020) to modernise Grand Challenge and unearth new social **Mechanisms**.

In Chapter six section 6.4, the Grand Challenge concept was modernised as a net zero MSP organisational enabler. The author's research and insights explained how, by developing the net zero Grand Challenge brand, organisations can build stronger and more effective MSPs. By overcoming a range of obstacles (section 6.4.4) the Grand Challenge brand has the enabling power within organisations to make important interventions in social contingency. Specifically, Grand Challenge as a brand could facilitate human agency to accelerate the decarbonisation process and promote the success of net zero (Jagosh, 2020, p. 123).

Curating net zero as a Grand Challenge was seen as different, interesting and attractive to many organisational contributors. If framed correctly as a Grand Challenge brand and implemented appropriately, Grand Challenge can help organisations avoid obstacles, facilitate innovation and accelerate decarbonisation. However, organisations must play their part. They must face up to the obstacles and address them: accept that net zero is complex and cannot be solved but can be navigated; manage the stakeholders and manage the radical uncertainty; propose mitigating solutions; and finally, move from an opinion-based agenda to an evidence-based approach.

7.2.3 Theme three: The net zero MSP Boundary Spanner

Agency is central to any organisation and effective agency is critical in accelerating to net zero. Negotiating the agency relationship between the principle and the agent is a key role of the Boundary Spanner. The Boundary Spanner in the context of MSPs was identified as a literature gap (section 3.10). In the 2010's there was considerable academic curiosity regarding the role of the Boundary Spanner. This has since dissipated. In 2024, with the need for organisations to work in partnership, build scale, and share resources and risks, the reinvention of the Boundary Spanner as a boundary-crossing MSP enabler and MSP designer, builder and maintainer, is an exciting and valuable organisational opportunity.

The research found that the Boundary Spanner term was unfamiliar to most. Once explained, contributors understood its meaning if not the label. Therefore, this thesis asserts that the Boundary Spanner is an academically elegant concept that is currently organisationally clumsy and needs modernisation. By pivoting to an MSP designer, builder and maintainer, the role can apply its core set of skills, as detailed in Table 3.4, and supplement them with a new set of MSP specific skills (section 6.5.5 to 6.5.8). The Six Cs of a Boundary Spanner (Table 6.2) complements and builds on the work of Williams and van Meerkerk and is new academic contribution. The net zero Boundary Spanner can lead the new purpose-led agenda and effect change inter- and intra-organisation. In this way they will ensure the principles of net zero MSPs endure and are always relevant because their actions will result in demonstrable delivery, thus building legitimacy for net zero and its role within the organisation.

During the last three years the author has talked with many sustainability leaders about their organisational partnership challenges resulting in an intimate understanding of MSPs. From this it has been possible to understand how the Boundary Spanner can help to design, build and maintain them. Each of these stages and the role the Boundary Spanner plays will now be detailed.

During the MSP **design stage**, contributors identified that partnerships often struggle initially due to a weak fundamental partnership architecture. Internal legitimacy and appropriate financial resources were often lacking. The Boundary Spanner's role is to design the net zero MSP ensuring that participant organisations are clear about its objectives. The Boundary Spanner must clearly explain and be an advocate of why an MSP, rather than the simpler DSP, is the best solution to this cross-boundary challenge. Additionally, the Boundary Spanner must carefully select culturally compatible organisations who have the optimum skills and resources in order to ensure that the MSP is designed to succeed.

During the MSP **building stage**, the Boundary Spanner must act as the MSP leader and quickly ensure that the MSP remains focussed on its key delivery objectives. They

have a responsibility to maintain continuity and consistency throughout this stage and build MSP consensus. Initial partnership momentum is crucial and the findings revealed that MSPs often fail early on because they excel at talking but struggle with action. The multiple stakeholders must swiftly transition from talking to action. The Boundary Spanner's role is to facilitate this process, ensuring the MSP is effective and fulfilling the expectations of its stakeholders. This allows the MSP to demonstrate its contributions and positive use of time and resources to its organisations. The Boundary Spanner must be acutely aware of the personal team dynamics, manage conflicts, and overcome inevitable tensions. By doing so, they can ensure a smooth transition from the building stage of the partnership to the transformational endurance stage.

The MSP endurance and **maintenance stage** demands patience and pace. To deliver this the Boundary Spanner has to convene and build a wholly collaborative culture and if this is achieved transformation results are possible. The Boundary Spanner's role is to ensure continual progress, with every participant working hard to deliver their part in the MSP. However, they must also understand that this partnership is time-bound and results need to be delivered. Managing expectations is also crucial. The Boundary Spanner reports progress and communicates successes and challenges. They manage stakeholder expectations and if the delivery is clear and the MSP is achieving its objectives, legitimacy follows, ensuring the MSP's endurance.

7.2.4 Theme four: Net zero partnerships: How to enable MSPs

The thesis has discovered that 87% of contributors view partnerships as being key to net zero and 65% see them as increasingly important. Although there is frequently an organisational kudos from saying that 'we are in partnership with X', partnerships, like any relationship, are hard to arrange and maintain. They require significant effort and patience. Furthermore, there must be a shared collaborative agenda and aligned culture. Best-in-class evidence was presented by two sustainability orientated organisations. They were totally focussed on partnerships; one even enshrined partnerships in their Articles of Association. However, true MSPs are rare. Only 22% of organisations were involved in active and effective MSPs. MSPs require a set of common characteristics including strong governance and legitimacy as well as patient, aligned stakeholders and strong resources.

This thesis has adapted work by Wren & Simpson (1996) on dyadic relationships, translating it into the idea of Dyadic-Stakeholder Partnerships (DSPs), an organisational arrangement experienced by almost 90% of contributors. There is nothing wrong in DSPs and sometimes they do have advantages, but DSPs fail the scale and resources test when having to address society's Grand Challenges. MSPs are more likely to accelerate society to net zero than DSPs. The conundrum is therefore how to first encourage MSPs and promote the DSP to MSP transition, and

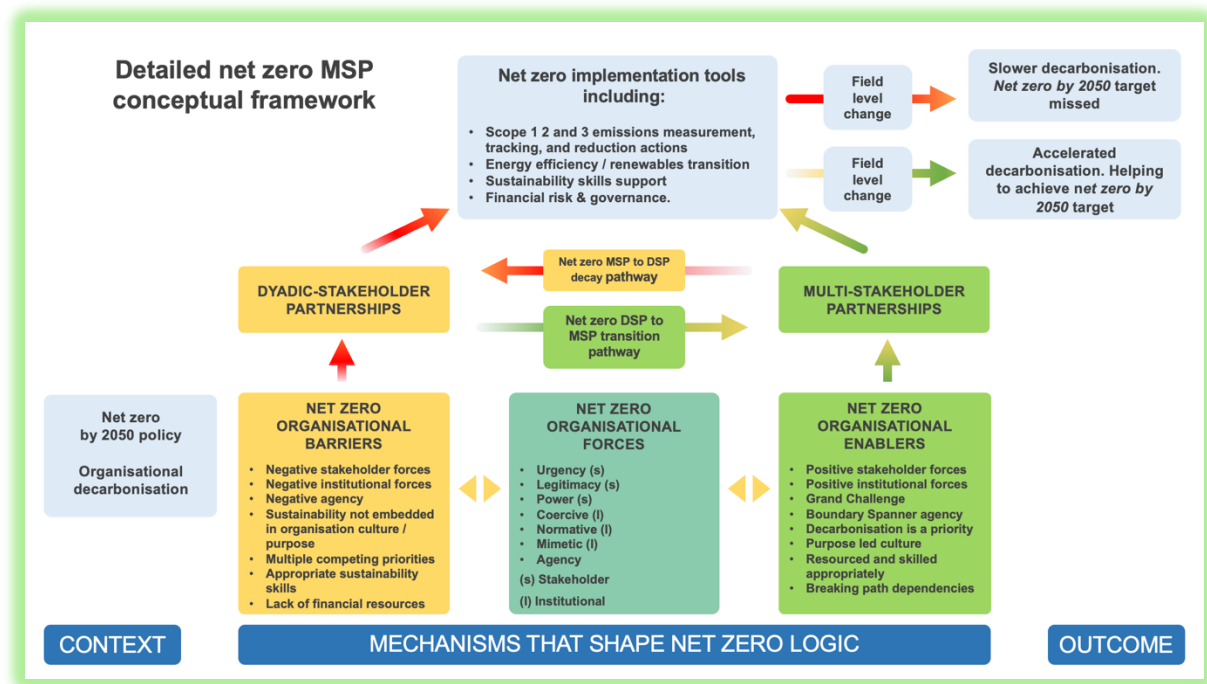
then how to maintain them and prevent decay back to DSPs. This thesis has proposed a set of conditions that optimise the chances of net zero MSP formation. This is built on the foundations of enabling **Mechanisms** by overcoming negative organisational barriers including stakeholders, agency, culture, skills and resources. Additionally, by maximising organisational enablers from stakeholder and institutional theory plus Grand Challenge, Boundary Spanner, a purpose-led culture and appropriate resources. In this way the MSP will be more likely to exist, assist the decarbonisation process and accelerate to the *net zero by 2050 Outcome*.

In Chapter three (Figure 3.2) the net zero MSP conceptual framework was proposed as a way of ensuring the success of MSPs. Based on the **CMO** structure and the principle of enabling **Mechanisms** overcoming organisational barriers, the framework proposed a general approach that navigated a pathway from understanding net zero **Context** through to the *net zero by 2050 Outcome*. This was underpinned by two organisation theories; stakeholder and institutional as shown in Figure 3.1. The broad principle was that if the barriers to MSPs could be overcome, including divergent stakeholders, institutional misalignment, competing organisational logics, and skill and resource deficiencies, and their enablers maximised, then MSPs would be more likely to succeed and prevent decay to simpler DSPs. Having reached the conclusions of this thesis it is now possible to present a detailed net zero MSP conceptual framework based on the previous six chapters, particularly the four key themes and the dynamic nature between MSPs and DSPs as was illustrated in Figures 6.2 and 6.3.

7.2.5 Detailed net zero MSP conceptual framework

Figure 7.1 presents the detailed net zero MSP conceptual framework which works from left to right. Theme one detailed the **Context** of net zero and the challenges of the net zero paradox between the ES and organisational stakeholders. The **Mechanisms** are the core of this thesis and they shape the net zero logic. The net zero organisational forces have an impact on the barriers and enablers. The key attributes of stakeholder theory and institutional theory as well as agency each play an important part in the development of MSPs. When those theories key component attributes are aligned and act as positive forces MSPs are more likely to form; this is the green route. Those net zero organisational enablers are complemented by Grand Challenge and Boundary Spanner from Themes two and three as well as a purpose led organisation culture and appropriate human and financial resources. When they all act together in a positive, reinforcing manner, MSPs are enabled. The result is field level change and accelerated decarbonisation, helping to achieve *net zero by 2050*, as shown by the green pathway.

Figure 7.1 Detailed net zero MSP conceptual framework



Red route = Slower decarbonisation

Green route = Accelerated decarbonisation

The red route occurs when there is imbalance and many of the theoretical attributes are in opposition to the organisational objectives. The result is a set of negative stakeholder and institutional forces that result in DSPs. DSPs do not have the scale to deliver net zero and therefore the red field level change route will be followed. The end result will be slower decarbonisation and the likelihood that the *net zero by 2050* policy target will be missed.

Section 6.6.5 detailed the middle section of the framework, the dynamic DSP to MSP transition and the decay Mechanism.

DSPs and MSPs alone will not accelerate decarbonisation and may require a set of implementation tools. Some of these are detailed in the top blue box of Figure 7.1 and are organisationally dependent. The following tools are illustrative, not an exhaustive list.

Attend any net zero conference and there will be organisations exhibiting and selling their decarbonisation services and software. Sustainability consultancies play an important part in strategy development whilst software is central to financial and risk

management. CFOs are highly aware of their fiduciary responsibilities and carbon accounting software helps organisations comply with the sustainability regulations associated with financial risk. Working collaboratively with suppliers can help to quantify and manage Scope 1, 2 and 3 carbon emissions and develop appropriate decarbonisation plans. Renewable energy is also a productive decarbonisation tool. Using the organisation's buildings or land as a base for solar panels or wind turbines is an easy win.

7.3 Research objectives and research questions

This thesis asserts that the ROs and the RQs have been answered.

7.3.1 *Research objectives*

RO1 Establish the importance or otherwise of net zero partnerships and how far those partnerships fulfil the characterisation of MSPs as described by experts including Gray & Purdy (2018).

Quantitatively, the importance of net zero partnerships has been categorically established, with 91% of contributors emphasising their significance. However, the most significant insight lies in the gap between complex and simple partnerships. DSPs are the dominant organisational partnership arrangement and fail to meet the gold standard MSP threshold. This unexpected finding prompted the thesis to explore the reasons behind this disparity and develop strategies to encourage MSPs. By identifying and overcoming organisational barriers and designing appropriate enablers, a net zero DSP to MSP transition pathway has been proposed.

RO2 Use the insights from the research in combination with appropriate academic theories and concepts to identify the barriers and enabling **Mechanisms** of net zero MSPs. This will advance net zero MSP academic and practical contribution.

Research on RO2 has provided multiple insights unique to net zero because of its long-term nature and ambiguity including how net zero partnerships can be encouraged. The thesis has combined the component attributes from two important organisational theories to unlock some of their barriers and enablers. This academic contribution has been achieved in two ways: by designing and building a net zero MSP conceptual framework, and by understanding and detailing some of the enabling **Mechanisms** that have causal power to effect change and ensure the resilience of net zero MSPs. The net zero MSP framework detailed in Figure 7.1 is a significant contribution. Built around the architecture of the realist **CMO** model (Pawson, 2006),

and the principle of enabling causal **Mechanisms**, it has truly understood what matters (Jagosh, 2020, p. 121). Using an extensive literature base and detailed empirical research, the **CMO** model has been fully detailed, resulting in a clear pathway to more effective net zero MSPs. Practical contributions will be detailed later in this chapter through the Net Zero Organisational MSP Playbook.

RO3 Construct a net zero MSP conceptual framework that advances academic understanding about net zero MSPs, making them less ‘messy and confusing’ (Gray & Purdy, 2018, p. 199), to contribute to accelerating the UK to net zero.

Figure 7.1 is the result of this objective. The thesis presents a contemporary and realistic agenda for the development of net zero MSPs and outlines strategies to maintain and enhance their effectiveness, preventing them from decaying to simpler DSPs. By providing a set of clear enabling **Mechanisms**, the thesis aims to make net zero MSPs less messy (Gray & Purdy, 2018, p. 199) by providing a set of enabling **Mechanisms** (Caldera et al., 2019; Pawson, 2006). This includes developing Grand Challenges (Dorado et al., 2022; Ferraro et al., 2015), as powerful brand identities within the **Context** of net zero, and advancing the role of the Boundary Spanner (van Meerkerk, 2014; Williams, 2002), as an MSP designer, builder, and maintainer. Furthermore, the thesis provides a comprehensive understanding of organisational net zero realities and the specific requirements for organisations as the UK strives to accelerate its transition to net zero.

RO4 Understand how agency can help to build stronger net zero MSPs by overcoming barriers to accelerate decarbonisation.

The modernisation of the Boundary Spanner into a net zero MSP designer, builder, and maintainer, acting as a net zero enabler has advanced how Boundary Spanners can develop net zero MSPs. Theme three explores this thoroughly.

RO5 Identify how organisations are engaging with decarbonisation and net zero and develop policy and practice recommendations to help them decarbonise faster.

Chapter 5 and the discussion in Chapter 6 comprehensively explore how organisations are engaging with the *net zero by 2050* policy, supported by both quantitative and qualitative evidence. Policy and practice recommendations will be provided later in this chapter. This thesis has the potential to influence net zero policy by altering the ES and emphasising the significance of partnerships in achieving net zero, which could have profound implications for organisations.

7.3.2 Research questions

CQ How do the enabling **Mechanisms** of effective net zero MSPs shape the net zero organisational logic, why do they matter, and how can they be used to respond to the *net zero by 2050* policy Grand Challenge?

The study has established that organisations are faced with many logics and prioritising net zero is hard but with careful thought it is possible. It has identified and discussed key net zero MSP enabling **Mechanisms** that matter and how they shape organisational responses and prioritise the net zero logic over others. It has deconstructed and reconstructed Grand Challenge as a net zero MSP enabler as well as reinventing the Boundary Spanner as a net zero MSP enabler with causal power to design, build and maintain effective net zero MSPs. Collectively these can help organisations respond to the *net zero by 2050* Grand Challenge by using the net zero MSP framework (Figure 7.1).

RQ1 How can organisational MSPs tackle the net zero Grand Challenge and its policy ambitions?

The study has thoroughly researched how MSPs can help address the net zero Grand Challenge. It has established that partnerships are seen as important to net zero but MSPs are hard to design, build, and maintain. The study has designed a net zero MSP framework and modernised two enabling **Mechanisms**. Furthermore, the study has thoroughly discussed the net zero **Context**, conceptualised the UK's net zero policy paradox, and suggested how the gap between the ES and organisations can be bridged. Organisations must also embrace MSPs because the UK needs to accelerate to net zero. They provide scale and expertise and have a proven global record of accomplishing delivery when faced with societies' Grand Challenges. However, organisations currently struggle to build MSPs, and DSPs are more common. Organisations can address this problem by rethinking how the organisation engages with net zero as a purpose led agenda.

RQ2 How can the real and perceived structural organisational barriers of net zero MSPs be overcome and be used as enablers to build more effective net zero MSPs?

The study has identified both clear and hidden net zero MSP structural barriers and has developed a range of enabling suggestions as to how to overcome them. It has identified that DSPs are more common and proposed a DSP to MSP transition pathway which includes a number of enabling **Mechanisms** when combined have the power to build more effective net zero MSPs.

RQ3 How is agency important, and how can the change agent role, as a key organisational enabler, be legitimised and contribute to effective net zero MSPs?

Agency is a key contributor to net zero MSPs and the role of the net zero MSP Boundary Spanner underpins that contribution. The Boundary Spanner has been fully redeveloped and modernised as a net zero MSP designer, builder and maintainer. They can effect change and act as a causal **Mechanism** that affects other structures.

RQ4 How can organisations reconfigure themselves to adapt to the ambiguity of net zero, and participate in effective net zero MSPs?

Net zero and MSPs are both messy and it can be tempting for organisations to avoid the decarbonisation challenge. However, the urgency of net zero makes it imperative for organisations to address net zero by understanding their net zero structural challenges. How organisations reconfigure themselves when faced with the net zero boundary threat will be detailed in section 7.4.3 as part of the Net Zero Organisational MSP Playbook. By reconfiguring themselves with net zero as a central priority, and by embedding that across the whole organisation, net zero acceleration is possible.

7.4 Recommendations

7.4.1 General policy

This thesis has identified that the UK is experiencing a net zero public policy paradox; it is rich in policy, yet delivery is slow. The new Government over time will redevelop its approaches to net zero and these policy recommendations will hopefully add to that thinking.

1. Net zero evidence-based policymaking is essential. The **CMO** concept is an EBPM framework, however, EBPM is open to many rational and irrational influences that can be personally biased or politically motivated. Maintaining a strict evidence-based approach to net zero policymaking will deliver better policy. Cairney (2015) identifies that EBPM can only be achieved by widescale engagement, negotiation and collaboration between stakeholder groups. The author echoes that. Deeper engagement between the ES and its stakeholders is absolutely necessary and by listening to their advice and expertise the ES will develop better, more realistic, and more practical policy resulting in improved delivery and faster decarbonisation (Cairney, 2015, 2020). The Scottish Deposit Return Scheme discussed in section 5.5.2 was a good example of how to develop bad policy.

2. The concept of the Environmental State needs to be reimagined. A newer and more modern ES that is more inclusive of its stakeholders and embraces MSPs could make a significant difference to the net zero Grand Challenge. In combination with EBPM, the ES would develop better policy and benefit net zero.
3. LG has a crucial role to play in achieving net zero, but they are currently financially constrained to go beyond their standard organisational responsibilities. More fundamentally, they are not legally obligated to contribute to net zero. Using their close ties with citizens and local organisations, LG could contribute to net zero acceleration in two ways. Firstly, they could actively develop local MSPs, building upon the historical work done by the LEPS. Secondly, even without statutory responsibility, LG could be granted greater legal powers and financial support to facilitate local decarbonisation.
4. Global net zero policy is not working, but outside the scope of this thesis. However, what is in scope is the importance of net zero partnerships. The wider geopolitical situation is undermining partnerships yet the COP process and *net zero by 2050* policy will only ever be achieved through global partnerships.

7.4.2 *Policy relating to MSPs*

Mechanisms are the engine-room of MSPs and focussing on **Mechanisms** can make new or modified net zero policy more effective. This thesis has concentrated on how to enable net zero MSPs, therefore it is important to integrate MSPs into net zero policy.

1. UK net zero policy needs to seriously address how to integrate MSPs into the agenda. MSPs are powerful, yet are not organisationally common, and as this work has shown through the net zero MSP framework, there are ways to accelerate the use of MSPs. The Power of Partnership work (Advisory Business Group for the UK's Climate Change Committee, 2023) did not go far enough and this thesis recommends that MSPs are made central to net zero public policy and organisational implementation.
2. This thesis proposes the development of a net zero MSP ecosystem. This network would act as a clearing house, matching organisations with partnership projects. It would make partnerships accessible to SMEs as well as larger corporates. LG could facilitate the development of these partnerships, building on the previous recommendation. The ecosystem was welcomed by SMEs during the research.

3. Agency is crucial in achieving net zero, and the modernisation of the Boundary Spanner is key to this thesis. However, it is evident that there is a lack of knowledge about the skills of Boundary Spanners and, more broadly, how to build MSPs. Therefore, it is recommended that MSP skills training, addressed as part of net zero policy and net zero MSP Boundary Spanners, be central to the design, build and maintenance of MSPs.

7.4.3 Organisational recommendations: The Net Zero MSP Playbook

Accelerating net zero delivery is crucial, and organisations and MSPs are central to this. This net zero MSP Organisational Playbook focusses on how academics can assist organisations in designing, building, and maintaining appropriate MSP systems and structures, including embedding sustainability as a core organisational purpose. Academic organisational experts have the potential to educate and train organisational leaders, guiding them on their decarbonisation journey. This Playbook can be a powerful manual for organisations to build a more sustainable decarbonisation agenda. It could serve as a launch or education manual for sustainability and decarbonisation programmes, MSPs, and internal stakeholders, helping them understand the importance of sustainability.

This Playbook provides the steps and insights to guide organisations on their journey. While it may be easier for start-ups because they can establish these core principles from day one, it can also be used by established organisations to help redesign their organisation. Academics can use this thesis to challenge organisational leaders by prompting them to reassess their organisation's structure and operations.

Step 1: Multi-Stakeholder shareholders

Shareholders need to be more than just dividend extractors. They must believe in the organisation beyond its financial objectives. They must be engaged with and convinced that the organisation can deliver a lucrative financial return centred on a sustainability and business-based vision. In this way a set of genuine multi-stakeholder shareholders can be developed who can contribute to the future success of the organisation. If they are only interested in the financial gain, they are the wrong shareholders.

Step 2: Defining sustainability purpose

Why does the organisation exist? What does it want to contribute to society and planet Earth? How can it centralise sustainability and decarbonisation into the DNA of the organisation to deliver both a better business and a better planet? Answer these

questions and the organisation's purpose will be defined no matter what external boundary pressures emerge.

Step 3: Organisational culture

Everything the organisation does has to align with both better business and better planet. Design a culture that attracts and retains like-minded colleagues who can build a commercially successful and sustainable organisation and then measure everything against those cultural values.

Step 4: Decarbonisation is everyone's responsibility (Vignettes one and two)

It is easy to appoint a CSO and give them the responsibility to drive sustainability and decarbonisation through the organisation. This is not wrong, but the reality is that decarbonisation is everyone's responsibility. Therefore, make sustainability part of every personal objective and build sustainability into remuneration packages. This will focus everyone in the organisation on the challenge. The results will be faster and more integrated across the organisation.

Step 5: Legitimacy (Sections 3.4, 3.5, 3.6)

Academics can educate organisational leaders in important organisational theories including stakeholder and institutional. From this the importance of legitimacy emerges. Contributors to this thesis also affirmed legitimacy's importance. The organisation must demonstrate that it is committed to the long-term challenges of net zero and will not be blown off-course when other pressing priorities emerge. This is more than a two-line statement on the website: it is an all-in agenda. This will legitimise the importance of net zero. Organisational colleagues must also play their part, demonstrating they are committed and can contribute to deliver decarbonisation in their function.

Step 6: Net zero is a Grand Challenge (Chapter two, Section 6.4)

As a Grand Challenge, net zero is about overcoming obstacles, addressing its complexity, its uncertainty and its ambiguity. The net zero journey is never-ending and building a credible internal net zero Grand Challenge brand will elevate the story and its importance in the minds of every stakeholder group.

Step 7: Stakeholder alignment (Sections 3.5, 3.7, Vignette one)

Understanding the urgency, legitimacy and power dynamics of every important stakeholder group will ensure that stakeholders are aligned. This is important but can be easily overlooked. Stakeholder management is a priority.

Step 8: Institutional alignment (Sections 3.6 and 3.7)

This is dual focussed. Being engaged with local and national institutions is important, it can be hard and time consuming but it can help shape policy. The second part of institutionalism is embedded in habit-forming and symbolic action. Being highly aware of the external pressure on the organisation will allow the organisation to manage its behaviours and the social choices it makes.

Step 9: Decarbonisation strategy

The strategy must be built on Steps 1-8 and Steps 10-12. It must be an explicit delivery strategy. It is not about great statements regarding ambitions. It is about how the organisation decarbonises by identifying which barriers to overcome and which enablers to use. Organisational structure is key (Steps 3,4,5,10,11), and ensuring the strategy is aligned to commercial reality as well as competitive advantage.

Step 10: Multi-Stakeholder Partnerships (Chapter three and section 6.6)

Effective MSPs are crucial for achieving net zero and require careful design, construction, and ongoing maintenance. By utilising the detailed MSP conceptual framework (Figure 7.1), academics can guide sustainability leaders and embrace the principles of organisational barriers and enablers. The thesis has identified specific barriers and enablers, and academic practitioners can assist organisations to identify and manage these forces, ensuring they are aligned positively to build powerful and effective MSPs. Grand Challenges and Boundary Spanners are also important in this context. By collaborating with others, organisations can learn faster, share risks and resources, and deliver greater impact. However, this requires inspiring leadership, which is the role of the Boundary Spanner.

Step 11: The net zero MSP Boundary Spanner (Sections 3.9 and 6.5)

The Boundary Spanner as an MSP designer, builder and maintainer is a key role. The role demands a special type of leader, as detailed in section 6.5. They will benefit the

organisation, but they need to be organisationally legitimised to be empowered, to design strategy, communicate, persuade and deliver results.

Step 12: Success is about delivery and decarbonising
(Chapters two, three, four, five and six)

The **CMO** concept and the MSP conceptual framework provide a route map for the design, building and maintenance of MSPs. This will help the organisation decarbonise faster and deliver net zero faster than would otherwise have been possible. Net zero MSPs are central to that agenda.

7.5 Theoretical contribution

There are three novel contributions and three others that develop existing thinking.

7.5.1 *Novel contributions*

7.5.1.1 *Net zero MSPs, DSPs, organisational barriers and enablers* (Chapter three and Theme four, sections 5.4.4 and 6.6)

This thesis has established that although net zero MSPs are key to our future and an important **Mechanism** for solving complex problems (Gray & Purdy, 2018), they are not common in the UK because organisations find them hard to design, build and maintain; net zero DSPs are far more common. Only MSPs have the scale to attack the net zero Grand Challenge therefore the thesis has developed a detailed organisational understanding about why this is the case and what needs to be done to develop net zero MSPs. There are a range of organisational barriers that inhibit MSPs and enablers that promote them. In response to this the thesis has constructed a novel net zero MSP conceptual framework (Figure 7.1) which is built on a range of MSP **Mechanisms**. Those **Mechanisms** are developed from existing academic insights but the author would defend that the combination and the complete package delivers novelty and advances existing academic thinking.

7.5.1.2 *Net Zero MSP conceptual framework and DSP to MSP transition* (Sections 3.2, 6.6 and 7.2.5)

The detailed net zero conceptual framework is also novel contribution (Figure 7.1) as is the DSP to MSP transition pathway (Figure 6.3) which is part of the master framework. By combining two organisational theories and using the principle of barriers and enablers the thesis has developed a theory-based pathway to net zero MSPs. Supported by research, it has uncovered the dynamic relationship between DSPs and MSPs and proposed ways to activate MSPs.

7.5.1.3 *Net zero MSP Boundary Spanner: MSP designer, builder and maintainer* (Chapter three, section 3.9 and Theme three, sections 5.4.3 and 6.5)

The Boundary Spanner agency concept has been reinvented and modernised to enable net zero MSPs to flourish. The thesis has used the foundational work of Williams (2002) and van Meerkerk (2014) but advanced that work specifically in the context of net zero MSPs. The thesis has isolated the three stages of net zero MSPs, designing, building and maintaining, and the role that the Boundary Spanner plays in each. Furthermore, the thesis has developed the Six Cs of the MSP Boundary Spanner, and those characteristics are specific to net zero MSPs. These additions are novel contribution and it is hoped that it reignites the academic and practical relevancy of the Boundary Spanner.

7.5.2 *Developmental contribution*

Net zero from an organisational and business perspective requires more research as was shown in Chapter one. The thesis has significantly contributed to the research knowledge base, identified important problems with net zero MSPs and developed existing academic thinking. Nevertheless, further research is recommended.

7.5.2.1 *The net zero Grand Challenge brand* (Chapter two and Theme two sections 5.4.2 and 6.4)

The thesis has embraced Grand Challenge as a viable net zero enabling **M**echanism and modernised the Grand Challenge concept in the context of MSPs, as well as critiquing contemporary negative sentiment to Grand Challenge. The net zero Grand Challenge brand possesses causal power to effect change by overcoming inter- and intra-organisational obstacles. It can remove intra-firm obstacles and curate new narratives that develop innovation and encourage cross-functional working which are fundamental to net zero. For example, Grand Challenge can be used to help employees understand their own functional net zero obstacles and collaborate with others to overcome them. Therefore, Grand Challenge has been redesigned and made appropriate for net zero MSPs. This advances the work of others (Brammer et al., 2019; Carton et al., 2023; Dorado et al., 2022; Ferraro et al., 2015; Seelos et al., 2023).

7.5.2.2 *The new Environmental State* (Theme one, sections 2.11.1, 5.4.1, 6.2.1)

The ES is an important concept developed by Duit (2016). This thesis deploys and

develops that thinking because there is a gap between net zero policy and organisational reality. This requires the ES to change. To address this the thesis has conceptualised the net zero paradox and described how policy led by the ES is abundant, yet delivery led by the multiplicity of stakeholders is slow. Significant questions must therefore be asked about the role of the ES and how net zero policies are being interpreted and implemented by organisations. The thesis has advocated that deeper and wider stakeholder engagement is key and this reinforces the importance of net zero MSPs.

7.5.2.3 *Dyadic-Stakeholder Partnerships* (Sections 3.4.2, 5.4.4.7, 6.6.5)

The DSP concept is inspired by preceding dyadic buyer-seller relationship work by Wren & Simpson (1996). The term has not been previously used to describe partnerships, and it complements MSPs helping to clarify their definition.

7.6 Future research

There are three areas that require further organisational research; net zero, net zero MSPs, and the net zero MSP Boundary Spanner.

7.6.1 *Net zero*

The organisation has significant decarbonisation power. Organisations need help to navigate net zero's complexity. Academia can help and the thesis has identified the following areas that can be further researched.

Philosophically, net zero is extraordinarily complex and its understanding could be limited when having to pick only one ontological path as this thesis had to do. Ontological pluralism (Esbjörn-Hargens, 2010) has been investigated in the context of climate change, and the author believes that this is a powerful concept that needs to be applied to net zero. The multiple philosophical positions have the power to unlock new insights and avenues that have previously not been uncovered.

The ES is a relevant concept that this thesis has adapted in the context of partnerships. As the *net zero by 2050* deadline becomes closer and decarbonisation targets are missed, the ES may will have to decide how interventionist it wishes to become in order to accelerate decarbonisation. This is as much a political decision as it is an organisational one, but academically the redefinition of the ES is an area of future research that should be followed.

LG potentially have a significant role to play in net zero and currently are undervalued, as this thesis has identified. The academic opportunity is to reimagine the part LG can play in transforming the net zero agenda. LG's institutional structures are currently being consolidated and it is unclear how they will continue to engage with net zero. During this process there is an opportunity to develop stronger local decarbonisation strategies. What impact could LG have if they were provided with the statutory powers and financial resources to decarbonise faster?

7.6.2 Net zero MSPs

By using and developing the net zero MSP conceptual framework, a future net zero MSP study could advance this thesis. It could be ethnographically based. By immersing themselves internally within key UK decarbonisation organisations, for example power generators or oil and gas producers, researchers could observe and learn about how net zero MSPs are formed and implemented in reality, and how the barriers are overcome and enablers activated.

SMEs are not ideally placed to participate in net zero MSPs and this needs to be understood in more detail. SMEs possess specialist skills and can play a valuable role in MSPs, but are resource limited and can be excluded, overtly or covertly, from net zero MSPs. How can they partner with larger organisations and contribute fully to net zero MSPs?

7.6.3 The net zero MSP Boundary Spanner

The net zero MSP Boundary Spanner role is exciting and deserves further research investigating. This would develop the net zero MSP Boundary Spanner further by researching the realities of their role as an MSP designer, builder and maintainer and proving whether the proposition developed in this thesis is valid.

7.7 Delivering generalisation

Analytical generalisation is an academically powerful concept (Yin, 2018, p. 7). Taking the core ideas from academic research in one setting and transferring them to another adds credibility to the original work. This thesis has that potential. Although the study is located in the UK, it has wider geographical relevancy to other states wrestling with net zero. Furthermore, it also has the potential to alleviate other Grand Challenges. There are three core ideas that can be generalised.

7.7.1 MSPs and DSPs

Partnerships are crucial to the way many organisations operate in 2024. They must learn how to share resources, collaborate, and develop webs of relationships to achieve things they could not do alone. This thesis has identified that establishing and maintaining net zero MSPs is challenging. Organisations often prioritise DSPs due to competing priorities, lack of organisational sophistication, skills, and resources. However, many other social Grand Challenges and complex projects may have similar organisational characteristics. Understanding why organisations struggle to move beyond DSPs and engage in MSPs is a theme that could be applied to many populations. This approach, which focusses on identifying barriers and enablers, has widespread relevance and appeal. Furthermore, the MSP conceptual framework could be applied to other Grand Challenges.

7.7.2 The Grand Challenge brand

Grand Challenge is a generalisable concept; that is not new. What is new, and even more generalisable, is the Grand Challenge brand and its application to overcome obstacles and to unlock complex, multi-disciplinary, ambiguous, organisational problems.

7.7.3 The MSP Boundary Spanner

The reinvention of the Boundary Spanner is highly generalisable. There are many subjects that cross boundaries and many situations where MSPs are required. The idea that the MSP Boundary Spanner can design, build and maintain the MSP is generalisable and can be transferred to many disciplines, situations and settings.

7.8 Final reflections

The organisation has the agency to deliver the net zero Grand Challenge by embracing MSPs. While MSPs can be challenging and uncomfortable, they are essential to net zero. The challenge is large and presents significant intellectual and operational barriers. However, as this thesis has shown, there are enabling **Mechanisms** that can help net zero MSPs succeed. Ultimately, saying and doing are two different things, and organisational leadership is essential to ensure maximum decarbonisation delivery. Inspiring leaders who believe in social purpose and the need for businesses to be in harmony with Planet Earth can be motivating, but organisational decarbonisation legitimacy is key. By empowering the Boundary

Spanner as a net zero MSP designer, builder, and maintainer, organisations can help the UK accelerate towards the net zero Grand Challenge.

Three years ago, the author embarked on an ambitious and daunting journey. Through countless hours of assessing previous literature, listening to expert practitioners and personal reflection, a thesis has emerged. What the future observer will think of our generation's attempt to achieve net zero remains unknown, but it is hoped that academics and organisations today will embrace this thesis's findings and apply them. By leveraging their skills and resources through net zero MSPs, organisations can help accelerate the UK towards *net zero by 2050*.

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Appendix One *Grand Challenge literature table*

Authors	Title	Year	Contribution	Summary
(Rittel & Webber, 1973)	Dilemmas in a General Theory of Planning	1973	Policy problems cannot be definitely defined. There are no solutions. They are not true or false. They were at the forefront of challenging policy makers to step change their thinking in social policy development.	Science has been developed to deal with tame problems but confronting social policy is bound to fail because they are wicked problems. Theoretic dilemmas may be the most wicked problems that confront us. We need theory development to confront these pluralistic issues.
(Stacey, 2011)	Complex Responsive Processes in Organisations	2011	Developed an alternative approach to knowledge management in organisations away from 'mainstream system thinking'	The creation of new knowledge and organisational change is viewed as a self-organising process between individuals. Knowledge management needs to start by facilitating conversations about what people are doing at the moment rather than discussing goals in an unknown future.
(Colquitt & George, 2011)	Significance: Taking on "Grand Challenge"	2011	An effective topic is one that allows researchers to tackle a grand challenge in a literature, pursue a novel direction that arouses and maintains curiosity, build a study with ambitious scope, and uncover actionable insights.	The fundamental principles underlying a grand challenge are the pursuit of bold ideas the adoption of less conventional approaches to tackling large, unresolved problems.
(Ferraro et al., 2015)	Tackling Grand Challenges Pragmatically: Robust Action Revisited	2015	They theorise a novel approach to addressing the world's grand challenges based on the philosophical tradition of American pragmatism and the sociological concept of robust action. They identify three robust strategies that organisations can employ in tackling issues such as climate change.	Grand Challenge are complex, evaluative and uncertain. Climate change is a Grand Challenge, and they discuss how institutions respond to Grand Challenges. Pragmatic theory recognises that means and end are not always clearly defined. Defining the problems is an essential part of the possible resolution. Robust actions I clearly articulated around generating novelty and sustained engagement.
(George et al., 2016)	Understanding and tackling societal grand challenges through management research	2016	Grand Challenge require coordinated and collaborative effort. They highlight several factors that are likely to help attaining the collective goals. They develop a framework to guide future research.	This article highlights management research that addresses Grand Challenge. The framework is a 3-stage process of articulating and participating in the Grand Challenge, multilevel action and outcomes and impact. Grand Challenge reflects actor needs and aspirations.
(Touboulis & McCarthy, 2020)	Collective action in SCM: a call for activist research	2020	This paper centred in supply chain looks at how field level change and societies constraints can affect wider organisation change. It proposes	There is a need for collective action in order to reimagine societies Grand Challenges. These

			new methods of doing and writing and new agency approaches.	problems are so large they need research activism.
(Dorado et al., 2022)	Standing on the Shoulders of Giants: Leveraging Management Research on Grand Challenges	2022	They advance research on how businesses engage with the complex social problems currently known as Grand Challenges. They construct a knowledge map that includes obstacles, such as governance obstacles hindering engagement and sensemaking obstacles limiting the ideation of novel and creative efforts.	This article is about obstacles in the context of Grand Challenge. They develop a knowledge map for business. Curation, governance, sensemaking and adaption obstacles. Each are ontologically grounded and afford a unique vantage point to think about the role of businesses in Grand Challenges.
(Seelos et al., 2023)	The future of grand challenges research: Retiring a hopeful concept and endorsing research principles	2023	They propose that the variety and incoherence of current uses of the GC concept and the lack of efforts to improve its analytical competence lead us to suggest its retirement. They want to raise the theoretical and practical ambitions. They propose replacing the focus on conceptual development with a commitment to a principles-based research agenda for GC research.	They address how and why Grand Challenge is defined and used. They acknowledge the enthusiasm for its use but say that Grand Challenge does not help theory development. Realism can help integrate and overcome the limitations of positivist and relativist positions. They are hopeful that the second decade of GC research will be marked by ambitious advances in both theory and practice.
(Carton et al., 2023)	How Not to Turn the Grand Challenges Literature Into a Tower of Babel?	2023	This short article says that the wide variety of disjointed Grand Challenge literature runs the risk of reinventing the wheel. Scholars need to build on previous research and create opportunities for generalisability.	Grand Challenge can run the risk of just being a label that signals legitimacy. The lack of theoretical consideration can create noise and ignoring other management and organisation fields that have already proposed solutions to Grand Challenges. Future research needs to be better connected.

Appendix Two Key net zero policy initiatives and reports: 2008 – 2024

Year	Description	Net Zero Policy	Key Focus	Objective	Stakeholder Group	Source
2008	Climate Change Act 2008	Net zero became a statutory target. By 2050 to have reduced GHG emission by at least 80% as compared to 1990	Emission Reductions. Established the Committee on Climate Change.	First integrated plan to tackle GHG reduction in the UK.	National Government Local Government Devolved Administrations UK Business UK Citizens	https://www.legislation.gov.uk/ukpga/2008/27/contents
2008-2020	Legally Binding Annual Carbon Budgets	Sets out how UK's Emissions will be achieved vis annual budgets. Between 2008 and 2020 here have been six budgets.	Carbon Reduction Pathways	Carbon Budget is a cap on the amount of GHG emitted in the UK over a five-year period. Budgets must be set at least 12 years in advance to allow for stakeholder engagement.	National Government Local Government Devolved Administrations UK Business UK Citizens	https://www.theccc.org.uk/about/our-expertise/advice-on-reducing-the-uks-emissions/
2011	The Carbon Plan	Detailed policy plan for decarbonisation in the UK	Emissions reduction strategy	Laid out in detail what and how was needed by sector	National Government Local Government Devolved Administrations UK Business UK Citizens	https://shorturl.at/wCIU9
2019	The Climate Change Act 2008 (2050 Target Amendment)	Increases the 2008 statutory target from 80% to 100% by 2050.	Emission Reductions.	To be more ambitious.	National Government Local Government Devolved Administrations. UK Business UK Citizens	https://www.legislation.gov.uk/ukdsi/2019/9780111187654
2019	Net zero review: terms of reference	HM Treasury Review about net zero funding	Engage with key Stakeholders	Report by 2020	National Government Local Government Devolved Administrations UK Business	https://www.gov.uk/government/publications/net-zero-review-terms-of-reference/hm-treasurys-review-into-funding-the-transition-to-a-net-zero-greenhouse-gas-economy-terms-of-reference
2020	The ten-point plan for a green industrial revolution	£12 billion investment plan, and potentially 3x as much from private sector. Support up to 250,000 green jobs	Industrial Strategy Growth Job Creation	An integrated plan bridging 'Green Policy' and 'Industrial Strategy'	HM Government Local Government UK Business	https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution

2021	Net Zero Review. Final Report	Current economic analysis could understate the UK economic cost as climate heats up. UK climate action could boost the economy; the investment could contribute to growth.	The Financial Case for net zero	How the UK can finance net zero and what its benefits will be.	National Government Local Government Devolved Administrations UK Business	https://www.gov.uk/government/publications/net-zero-review-final-report
2021	Net Zero Strategy: Build Back Greener	Strategy sets out policies and proposals for decarbonising all sectors of the UK economy to meet net zero by 2050.	Action plan to decarbonise and deliver net zero.	To recover from Covid-19 and how to utilise green policy and action across the whole of the UK.	HM Government Local Government UK Business	https://www.gov.uk/government/publications/net-zero-strategy
2022	MISSION ZERO Independent Review of Net Zero	Report by Skidmore MP following extensive engagement with stakeholders across UK.	Net zero decision-making requires action plan from government and all stakeholders.	Skidmore was an energy minister and is an expert in net zero. His report was commissioned by government to assess situation and key actions.	National Government Local Government Devolved Administrations UK Business UK Citizens	https://assets.publishing.service.gov.uk/media/63c0299ee90e0771c128965b/mission-zero-independent-review.pdf
2023	Powering Up Britain. The Net Zero Growth Plan	Balancing UK's Energy Security with the demands of net zero.	Supporting the net zero transition across the economy by reducing emission across the economy.	Improving the delivery plan and responding to advice from Skidmore Report. Demonstrates actions to be taken as a net zero leader and investments into green industries.	National Government Local Government Devolved Administrations UK Business UK Citizens	https://www.gov.uk/government/publications/powering-up-britain/powering-up-britain-net-zero-growth-plan

Appendix Three Key net zero institutional governance reports: 2010 – 2024

Climate Change Committee (CCC) and National Audit Office (NAO)

Year	Author	Report	Purpose	Key Focus	Conclusions	Source
2010	NAO	Government funding for developing renewable energy technologies.	To measure impact of government investment in low carbon energy sources.	Value for money Delivery Strategy Planning Stakeholder engagement	A lack of strategy, plans, and co-ordination by government. Investment has successfully supported innovation and renewable energy production has increased.	https://www.nao.org.uk/reports/government-funding-for-developing-renewable-energy-technologies/
2010 – 2024	CCC	Progress Reports to Parliament	Annual Assessment of Progress versus the 2050 net zero target.	Governance Independent Statutory	An important annual report. 2023 Report detailed below.	https://www.theccc.org.uk/publicationtype/0-report/02-progress-reports/
2010- 2024	CCC	Multiple Technical and Policy Reports on net zero	To report on net zero progress and hold Government to account.	Governance Independence Statutory overview	Independent Statutory Body – Advising the Government.	https://www.theccc.org.uk/publications/
2008 -2020	CCC	Carbon Budgets	To advise Government on setting carbon budgets	Carbon levels	Multiple – see Government Policy (2008 -2020)	https://www.theccc.org.uk/about/our-expertise/advice-on-reducing-the-uks-emissions/
2012	NAO	Carbon capture and storage: lessons from the competition for the first UK demonstration.	To assess the failures in this technology investment.	Poor governance Challenging technology High risks	The department failed to tackle the barriers and risks to this technology. It must learn the lessons.	https://shorturl.at/bLTQ
2012	NAO	The government's long-term plans to deliver secure, low carbon and affordable electricity	To set out the long-term challenges and uncertainties with supplying low carbon affordable electricity	High investment High uncertainty Technology development	The costs are extremely high at £110bn and net zero is dependent on reconfiguring the energy network. Consumers and business will pay the bill.	https://shorturl.at/M4lZ5
2019 (1)	CCC	Net Zero – The UK's contribution to stopping global warming	To reassess the UK's long-term emissions targets.	Clear policies Well-designed policy Current policy insufficient	The Climate Change recommends a new emissions target for the UK: net zero greenhouse gases by 2050.	https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/

2019 (2)	CCC	Net Zero – Technical Report	Detailed technical assessment of UK's net zero target	Science Based Target Strategy development 10 Key Sectors	Thorough technical analysis which supports the 2019 (1) Report.	https://www.theccc.org.uk/publication/net-zero-technical-report/
2020	NAO	Achieving net zero	To assess the scale of the challenge, the co-ordination, plans, and risks involved.	Political priority Enormous challenge Stakeholder engagement	A clear strategy is needed to ensure that the target will be achieved. National cooperation is required.	https://www.nao.org.uk/reports/achieving-net-zero/
2021	NAO	Local Government and net zero in England	To assess how national and Local Government can collaborate on net zero.	Roles need to be defined Joined up working LG hampered	There is a lack of connected working and partnership between national and Local Government resulting in poor planning.	https://www.nao.org.uk/reports/local-government-and-net-zero-in-england/
2021	CCC	Independent Assessment: The UK's Net Zero Strategy	Independent assessment of the Government net zero Strategy: Build Back Greener policy paper.	Ambitious Cross cutting policies Sector specific Enabling policy required	The strategy is an ambitious and comprehensive one that marks a significant step forward for UK climate policy. Further steps will be needed to implement the policies if it is to be a success.	https://www.theccc.org.uk/publication/independent-assessment-the-uks-net-zero-strategy/
2023	NAO	Decarbonising the power sector	To understand the key challenges involved in decarbonising the energy sector.	Significant challenges Long-term plan required	There is a need for needs a joined-up approach to ensure changes happen in sequence and with coherence.	https://www.nao.org.uk/reports/decarbonising-the-power-sector/
2023	NAO	Support for innovation to deliver net zero	The government expects research and innovation to play a crucial part in the UK achieving net zero	Stakeholder engagement is critical Strong framework Poor planning	Government should take prompt action to further strengthen its governance and delivery mechanisms, building on the excellent work done to develop the Framework.	https://www.nao.org.uk/reports/support-for-innovation-to-deliver-net-zero/
2023	NAO	Approaches to achieving net zero across the UK	To support the scrutiny of governments' arrangements to achieve net zero	Co-ordination is key Sharing learnings UK national effort	Effective working relationships and close engagement between the UK and devolved governments will be vital to achieving the overall aim of net zero	https://t.ly/GYxxh
2023	CCC	2023 Progress Report to Parliament	To independently assess the government's policy and delivery agendas. Progress in reducing emissions.	Lack of urgency Move to delivery Prioritise Empower actions	Policy development continues to be too slow. Confidence in the UK meeting its medium-term targets has decreased in the past year.	https://www.theccc.org.uk/publication/2023-progress-report-to-parliament/
2024	CCC	2024 Progress Report to Parliament	To independently assess the government's policy and delivery agendas. Progress in reducing emissions.	Stop providing inconsistent messages Rapid investment is needed	Urgent need to reverse recent policy decisions. Low-carbon technology roll out off track. 10 priority actions.	https://www.theccc.org.uk/publication/progress-in-reducing-emissions-2024-report-to-parliament/

Appendix Four UK net zero evidence: Macro, meso and micro levels

Macro System Level	Micro Organisational Level	Micro Agency Level
Political - Climate Change 2008 Act. Reduce GHG emissions by 100% from 1990 levels. Revised in 2019 - Establishing Climate Change Committee - Build Back Greener 2021 & Skidmore 2023 report - September 2023 Rollback on key net zero pledges - Election in 2024 - Lack of LA funding and no net zero Statutory responsibility Economic - Net zero as an economic growth engine - Net zero boost UK estimated at £240bn and 6.4% GDP boost - Global market opportunity for UK estimated at £1tn - Low carbon investments at 0.9% of GDP - Renewables in UK outspending oil and Gas 2:1 - Carbon pricing in 2024 Socio-cultural 60% of net zero to 2050 to come from behavioural changes - Behavioural changes in transport, food, diet, and heating - Reduced air pollution and diets leading to improved health Technological - Net zero UK R & I £4.2bn plan inc. Zero emission road freight trials and advanced nuclear mini reactors - Reconfigure UK Energy grid to renewables solar and wind - Low carbon Hydrogen – ambition of 10GW by 2030 - CCUS CO₂. Carbon Capture and Storage in Teesside	Institutional forces - Policies - TCT. Disclosure framework for UK organisations - Financial reporting regulations - Scope one, two and three emissions tracking - Legal threats failures to decarbonise - NAO and CCC Stakeholder forces - UK laws: 2009 and 2019 acts - Institutional and ethical investors - Activist groups e.g. Extinction Rebellion - Employees who are net zero and green aware. Attracting and retaining talent - Working with partners who are aligned to net zero ambitions - Net zero, CSR and sustainability: key internal and external subjects Ethical responsibilities - Responsible organisations - Moral and ethical agenda: protecting future generations - Responsible sourcing and recycling	Citizen centred 71% of British citizens support net zero by 2050 (YouGov 2023) - Net zero comes at a cost and the citizen will have to pay e.g. EV cars expensive Renewable electricity green levy - Insulating homes reduces emissions, and improves health - General health benefits from lower air pollution, less meat, more exercise = lower emissions - Green industrial strategy could benefit employment and wealth Agency led - Reducing GHG emissions is a personal responsibility - Whether citizens wish to be dependent on socio factors

Appendix Five Stakeholder groups: Their role and influence in net zero

Stakeholder	Core Role	Net Zero Role	Net Zero Influence
UK National Government	- Set policy - Set fiscal strategy - Finance-raising powers - Allocate and prioritise spending - Target outcomes - Communicate to other stakeholders nationally	- Set policy and strategy - Fulfil legal responsibilities - Ensure cross-department alignment - Allocate finances - Initiate innovative technologies - Encourage private sector - Manage the public narrative	- Significant - High-impact - Can control the multilevel governance agenda - Can ensure high-impact outcomes
Devolved Administrations (DA) (Scotland, Wales, Northern Ireland)	- Set policy - Limited tax-raising powers - Prioritise spending - Target outcomes	- Work with UK Government - Related policy areas e.g. health and transport - Social communication - Reporting	- Prominent levels of local influence - Influence UK strategy - Integrate it into other policy areas - Potential is significant
Local Government	- Deliver statutory responsibilities - Set local policy - Set local priorities - Allocate spending - Target outcomes	- Net zero is NOT a statutory responsibility - Directly accountable local policy - Reduce emissions in e.g. Transport to benefit health - Typically, must bid for finance - Unusual to have dedicated budget	- Medium level - Commission infrastructure projects e.g. electric transportation, housing insulation - Stretched financially - An undervalued resource - the CCC
Arm's Length Bodies including LEPs	- Strategy for local growth - Job creation - Local inward investment - Skills improvement	Their choice as to whether net zero is a core or peripheral priority	Limited but can have specific sector influence
Climate Change Committee Institution	Accountable to parliament. Hold UK & DA to account	- Produce carbon budgets - Assess progress and report to parliament	- Significant statutory powers - Selectively ignored
Large Corporates	- Stakeholder economic return - Social Purpose - Provide economic and social benefits e.g. employment and tax	- Legally responsible for emissions (turnover dependent) - Scope one, two and three emissions management - CSR and ethical responsibilities to environment and stakeholders	- Significant - High-impact. Choices concerning raw material sourcing, supply chain, management, and consumer proposition
SMEs	- Stakeholder economic return - Social Purpose - Provide economic and social benefits	- Voluntary management of emissions (turnover dependent) - Scope one, two and three emissions management - CSR and ethical responsibilities	- Within their context and size, high-impact - Lower levels of power and influence

NGOs	• Delivery agents for Government • Social purpose led • Frame moral agenda	• Highly dependent on size and resources • Can be strong advocates of others' wrongdoings	• Can have disproportionate influence relative to size.
Lobby Groups	• Conveyors of other agenda • Representation to institutions, influence policy	• Coordinate and focus on specific challenges e.g. recycling or emissions reduction	• Elevated levels of influence should they choose to focus on the net zero agenda
Activist Groups	• Single topic focus	• Have immense power and influence • Elevated level of passion and tenacity • Strong at communication drawing attention to the issue	• Prominent levels of influence, disproportionate to size
Citizens	• Living as citizens • Building community • Working and spending earnings	• Individual choice as to level of engagement • Responsibility to planet • Manage personal emissions	• As an individual, limited, but as a wider activist community, significant

Appendix Six Stakeholder groups: Role characteristics

[These words have been derived from the interview transcripts and the author's interpretations]

Stakeholder Group	General Role Characterisation and Description	Specifically in Context of Net Zero
National Institutions. Government/MPs	Enforcers, Market creators, Evidence based policy makers, Organisers, Financers, Administrators, Resource allocators, Curators, Incubators, Initiators, Citizen protectors, Governors, Legislators, National leaders, Communicators, Reporters,	Organisers, Financial initiators, Administrators, Resource allocators, National leaders, Citizen Protectors, Legislators, Market initiators, Policy makers, Shapers, Communicators, Growth Agents, Strategists, Pro environmental behaviours (PEB)
Local Government	Local organisers, Resource allocators of distributed finance. Convenors, Clarifiers, Priority setters. Collaborators, Curators, Co-Ordinators, Facilitators, Social improvers, Citizen protectors, Local leaders, Communicators, Implementers, Reporters on Progress	PEB, Local organisers, Resource allocators, Convenors, Social improvers, Local leaders, Communicators, Implementers, Reporters, Change agents, Citizen protectors, Reporters on net zero progress
Arm's Length Institutions e.g. LEPs	Convenors, Resource allocators, Administrators, Job Creators, Industrial strategists, Facilitators, Co-ordinators, Implementers, PEB	PEB, Convenors, Resource Allocators, Job Creators, Strategists, Facilitators, Co-ordinators
Large Corporates	Value creators, Innovators, Executers, Opportunists, Pragmatists, Agenda setters, Collaborators, Environmental Protectors, Futurists, Implementers, Market developers, socially responsible.	Environmental protectors, Value creators, Market developers, Implementers, socially responsible, Communicators, PEB
SMEs	Value Creators, Futurists, Governors, Innovators, Leaders, Builders, Implementers, Job creators	Environmental protectors, Value creators, Market developers, Implementers, socially responsible, Communicators, PEB
Consultancies & Experts	Strategic directors, Opinion formers, Leaders, Information Assemblers, Intellectualists, Facilitators, Visionaries, Curators, Communicators, Change agents, Boundary Spanner	Strategic directors, Opinion formers, Leaders, Information assemblers, Intellectualists, Facilitators, Visionaries, Curators, Communicators, Change agents, Boundary Spanner, PEB
NGOs / Charities	Curators, Protectors, Moralists, Implementers, Social agenda setters, Futurists, Co-ordinators, Convenors, socially responsible, Change agents, Boundary Spanner	Curators, Protectors, Moralists, Implementers, Social agenda setters, Futurists, Co-Ordinators, Convenors, socially responsible, PEB, Change agents, Boundary Spanner.
Peer Group Organisations	Curators, Protectors, Moralists, Implementers, Social agenda Setters, Futurists, Co-ordinators, Policy shapers and formers, Convenors, socially responsible, Change agents, Boundary Spanner	Convenors, Lobbyists, Curators, Communicators, Co-ordinators, Representatives, Opinion leaders, Opinion formers, Consensus formers, Policy shapers and formers, Influencers, Standard setter, PEB, Change agents
Academia	Visionaries, Intellectualists, Information gatherers, Interpreter, Policy shaper, Communicator, Boundary Spanner	Visionaries, Intellectualists, Information Gatherers, Interpreter, Policy shaper, Communicator, Boundary Spanner, PEB
Finance	Financiers, Value creators, Facilitators, Administrators, Resource Allocators, Change agents, Futurists	Financiers, Value Creators, Facilitators, Administrators, Resource Allocators, Change agents, Futurists, PEB

Appendix Seven *Multi-Stakeholder Partnerships literature table*

Authors	Title	Year	Contribution	Summary
(Gray, 1989)	Collaborating: Finding Common Ground for Multiparty Problems	1989	Gray argues that self-interest, although linked to conflict, may yet be perceived as the best incentive for collaboration.	An early book in MSP thinking and the pre cursor of later work by the author. Defines the dynamics of collaboration and details three phases of collaboration problem setting, direction setting, and implementation.
(Wren & Simpson, 1996)	A dyadic model of relationships in organisational buying- a synthesis of research results	1996	The dyadic interaction model is the two-party exchange Relationship and you need to consider both parties in the relationship.	The study reviews previous work and proposes a new model based on others work and their criticism. Their model presents a more sophisticated understanding about the buyer seller relationship and characteristics.
(Salamon, 2002)	The New Governance and the Tools of Public Action: An Introduction	2002	A new way of thinking is required in order to understand the realities of public management and problem solving. That is what this book contributes.	They suggest a new governance approach which is based on the fact that problems are a team sport and that new ways are needed to play the sport. To provide a better handle on their character, the new governance suggests a shift in the "unit of analysis" in policy work from government agencies and individual programs to the generic "tools" that are utilized to address public problems. It is both a political and a management challenge
(Selsky & Parker, 2005)	Cross-sector partnerships to address social issues: Challenges to theory and practice	2005	This article consolidates recent literature on CSSPs to improve the potential for cross-disciplinary fertilization and especially to highlight developments in various disciplines for organisational researchers.	They look at multiple partnerships and isolate the importance of formation, implementation, and outcomes. A number of possible directions for future research on the theory, process, practice, method, and critique of CSSPs are highlighted. The societal sector platform is identified as a

				particularly promising framework for future research.
(Bryson et al., 2006)	The Design and implementation of Cross-Sector Collaborations: Propositions from the Literature	2006	This article focuses on cross-sector collaboration that is required to remedy complex public problems. Based on an extensive review of the literature on collaboration, the article presents a propositional inventory organized around the initial conditions affecting collaboration formation, process, structural and governance components, constraints and contingencies, outcomes, and accountability issues.	They propose a framework to understand CSC: initial conditions, environmental factors, the process, structure and governance, outcomes, and accountabilities. CSC are difficult to create and even more difficult to sustain because so much must be in place and work well for them to succeed. The challenge of designing and implementing effective CSP is daunting
(Waddell & Khagram, 2007)	Multi-stakeholder global networks: Emerging systems for the global common good	2007	Chapter 12 of this book moves beyond states and IGO's as the key management agents of Grand Challenges. This chapter focusses on global multi stakeholder networks as global action networks.	GANs are global governance arrangements defined by five characteristics. They are (1) global;(2) focused upon public good issues;(3) interorganisational networks; (4) bridging agents among diverse organisations; and (5) systemic change agents.
(Mena & Palazzo, 2012)	Input and Output Legitimacy of Multi-Stakeholder Initiatives	2012	This conceptual paper examines the conditions of a legitimate transfer of regulatory power from traditional democratic nation-state processes to private regulatory schemes, such as MSIs.	Democratic legitimacy is typically concerned with input legitimacy (rule credibility, or the extent to which the regulations are perceived as justified) and output legitimacy (rule effectiveness, or the extent to which the rules effectively solve the issues). In this study, we identify MSI input legitimacy criteria (inclusion, procedural fairness, consensual orientation, and transparency) and those of MSI output legitimacy (rule coverage, efficacy, and enforcement), and discuss their

				implications for MSI democratic legitimacy.
(Dentoni et al., 2018)	Harnessing Wicked Problems in Multi-Stakeholder Partnerships	2018	The paper develops an innovative analytical framework that conceptualizes MSPs in terms of 3 governance processes (deliberation, decision-making and enforcement) harnessing 3 key dimensions of wicked problems (knowledge uncertainty, value conflict and dynamic complexity).	Building upon the notion of wicked problems & the literature on governing wicked problems, this paper defines harnessing problems in MSPs as the approach of considering the nature of the problem and of organizing governance processes accordingly.
(Gray & Purdy, 2018)	Collaborating for Our Future: Multistakeholder Partnerships for Solving Complex Problems	2018	This book provides a comprehensive understanding of MSPs, why they are needed, the challenges partners face in working together, and how to design them effectively.	Five essential components of a rigorous definition of collaboration are presented: interdependence among partners, emergence of shared norms, wrestling with differences, respect for different competencies, and assuming joint responsibility for outcomes.
(De Bakker et al., 2019)	Multi-Stakeholder Initiatives on Sustainability: A Cross-Disciplinary Review and Research Agenda for Business Ethics	2019	They show that the scholarly debate rests on three broad themes (the “3Is”): the input into creating and governing MSIs; the institutionalization of MSIs; and the impact that relevant initiatives create.	The paper reveals the theoretical underpinnings of the 3Is and also shows that a number of research challenges related to business ethics remain unaddressed. They address these challenges and suggest how scholars can utilize theoretical insights in business ethics to push the boundaries of the field.
(Gray et al., 2022)	Confronting Power Asymmetries in Partnerships to Address Grand Challenges	2022	They argue that attention to the political landscape, and particularly who has power and who does not, can account for the shortfalls of many partnerships. Theory and practice can improve by considering power dynamics in the institutional field that shapes the context in which partnerships unfold and	They consider four field conditions that differ with respect to the degree of power and alignment of goals among actors in the field. They discuss four trajectories of change originating from each of these field conditions that describe shifts in field-level power or alignment of goals: collaboration, contention, consciousness raising, and

			influences the problems partnerships are designed to affect.	compliance. They explore the dynamics associated with each trajectory to show how fields may shift toward or away from conditions conducive to building and sustaining collaborative partnerships around grand challenges.

Appendix Eight Stakeholder theory literature table

Authors	Title	Year	Contribution	Summary
(Freeman, 1984)	Strategic Management: a stakeholder approach	1984	The book introduced and defined the concept of stakeholders.	Provides a new way of thinking about strategic management. How a corporation can and should set and implement direction by paying attention to stakeholders. The book is wide ranging and provides an important foundation for what follows.
(Donaldson & Preston, 1995)	The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications	1995	The article examines the three aspects of the stakeholder theory and critiques contributions to the literature/ The three aspects of stakeholder theory are mutually supportive and that the normative base of the theory-which includes the modern theory of property rights-is fundamental.	They argue that stakeholder theory is "managerial" and recommends the attitudes, structures, and practices that, taken together, constitute a stakeholder management philosophy. Stakeholder theory has been advanced and justified in the management literature on the basis of its descriptive accuracy, instrumental power, and normative validity. These three aspects of the theory, although interrelated, are quite distinct; they involve distinct types of evidence and argument and have different implications.
(Fineman & Clarke, 1996)	Green Stakeholders: Industry Interpretations and Response	1996	The paper argues that industrial responses to 'green' pressures may fruitfully be explored using a stakeholder framework. However, the common view of an objective configuration of stakeholders is replaced with one that favours an interpretive perspective	Managers are viewed as crucial mediators of stakeholder influence; how they identify, define and construct stakeholders is an important feature of the meaning of greening and an industry's subsequent response. A qualitative study of managers in four UK industries - supermarkets, automobiles, power and chemicals - is reported. the effect of a small number of stakeholders -

				campaigners and regulators - is examined in some detail, distinguished differentially according to their perceived legitimacy and the threat they pose to industry. Also examined is the large group of traditionally powerful stakeholders - customers, creditors, and employees - who fail markedly to impact on industry's greening. the implications of the findings for pro-environmental change and stakeholder theory are discussed.
(R. K. Mitchell et al., 1997)	Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts	1997	This article contributes to a theory of stakeholder identification and salience based on stakeholders possessing one or more of three relationship attributes: power, legitimacy, and urgency. By combining these attributes, they generate a typology of stakeholders, propositions concerning their salience to managers of the firm, and research and management implications.	After an extensive literature review, they propose qualitative classes of stakeholders and how power, legitimacy, and urgency overlap. The one two and three attributes that follow define eight stakeholder typographies. This is really important work.
(Gibson, 2000)	The Moral Basis of Stakeholder Theory	2000	After over 200 stakeholder articles Gibson tackles the moral case for stakeholders' interests being relevant to business.	He points out three approaches to stakeholder theory: prudence, agency, and deontology and this provides a way to distinguish between competing stakeholder claims.
(Driscoll & Starik, 2004)	The Primordial Stakeholder: Advancing the Conceptual Consideration of Stakeholder Status for the Natural Environment	2004	The article furthers the argument for a stakeholder theory that integrates into managerial decision-making the relationship between business organisations and the natural environment. They develop a fourth attribute to Mitchell and Woods's work - that of proximity.	The authors provide a stronger basis for arguing for the salience of the natural environment as the primary and primordial stakeholder of the firm.

(Lukes, 2005)	Power. A Radical View.	2005	Lukes's book develops the three-dimensional view of power based on his work from 30 years previously. Building on Dahl's work he proposes hidden power and the concealment of people's real interests.	Power is radical and political. The book considers the history of power and develops methodological, theoretical and political interpretations of power resulting in defence of his earlier book.
(Reynolds et al., 2006)	Stakeholder theory and managerial decision-making: Constraints and implications of balancing stakeholder interests	2006	The article looks at individual management decisions and how by using stakeholder theory managerial decisions are based on stakeholder interests.	Using stakeholder theory as our basis, they assumed that managers are interested in and motivated to balance stakeholder interests, but that certain factors constrain their efforts to do so. The results of the study suggested that resource divisibility and relatively unequal levels of stakeholder saliency indeed, constrain managers from balancing stakeholder interests, but the mere fact that one set of stakeholders were owners of the company did not influence this process. The findings further suggested that resource divisibility impacts whether a manager will try to balance stakeholder interests with a within-decision approach or an across decision-approach.
(Wood et al., 2021)	Stakeholder Identification and Salience After 20 Years: Progress, Problems, and Prospects	2021	To contribute to the continuing challenge of explaining how managers identify stakeholders and assess their salience, in this article, we chronicle the history, assess the impact, and evaluate the possibilities opened by Mitchell, Agle, and Wood.	Their work analyses the MAW work and then proposes developments. They have noted also that the stakeholder conceptualization of the firm depends in great measure on the perceptions of managers, because despite the factual importance of stakeholders for any corporation, managers may or may not accurately perceive who their stakeholders are and whether/how

				they are important or salient; managers can, therefore, be unaware of or inaccurately interpret some noncontractual claims and harms. From the perspective of a manager, then, this hierarchical perception, as it has repeatedly been expressed to engagement with managers, means “profits first, then whatever else.” From the perspective of society, however, the super connected nature of participants within the present business environment means that mismanaging stakeholder relationships particularly ignoring harms to involuntary stakeholders can result in substantial and lasting damage to those stakeholders and to society.
(Freeman et al., 2020)	Tensions in Stakeholder Theory	2020	They argue that many of the tensions are more apparent than real, representing different narratives about stakeholder theory, strategic management, business, and ethics.	They argue that some of the tensions may, instead, provide interesting ways to put the two areas of scholarship and practice together. They maintain that SM and stakeholder theory could mutually benefit from a more pragmatist philosophy.
(Freeman et al., 2021)	Stakeholder Theory and the Resource-Based View of the Firm	2021	The article proposes that although the RBV has become a leading paradigm in the strategic management field, in its current form it is incomplete. They suggest there are four aspects that stakeholder theory can offer to inform RBV: normativity, sustainability, people, and cooperation.	Reconciling stakeholder theory and RBV is a promising path to advancing the understanding of management, They provide a two-part guideline to scholars and practitioners 1) It is important to build sustainable stakeholder relationships because stakeholders enable a firm to exist because stakeholders are vital to the survival and success of the firm

				and because it is simply the right thing to do from an ethical perspective 2. Using the resource-based perspective of the firm is a powerful framework to build sustainable stakeholder relationships and to help a firm succeed.

Appendix Nine *Institutional theory literature table*

Authors	Title	Year	Contribution	Summary
(J. W. Meyer & Rowan, 1977)	Institutionalised Organisations: Formal Structure as Myth and Ceremony	1977	Organisational structures are created and made more elaborate with the rise of institutionalized myths, and, in highly institutionalized contexts, organisational action must support these myths. But an organization must also attend to practical activity. The two requirements are at odds. A stable solution is to maintain the organization in a loosely coupled state.	Many formal organisational structures arise as reflections of rationalised institutional rules. The elaboration of such rules in modern states and societies accounts in part for the expansion and increased complexity of formal organisational structures. Institutional rules function as myths which organisations incorporate, gaining legitimacy, resources, stability, and enhanced survival prospects. Organisations whose structures become isomorphic with the myths of the institutional environment in contrast with those primarily structured by the demands of technical production and exchange-decrease internal coordination and control in order to maintain legitimacy. Structures are decoupled from each other and from ongoing activities. In place of coordination, inspection, and evaluation, a logic of confidence and good faith is employed.
(Dimaggio & Powell, 1983)	The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organisational Field	1983	What makes organisations so similar? They contend that the engine of rationalisation and bureaucratisation has moved from the competitive marketplace to the state and	They believe there is much to be gained by attending to similarity as well as to variation among organisations and, in particular, to change in the degree of homogeneity or

			the professions. Once a set of organisations emerges as a field, a paradox arises: rational actors make their organisations increasingly similar as they try to change them. They describe three isomorphic processes-coercive, mimetic, and normative leading to this outcome. They hypothesise about the impact of resource centralisation and dependency, goal ambiguity and technical uncertainty, and professionalization and structuration on isomorphic change.	variation over time. Our approach seeks to study incremental change as well as selection. The foci and motive forces of bureaucratization (and, more broadly, homogenization in general) have changed since Weber's time. But the importance of understanding the trends to which he called attention has never been more important.
(W. R. Scott, 1994)	Institutional environments and organisations: Toward a theoretical synthesis	1994	The book promotes the importance of institutional theory to the organisation. He theoretically and conceptually clarifies the connection.	He believes that institutional theory is the best lens through which to view the organisation. The dynamics of regulation and freedom. The control structures and rules, the differences and the similarities and the culture are all examined.
(Dacin et al., 2002)	Institutional Theory and Institutional Change: Introduction to the Special Research Forum	2002	They provide an overview on over 75 contributions for review. They found that that institutions change over time, are not uniformly taken for granted, have effects that are particularistic, and are challenged as well as hotly contested. They acknowledge that although institutions serve both to powerfully drive change and to shape the nature of change across levels and contexts, they are also themselves change in character and potency over time.	It is hard to summarise the extent of the work as it is so expansive, but their conclusion was that 'the articles accepted for this special research forum contribute to knowledge of institutional theory and institutional change. They do so from a theoretical perspective as well as from a methodological one, given the variation they offer in terms of methodology. They also leave institutional scholars, with a set of new directions and a host of unanswered questions.

(Ansari et al., 2013)	Constructing a climate change logic: An institutional perspective on the "tragedy of the commons"	2013	Institutional examination of climate change at a transnational level and explains how commons logic – field level logic socially constructed by actors – develops and changes. Secondly demonstrating that actors move from individual to collective responsibility.	Over a 40-year period they track the emergence of climate change actor framing logics that work to a consensus to avoid the 'tragedy of the commons'. The emergence of 'commons logic' in a transnational field is a non-linear process. Actors view their actions as interconnected, recognise their own behaviours as contributing to the problem and that collective action is necessary.
(Hoffman & Devereaux, 2015)	Institutional Theory and the Natural Environment: Research in (and on) the Anthropocene	2015	The article is focused on providing avenues researching the Anthropocene Era. Second, while based on the trajectory of current, accumulated theory and research, the review is forward-looking in its orientation and thus aimed at guiding future work to explore the emergence of a new social reality in Anthropocene Society.	They begin by summarizing the scientific research on the Anthropocene Era, then move to its implications for grand and midrange institutional theory principles, and of institutional principles. They end with a call to reenergize and radicalise the organization and the natural environment field to properly address the magnitude and scope of this shift to the Anthropocene.
(Jennings et al., 2016)	Working Paper Institutional Theory and the Natural Environment: Building Research through Tensions and Paradoxes	2016	The chapter is enquiring about the fruitful tensions and paradoxes between combining institutional theory and the natural environment.	At the grand theory level, debate and tension allow for multiple theoretical approaches to develop, while avoiding the hegemony by any particular perspective. Vigorous debate among multiple approaches clarifies paradigms and exposes possible new combinations among them. At the mid-range level, debate about concepts and their relations is fundamental to better model building, and that debate can be enhanced by having to wrestle with multiple inconsistencies. They present the ontological, epistemological and normative tensions and paradoxes.

(Abdelnour et al., 2017a)	Agency and Institutions in Organization Studies	2017	Agency and institutions are essential concepts within institutional theory. The analysis leads the authors to dissociate agency from individuals and view it as a capacity or quality that stems from resources, rights and obligations tied to the roles and social positions actors occupy. Roles and social positions are institutionally engineered. It is social actors of roles and positions (not individuals) that enter the social 'stage' and exercise agency.	They draw on a select group of Organization Studies articles to provide an overview of the topic of agency and institutions. They consider diverse ways of defining agency and institutions and examine their implications for institutional theory. They analyse the relationship of actors and institutions through four lenses – the wilful actor, collective intentionality, patchwork institutions and modular individuals.
(Alvesson & Spicer, 2019)	Neo-Institutional Theory and Organization Studies: A Mid-Life Crisis?	2019	They show how IT has evolved from infancy, through adolescence and early adulthood to being a fully mature theory, which we think is now facing a mid-life crisis. Some of the features of this mid-life crisis include over-reach, myopia, tautology, pseudo-progress and re-inventing the wheel.	To address these problems, the authors argue that institutional theorists should limit the range of the concept, sharpen their lens avoid tautologies and problematize the concept. By doing this, they think institutional theorists could develop a narrower and more focused conception of institutions.
(Munir, 2020)	Challenging Institutional Theory's Critical Credentials	2020	Institutional theory's claim to be critical rings hollow. Not only does the theory lack an emancipatory agenda but most institutional studies privilege agentic power over hegemonic. Even when engaging with 'grand challenges' institutional theorists are inclined to overlook larger structures of domination in favour of focusing on smaller, more manageable issues. As a result, institutional theorists run the risk of becoming complicit in the reification and legitimation of structures of domination. A process of self-critique must be initiated in order to recognize the role institutional theory is playing in this process.	In order to become critical, institutional theory needs a rebirth, with its emphasis shifting from creative institutional work to the hegemonic operation of power and perpetuating power differentials. Engaging with Grand Challenges from a conservative position, armed with a theory claiming to be neutral and objective, will not lead to progress, let alone criticality. Relinquishing power, however, will mean allowing space for radical voices within institutional theory, which engage with grand challenges from more critical positions.

(Maier & Simsa, 2021)	How actors move from primary agency to institutional agency: A conceptual framework and empirical application	2021	By examining a Spanish case study, they demonstrate how actors move from having primary agency to having institutional agency and the role that organising, and organisations have in this process.	Understanding actors and agency in the theorisation of institutional work. They analyse institutional work as a specific kind of social action that involves exercising institutional agency (centred on the institution) as opposed to primary agency (taking institutions for granted). A conceptual framework for combining a view of actors, who have agency and may engage in institutional work, with a view of actors as socially constructed, in line with critical-realist ontology

Appendix Ten *Boundary Spanner literature table*

Authors	Title	Year	Contribution	Key Points
(Aldrich and Herker, 1977)	Boundary Spanning Roles and Organization Structure	1977	One of 1 st to detail a boundary spanner. Link environmental characteristics with organisational structure.	Eleven hypothesis that needed further investigation. The Boundary Spanner can provide legitimacy. Organisational responses to the environment is a disaggregated one.
(Lipsky, 1980)	Street Level Bureaucracy: Dilemmas of the Individual in Public Services	1980	How public service workers function in effect as policy decision makers. They wield considerable discretion in the day-to-day implementation of public programs.	Drew attention to the power and influence of street level workers. They have influence but inadequate resources. They have to ration and make many decisions
(Williams, 2002)	The Competent Boundary Spanner	2002	Details the major factors that influence the effective collaboration of key agents managing inter organisational theatres. Provided real focus on the agents and a framework of competence-based variables that influence engagement	Delivers focus on the agents rather than the institutions. Details skills and competences. How they engage with groups.
(Bryson et al., 2006)	The design and implementation of cross-sector collaborations: Propositions from the literature	2006	A set of propositions under which CSCs can operate. Do not rely on them succeeding.	Framework for understanding CSC. Managing conflict through to delivery
(Williams, 2013)	We are all boundary spanners now	2013	Discusses the roles and competencies of boundary spanners in the context of collaboration. Provides practical implications for training and development of the Boundary Spanner.	There are several types of Boundary Spanner with distinct roles. They have a great challenge dealing with tensions.
(van Meerkerk, 2014)	Boundary Spanning in Governance Networks A study about the role of boundary spanners and their effects on democratic throughput legitimacy, performance of governance networks	2014	Thesis on the interconnectedness of Boundary spanners in Governance Networks. Details the critical role that the Boundary Spanner needs to play by public managers in governance networks.	Boundary Spanners are important. They are necessary in complex public organisations. They can improve network performance. They emerge from the private rather than the public sector
(van Meerkerk & Edelenbos 2017)	Facilitating conditions for boundary-spanning behaviour in governance networks	2017	Comprehensive understanding of boundary spanners in the context of public management and governance.	Boundaries are not structural but also cultural and functional. If they are key there is a need to find ways to support them.

(van Meerkkerk & Edelenbos, 2018)	Boundary spanners in public management and governance: an interdisciplinary assessment	2018	Provide a comprehensive understanding about the Boundary Spanner in context of public management and governance	Seven chapters of insights into the Boundary Spanner. Details their evolution, their activities and their impact.
(Goodrich et al., 2020)	Who are boundary spanners and how can we support them in making knowledge more actionable in sustainability fields?	2020	Greater acknowledgement & professionalization of boundary spanning will improve the use of science in practice and knowledge to action.	Need more boundary spanning and co-production of knowledge to increase use of science in solving sustainability problem

Appendix Eleven Quantitative questions

Organisational Responses to Net Zero by 2050 and the Role of Partnerships.

* Required

Introduction and Welcome to the Study

Dear Participant,

I invite you to contribute to this research study. It will take approximately 7 minutes of your time.

I am investigating the important and demanding policy target of Net Zero by 2050 in the UK (Net Zero). This is a UK Government policy that aims to deliver a 100% reduction in greenhouse gas emissions versus 1990 levels by 2050.

This study is aiming to develop new insights into how organisations can tackle Net Zero and the importance of partnerships in the decarbonisation process. I am interested in your opinions, and there are no right or wrong answers.

Following a brief introduction, and your agreement to participate in the study, the questionnaire explores three areas. Firstly, you will be asked a few questions about your organisation and your role in the organisation. Secondly, there are a range of questions about what you understand by Net Zero and what it means for your organisation. Finally I am interested in the role of partnerships in your organisation and how they may assist the challenges of Net Zero.

Your views are appreciated and they will make a valuable contribution to how the UK delivers its Net Zero ambition. All responses are anonymous, unless you explicitly offer your consent to be contacted about involvement in the second stage of this project, which will involve one to one interviews.

Your further involvement would be most appreciated.

The data collected through this online study will be analysed and integrated into a final report, and may be presented at academic or professional conferences, and published more widely.

Thank you for your time.

David Durie

Doctoral Student, University of Derby, UK.



Your Consent

1. Consent to Participate *

Please Confirm

I confirm that I
am an adult.

☐

I confirm I have
read the
participant
information and
understand the
nature of the
proposed
research.

☐

I understand
that I will
generate a
Unique
Identifier
Number (UIN).
This will be the
only way to
identify my
data, unless I
am willing to
participate
further in the
study, when I
will supply my
email address
willingly.

☐

I confirm I am
happy to be a
participant in
this research.

☐

Ethical Information.

2. Research Ethics Information

The information that you supply for this study will be held and processed in accordance with the all legal data General Data Protection Regulation (GDPR) regulations post EU Exit, which comprise the Data Protection Act 2018 and the new "Data Protection, Privacy and Electronic Communications (Amendments etc) (EU Exit) Regulations 2019". Personal data and confidentiality will always be respected and protected.

The data will be anonymised and no one response will be identifiable. Research outputs may be shared externally in publications or conferences as part of this research project.

This project has been approved by the Business, Law and Social Sciences Research Ethics Committee at the University of Derby on 10.11.2022.

You can withdraw from the study within 21 days of providing data by communicating with the researchers and providing the self-generated unique identifier below. All data and information relating to the individual requesting withdrawal will be deleted.

The data from consenting participants will be retained for up to ten years as per our research privacy notice. Detailed information on how we handle your information can be found on our website - <https://www.derby.ac.uk/about/data-governance/privacy-notices/research/>

If you have any concerns about Data Protection you can email gdpr@derby.ac.uk

The information you provided will be kept confidential and anonymised, and used for the research purpose only, and the data will be kept for education purposes only.

If you later decide that you wish to withdraw from the study, please email me with your unique identifier number (UIN) in the subject line at [REDACTED] before 31st December 2023, and I will be able to remove your response from my analysis and findings and destroy your response.

Please detail below the last 4 digits of your telephone number. This will be your Unique identifier Number (UIN) *

My Questions

Please Complete the the following tick box questions. It should take approximately 7-8 minutes.

3. In the last **18** months have **YOU OR YOUR ORGANISATION** worked on a project concerned with Net Zero, decarbonisation or climate change ? *

☐ Yes

☐ No

4. What **TYPE OF ORGANISATION** do you work for. Please select from the following list *

☐ National Government

☐ Local Government

☐ Local Enterprise Partnership

☐ Large Business or Corporate

☐ Small or Medium Sized Business

☐ Financial Institution or Service

☐ NGO

☐ Charity

☐ Education

☐ Other

5. What is the **SIZE** of your Organisation (Number of Employees or Full Time Equivalents) *

☐ < 10

☐ 11 - 49

☐ 50 - 250

☐ > 250

6. Your **FUNCTIONAL LEVEL** within your organisation. Please select from the following list *

- ☐ Chair
- ☐ Chief Executive / CEO
- ☐ Chief Operating Officer / COO
- ☐ Department Director
- ☐ Department Manager
- ☐ Manager / Leader
- ☐ Other

7. **Your Sector.** Please advise **broadly what sector** does your organisation work in. *

8. Please indicate you **FUNCTIONAL RESPONSIBILITY** within your organisation. Please Select from the following list (Maximum of Two) *

Please select at most 2 options.

- ☐ Board
- ☐ Finance
- ☐ Commercial
- ☐ Operations / Supply Chain
- ☐ Engineering
- ☐ Strategy and Policy
- ☐ Project Delivery
- ☐ Sustainability / Net Zero
- ☐ Other

9. Please advise your organisation's **OPERATING GEOGRAPHY or LOCATION** (Maximum of 2) *

Please select at most 2 options.

- ☐ UK Wide
- ☐ International
- ☐ Derbyshire
- ☐ Nottinghamshire
- ☐ London and South East
- ☐ South West
- ☐ West Midlands
- ☐ North of England
- ☐ Scotland / Wales / Northern Ireland
- ☐ Other

10. Please give **YOUR OPINIONS** about Net Zero and what it means for **YOUR ORGANISATION**.

Please rate the following statements from Highly Agree to Highly Disagree. *

	Highly Agree	Agree	Neutral	Disagree	Highly Disagree
Net Zero is the same as CLIMATE CHANGE	☐	☐	☐	☐	☐
Net Zero is about SAVING ENERGY	☐	☐	☐	☐	☐
Net Zero is a key issue for SOCIETY	☐	☐	☐	☐	☐
Net Zero could be called a CRISIS	☐	☐	☐	☐	☐
Net Zero could be called a GRAND CHALLENGE	☐	☐	☐	☐	☐
Net Zero is an ECONOMIC PRIORITY for the UK	☐	☐	☐	☐	☐
I am clear HOW the UK Government will achieve Net Zero	☐	☐	☐	☐	☐
I am clear what part LOCAL Government will play in DELIVERING Net Zero	☐	☐	☐	☐	☐
Net Zero is a 30-YEAR CHALLENGE so we have PLENTY OF TIME to resolve	☐	☐	☐	☐	☐
Net Zero in the UK will be ACHIEVED by 2050	☐	☐	☐	☐	☐
Net Zero is about PROTECTING future generations	☐	☐	☐	☐	☐

11. Please **REFLECT** on **YOUR ORGANISATION'S** response to the Net Zero by 2050 policy. Please rate the following statements from Highly Agree to Highly Disagree. *

	Highly Agree	Agree	Neutral	Disagree	Highly Disagree
Net Zero is a STRATEGIC PRIORITY for my organisation	☐	☐	☐	☐	☐
Net Zero is a subject that get discussed frequently at BOARD LEVEL	☐	☐	☐	☐	☐
Net Zero is important to our KEY EXTERNAL stakeholders	☐	☐	☐	☐	☐
What Net Zero demands EXCEEDS my organisation's skills and resources	☐	☐	☐	☐	☐
My organisation needs to work with EXTERNAL PARTNERS on Net Zero Projects	☐	☐	☐	☐	☐
Net Zero is a COST for my organisation	☐	☐	☐	☐	☐
Net Zero is a COST SAVING OPPORTUNITY for my organisation	☐	☐	☐	☐	☐
Net Zero is changing my organisation's BEHAVIOURS and how we THINK	☐	☐	☐	☐	☐
Net Zero is changing OUR CUSTOMER'S BEHAVIOURS	☐	☐	☐	☐	☐
Net Zero is so important we would consider partnering with our COMPETITORS to tackle its challenges	☐	☐	☐	☐	☐
Net Zero is a source of competitive advantage for my organisation	☐	☐	☐	☐	☐
Net Zero is MORE IMPORTANT to the organisation that it was 12 months ago	☐	☐	☐	☐	☐
My organisation has discussed Net Zero with NATIONAL OR LOCAL GOVERNMENT	☐	☐	☐	☐	☐

12. Finally thinking about **PARTNERSHIPS and NET ZERO**, please give your **OPINIONS**. Please rate the following statements from Highly Agree to Highly Disagree. *

	Highly Agree	Agree	Neutral	Disagree	Highly Disagree
Partnerships are a KEY OPERATING PRINCIPLE for our organisation	☐	☐	☐	☐	☐
Generally WORKING WITH PARTNERS helps us deliver projects FASTER	☐	☐	☐	☐	☐
Generally working with partners is a POSITIVE EXPERIENCE	☐	☐	☐	☐	☐
Partnership arrangements have INCREASED over the last 12 - 24 months	☐	☐	☐	☐	☐
Generally working with partners makes projects MORE COST EFFECTIVE	☐	☐	☐	☐	☐
Finding LIKE-MINDED partners is challenging	☐	☐	☐	☐	☐
Partnerships are KEY to the DELIVERY of Net Zero	☐	☐	☐	☐	☐
Net Zero Partnerships ARE NECESSARY because no single organisation has all the skills or resources to have impact on Net Zero	☐	☐	☐	☐	☐
Net Zero Partnerships are a good idea but just TOO HARD to manage	☐	☐	☐	☐	☐
Net Zero Partnerships need to be facilitated by LOCAL GOVERNMENT	☐	☐	☐	☐	☐

13. If you are happy to be contacted in future by David @ the University of Derby to discuss this research in more detail, please indicate below, complete your details and I will be in touch:

☐ Yes

☐ No

14. Please enter your email address and first name here:

Thank you for taking part in this survey.

Unfortunately on this occasion you do not meet the sector knowledge criteria necessary to take part in the survey.

However should you need to contact me, please do so through one of the methods shown below.



Appendix Twelve Semi-structured interview discussion guide

Qualitative Research Study. David Durie		
Interview Topic Guide.		
A study of understanding, expectations, and engagement with the UK's "Net Zero by 2050" policy initiative: A multiple-stakeholder perspective.		
Introductions and Study Overview (15mins)	Initial Introductions. Please tell me about yourself, your role in the organisation.	
	Short overview about me and the study's aims and objectives	
	Who are your Key Stakeholders and what are their direct influence on your organisation. How do you prioritise them and how do you engage with them and manage their needs and demands.	
	How to you engagement with national, local government, or the D2N2 LEP. General discussion	
	What do you understand by the Net-zero by 2050 policy and what does it mean for your organisation ?	
Net Zero as a Grand Challenge ((20mins)	Net zero as an economic, social/moral or source of competitive advantage project – Please discuss.	
	Net zero decarbonisation projects – organisational responses and ability to deliver. Policy vs practice.	
	Deeper dive into net-zero as a Grand Challenge. What does a Grand challenge make you think of ? A GC as a way of thinking differently. A GC as a new problem-orientated / impact-focussed approaches to difficult organisational challenges. Net Zero's aims and objectives. Is it a cost or competitive advantage, How do stakeholders view it – difference between internal and external ones.	
	Partnerships and net zero. Discuss	
Theoretical Exploration (20mins)	Practical exploration into stakeholders and exploration about stakeholder theory.	
	Practical exploration about institutional theory	
	Having explained both concepts I would like to discuss how stakeholder theory and institutional theory relate to your organisation. Then to discuss how they relate to net-zero and how best to use them and deploy them when undertaking a net zero project.	
Multi Stakeholder Partnerships (MSPs) 20mins	Explore partnerships in more detail. Deep dive into multi stakeholder partnerships. Connection to stakeholders and institutions. Please tell me about partnerships and their role in your organisation.	
	Organisational responses to MSPs. How you manage them, their conflicts, how they are led, the costs vs rewards. Speed and benefits. How partners are identified	
	The role of MSPs in project where one actor cannot deliver results on their own. Net zero as an example a complex social project.	
	Tying back to Net Zero	
How to Manage complex projects	Who manages partnerships and complex projects. What do they call them, what skills and traits do they need to have, what are their challenges, how do they deliver ?	

and Partnerships (15mins)	Role Titles. Exploring the different titles and moving into the area of Boundary Spanners. How and what they are different and important. Do they see the benefits and appropriateness especially in complex social projects such as Net-zero. Their important in complex projects	
	Their contribution to MSPs	
The Future (10mins)	What would the future look like on Net Zero projects in perfect world for business like yours, support from national Government, local Government, and stakeholders	
	Role of MSPs – forecast the future and think creatively if time.	
	Role of BSs – creative ideation if time.	
Close	Round up. Thank you. Potential follow up. Assess interest in focus groups.	

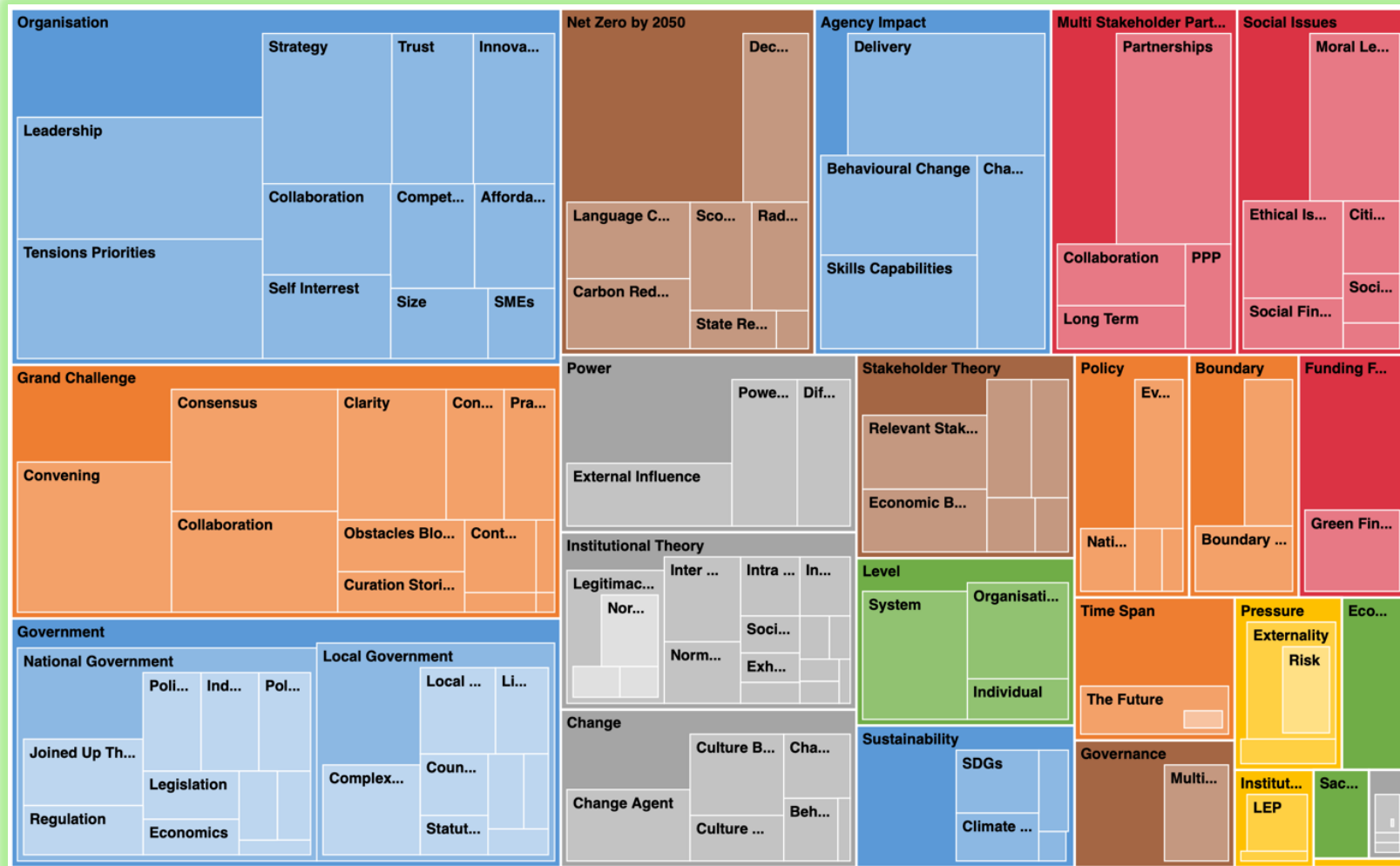
Organisation's partnerships. What are they, impact, and their importance

Question areas that will be different depending on type of organisation.

- 1) **National Gov.** Policy development. Engagement with Local Authorities and LEPS. Policy vs delivery. Significant time on delivery with business. MSPs and Net Zero
- 2) **Local Authorities.** Policy engagement with National Gov. Delivery of net zero. LEP and the culture; risk averse, business sets agenda, funding. Boundary spanners and their role. UA/LEP reorganisation.
- 3) **D2N2.** Culture profile and who sets and leads. Partnerships and net zero. Net zero and its strategic fit. Leadership of the Net zero agenda by D2N2. The new world post 2022 of UA/LEP integration and how it will impact on Net zero and partnerships. Boundary spanning role.
- 4) **Large Businesses.** Balancing their multinational parent agenda on net zero vs the local need. Multi-level organisational responses to net zero. Global. National, Local.
- 5) **Education.** How to influence, how to educate in Business, leading best practice, outreach. Boundary Spanners.
- 6) **Local Society.** How to have impact. How to be a partner and get involved. Net zero agenda setting in local society. Protest vs making a positive impact. Citizen moral future generations agenda

Appendix Thirteen Microsoft Excel quantitative data sheet

Please advise your organisation's OPERATING GEOGRAPHY or LOCATION (Maximum	Net Zero is the same as CLIMATE CHANGE	Net Zero is about SAVING ENERGY	Net Zero is a key issue for SOCIETY	Net Zero could be called a CRISIS	Net Zero could be called a GRAND CHALLENGE	Net Zero is an ECONOMIC PRIORITY for the UK	I am clear HOW the UK Government will achieve Net Zero	I am clear what part LOCAL Government will play in DELIVERING Net
International;	Disagree	Disagree	Agree	Agree	Disagree	Neutral	Neutral	Neutral
International;France;	Agree	Agree	Highly Agree	Disagree	Agree	Agree	Disagree	Neutral
UK Wide;	Highly Disagree	Disagree	Highly Agree	Neutral	Neutral	Agree	Highly Disagree	Highly Disagree
London and South East;International;	Highly Disagree	Disagree	Highly Agree	Highly Agree	Highly Agree	Neutral	Disagree	Agree
UK Wide;	Disagree	Agree	Disagree	Agree	Agree	Neutral	Neutral	Disagree
UK Wide;International;	Highly Disagree	Highly Agree	Agree	Highly Agree	Agree	Agree	Highly Disagree	Neutral
International;United States;	Neutral	Agree	Agree	Neutral	Agree	Neutral	Neutral	Neutral
UK Wide;	Neutral	Agree	Highly Agree	Neutral	Agree	Neutral	Disagree	Disagree
International;UK Wide;	Disagree	Agree	Highly Agree	Highly Agree	Highly Agree	Highly Agree	Disagree	Highly Disagree
UK Wide;	Disagree	Neutral	Agree	Highly Agree	Highly Agree	Highly Agree	Disagree	Highly Disagree
London and South East;	Disagree	Agree	Highly Agree	Highly Agree	Highly Agree	Highly Agree	Disagree	Highly Disagree
International;West Midlands;	Highly Disagree	Highly Agree	Highly Agree	Highly Agree	Agree	Disagree	Disagree	Disagree
London and South East;	Disagree	Agree	Highly Agree	Highly Agree	Agree	Highly Agree	Disagree	Disagree
International;	Disagree	Disagree	Disagree	Highly Disagree	Agree	Disagree	Disagree	Neutral
UK Wide;Europe;	Highly Disagree	Disagree	Highly Agree	Agree	Highly Agree	Agree	Disagree	Highly Disagree
UK Wide;	Neutral	Agree	Highly Agree	Highly Agree	Highly Agree	Highly Agree	Highly Disagree	Highly Disagree
London and South East;	Disagree	Agree	Highly Agree	Disagree	Highly Agree	Highly Agree	Disagree	Disagree
UK Wide;	Disagree	Agree	Highly Agree	Highly Agree	Highly Agree	Neutral	Highly Disagree	Highly Disagree
UK Wide;	Neutral	Highly Agree	Highly Agree	Highly Disagree	Highly Agree	Agree	Highly Disagree	Agree
Republic of Ireland ;	Neutral	Agree	Agree	Agree	Agree	Neutral	Neutral	Disagree
International;	Agree	Neutral	Agree	Neutral	Neutral	Neutral	Disagree	Neutral
International;	Disagree	Agree	Highly Agree	Agree	Neutral	Highly Agree	Highly Disagree	Disagree
International;UK Wide;	Disagree	Agree	Highly Agree	Agree	Agree	Disagree	Disagree	Disagree
Austria, Europe, pre-accession countries	Disagree	Agree	Agree	Disagree	Highly Agree	Neutral	Neutral	Neutral
International;	Disagree	Disagree	Agree	Agree	Agree	Highly Agree	Neutral	Neutral
International;	Disagree	Agree	Agree	Disagree	Agree	Agree	Disagree	Disagree
International;	Highly Disagree	Agree	Agree	Highly Agree	Highly Agree	Agree	Highly Disagree	Disagree
Nottinghamshire;	Disagree	Agree	Neutral	Disagree	Agree	Neutral	Neutral	Agree
Derbyshire;Nottinghamshire;	Agree	Agree	Agree	Agree	Disagree	Agree	Disagree	Disagree
International;	Disagree	Agree	Highly Agree	Neutral	Highly Agree	Agree	Neutral	Disagree
UK Wide;	Agree	Agree	Agree	Agree	Agree	Highly Agree	Disagree	Disagree
UK Wide;	Agree	Neutral	Agree	Highly Agree	Highly Agree	Highly Agree	Highly Disagree	Highly Disagree
Nottingham City;	Highly Disagree	Highly Disagree	Highly Agree	Highly Agree	Highly Agree	Highly Agree	Highly Disagree	Highly Agree
Us and uk;	Highly Agree	Agree	Highly Agree	Highly Agree	Highly Agree	Agree	Highly Disagree	Highly Disagree
Derbyshire;	Highly Disagree	Agree	Agree	Agree	Agree	Neutral	Screenshot	Agree



Appendix Fifteen Nvivo: Coding references

NVIVO
Video Interview...tro.nvpx (Saved)

IMPORT

- Data
 - Files
 - File Classifications
 - Externals

ORGANIZE

- Coding
 - Codes
- Cases
- Notes
- Sets

EXPLORE

- Queries
- Visualizations

Home
Edit
Import
Create
Explore
Share
Modules

Last Run Query
Text Search
Word Frequency
Matrix Coding Query
Queries

Chart
Hierarchy Chart
Maps
Diagrams

Name	Files	References	Created on	Created...	Modified on	Modified by	Color
○ Moral Leadership	17	34	3 Oct 2023 at 10:19	DD	10 Nov 2023 at 14:...	DD	
○ Ethical Issues	13	21	3 Oct 2023 at 10:19	DD	10 Nov 2023 at 14:...	DD	
○ Citizen Engagement	9	10	4 Oct 2023 at 06:24	DD	10 Nov 2023 at 11:36	DD	
○ Social Norms	6	7	8 Nov 2023 at 17:01	DD	10 Nov 2023 at 14:...	DD	
○ Social Finance	5	11	3 Oct 2023 at 13:17	DD	10 Nov 2023 at 14:...	DD	
○ Citizen Choices	3	3	3 Oct 2023 at 16:47	DD	4 Oct 2023 at 11:09	DD	
○ Economic vs Social	15	21	4 Oct 2023 at 06:41	DD	10 Nov 2023 at 10:...	DD	
✓ ○ Policy	15	20	3 Oct 2023 at 10:17	DD	10 Nov 2023 at 12:...	DD	
○ Evidence Based	11	17	3 Oct 2023 at 10:18	DD	10 Nov 2023 at 14:17	DD	
○ National	6	8	3 Oct 2023 at 10:18	DD	9 Nov 2023 at 17:35	DD	
○ Policy vs Practice	4	4	4 Oct 2023 at 09:13	DD	9 Nov 2023 at 14:56	DD	
○ Global	2	3	3 Oct 2023 at 10:17	DD	9 Nov 2023 at 14:56	DD	
✓ ○ Funding Finance	14	29	30 Aug 2023 at 11:...	DD	10 Nov 2023 at 15:10	DD	
○ Green Finance	13	18	4 Oct 2023 at 06:26	DD	10 Nov 2023 at 14:...	DD	
✓ ○ Change	13	16	29 Aug 2023 at 16:...	DD	10 Nov 2023 at 15:...	DD	
○ Change Agent	14	21	30 Aug 2023 at 11:51	DD	9 Nov 2023 at 17:39	DD	
○ Culture Breaker	13	18	3 Oct 2023 at 09:51	DD	10 Nov 2023 at 13:...	DD	
○ Change Agenda	11	11	3 Oct 2023 at 09:45	DD	10 Nov 2023 at 12:41	DD	
○ Culture Change	10	11	8 Nov 2023 at 15:06	DD	10 Nov 2023 at 15:...	DD	
○ Behaviour	9	9	8 Nov 2023 at 15:07	DD	10 Nov 2023 at 15:...	DD	
○ Methods	3	3	3 Oct 2023 at 10:21	DD	10 Nov 2023 at 10:...	DD	
✓ ○ Governance	13	21	3 Oct 2023 at 12:08	DD	9 Nov 2023 at 17:13	DD	
○ Multi Level	10	16	3 Oct 2023 at 12:09	DD	9 Nov 2023 at 17:13	DD	
✓ ○ Boundary	12	17	29 Aug 2023 at 16:...	DD	9 Nov 2023 at 15:06	DD	
○ Boundary Spanning	15	15	8 Nov 2023 at 15:08	DD	10 Nov 2023 at 15:10	DD	
○ Boundary Spanner	12	17	3 Oct 2023 at 10:44	DD	10 Nov 2023 at 14:...	DD	
✓ ○ Time Span	12	26	3 Oct 2023 at 10:37	DD	9 Nov 2023 at 14:42	DD	
> ○ The Future	13	14	3 Oct 2023 at 09:58	DD	10 Nov 2023 at 11:09	DD	
✓ ○ 5 Cs	8	8	8 Nov 2023 at 15:02	DD	10 Nov 2023 at 15:13	DD	
○ Convening	25	49	8 Nov 2023 at 15:02	DD	10 Nov 2023 at 15:16	DD	
○ Collaboration	24	36	8 Nov 2023 at 15:02	DD	10 Nov 2023 at 15:16	DD	
○ Clarity	21	30	8 Nov 2023 at 15:02	DD	10 Nov 2023 at 15:19	DD	
○ Consensus	21	43	8 Nov 2023 at 15:03	DD	10 Nov 2023 at 15:19	DD	
○ Consistency	10	16	8 Nov 2023 at 15:02	DD	10 Nov 2023 at 15:...	DD	
○ Continuity	8	11	8 Nov 2023 at 15:04	DD	10 Nov 2023 at 15:10	DD	
○ Sacrificies	8	9	3 Oct 2023 at 10:43	DD	9 Nov 2023 at 14:52	DD	
✓ ○ Agency Impact	7	7	3 Oct 2023 at 09:55	DD	10 Nov 2023 at 11:09	DD	
○ Delivery	26	51	3 Oct 2023 at 10:18	DD	10 Nov 2023 at 15:01	DD	
○ Behavioural Change	19	33	3 Oct 2023 at 16:09	DD	10 Nov 2023 at 14:...	DD	
○ Change Agents	15	28	3 Oct 2023 at 09:55	DD	10 Nov 2023 at 15:10	DD	
○ Skills Capabilities	15	31	3 Oct 2023 at 12:03	DD	10 Nov 2023 at 15:01	DD	

123 items selected

Appendix Sixteen Example coded interview

Raw Transcription – with key coding tags in yellow

SPK_1

Good morning. Thank you for your time and agreeing to participate in my PhD research

SPK_2

Hello, Morning. How are you doing, yes, no problem?

We have just being doing a lot of stakeholder customer scoping and research for an online business to understand the product and what people are looking for, but it certainly feels like they are, you know we are looking into the area of understanding biodiversity risks, naturist natural capital, yeah and helping companies kind of get to grips with there and being able to manage it. It's something like in this like guys people thinking about it a lot at the moment, which is helpful

[Stakeholders, Green Finance, Consensus, Behavioural Change, Change Management]

SPK_1

I just have interested in maybe sort of articulating some of those stakeholder pressures, stakeholder requirements and then maybe move on to conversation about when people move into more of an ethical stance and it's more about how to change behaviours and how to get the culture aligned. What you see is maybe the differences between those sort of stakeholder requirements and more the sort of institutional requirements Would be really helpful if you have anything to contribute there.

[Stakeholder management, Collaboration, Ethics, Behavioural Change, Change Management, Cultural Cognition, Types of Institutions]

SPK_2

Yes, totally. I'm just thinking of a good example then to think through. So, if I think of like a recent healthcare project where we were, we were working for a PSA to be healthcare entity and the big global listed company and. They make medical devices and the project I was on is looking at specific business unit and trying to help them understand the environmental impact of their of their medical devices and reduce it really through either the design or the marketing or faculty or distribution. It's quite open at the start of the project. One of the first things I always do in any good sort of change project or design thinking project, which is my methodology, I will do a bunch of stakeholder engagement and that takes the form of mapping, like you build just sort of concentric circle and you know who's got the most influence and all that sort of stuff and then.

[Stakeholder Engagement, Environmental Issues, Curating, Change Management]

SPK_2

What I tend to find is. That I need to I need to sort of build this this picture of people who can who first understand the specific challenges like from within the business like. And quite frequently they know what they have to do. They quite frequently would know and prove the recyclability of the product. We need to do this or to improve the waste or to reduce the cost or whatever. They've sort of tend to know they are at least some pretty strong hypothesis of what changes might need to be made. It's usually sort of blindingly clear to most people at all levels, like of the external pressures be they.

[Stakeholder prioritisation, Concept, Theory, Economic Benefit, Hypothesis]

SPK_2

You know the general sort of macro level that is need to be a good corporate citizen and the sort of potentially impacting that can have on improving the brands for example, but I guess a lot of those sort of macro external pressures are seen as secondary to the obviously the business pressures of you know maintaining growth or, reducing costs, stability that kind of figure is not really until some of these sort of external pressures and doing the right thing by sort of planet and society. So, I press to start to translate into very tangible and measurable business pressures that that they then get action so. I think so. You'd like to go back to this example of the healthcare company we're sort of in this situation where. What was happening is the marketing team had come from a consumer

goods background and they had they recognised the power that improving your narrative on sustainability, your position on it can help with the appreciation your brand that can drive brand values and equity and therefore make people choose you as a differentiating factor than other product. So, they sort of we're trying to drive this idea of making more sustainable healthcare products, so that sponsored the project where we were.

[Sustainability, Macro. Micro pressures, External pressure, Costs, Economic vs moral, Translation, Inter vs intra organisational, Legitimacy, Differentiators, Storytelling]

SPK_2

When we started to engage with this particular business unit, we would meet a few people they say in the in the product design team who were really up for it, you know we we'd love to do these changes but it's not considered cost effective or they don't really want to invest in the R&D because it might have a compromise on product well balance and you know it might be more expensive. So there's a lot of sorts of resistance,. And then we would go to like the next stage and we're like, well, how about the sort of packaging? Could we, could we look at that because you know, it's clearly quite overpackaged, probably some savings we could make there and that was maybe a little bit more traction. But again, it still felt like a sort of nice to have. There's a sort of sense, I think because it was coming from and sponsored by a sort of marketing stakeholder, it was maybe a bit more of a kind of nice to have. Then we started to find some quite interesting. Economic pressure, just thought to hear from certain business like stale team but they were losing out to other competitors because of their lack of progress on environmental issues like in the European Union. Your performance on sustainability and net zero now has a quantifiable score on tender process tenders' processes.

[Stakeholder engagement, prioritisation, Convening, Competition, Institutions, EU, Governance, Finance, Quantitative, Benefits, Clarity, Obstacles, Sustainability]

SPK_2

Back up to senior management and then that started to give the project a bit more credence. There's this kind of slow change that has to happen. You've already got a good understanding across the frontline of the business usually what needs to happen. You've

already got sort of sense of like a distant pressure at senior management and but you need this kind of you need something that starts to join the dots internally and some sort of agitators that can start to make that stuff really start to progress. So that's always been my experience with like mostly internal stakeholders, but often with these large entities there are sort of any rooms of internal and external, they're like in business unit outside of business unit is like global team versus these sort of marketing market teams. And a lot of what you're trying to do is kind of find the change makers within the different parts of the business, bring them together and create a sort of momentum around it, around a project and then and then actually give them very practical steps forward. Yeah, that's the sort of internal engagement piece. The speech a bit more of a work with external stakeholders on another project. That's helpful as well.

[Leadership, Legitimacy, making things happen, Stakeholder prioritisation, Change management, External Stakeholders, Urgency, Behavioural change, Delivery, External Boundary]

SPK_2

The whole project came unstuck because they pushed the economic benefits of the project. And then found that they were misaligned as far as the behavioural and cultural parts of the of the project were concerned. And they replied to me the fact that they would have been better on hindsight to have flipped around the other way and to make sure that there was sort of emotional, not emotional, maybe the wrong word but you know use behaviour and cultural alignment first knowing that there would have been economic benefits that would have delivered. Economic benefits were quite obvious and they found that there was better probably to start with the behavioural and cultural. And I think it's, you know, it's a case-by-case basis, but I think what you've identified there is quite interesting because you you've identified in both sort of functional benefits as well as these emotional benefits, the more behavioural and cultural benefits as well. I don't know whether that's going to be residence.

[Economic benefits, Emotional behavioural, Functional]

SPK_2

One of the things we tend to do in our sustainability strategy projects is working out what sort of change is needed for the company; it might be a product or service or intervention or something else. The part where we would package up the story of the project in different flavours. So how do we give a really strong commercial case for it? Like what's the sort of motivating employer value

proposition. So if you're head of HR and you want to really motivate potential recruits and internal teams like how do you, how do you, how do you translate that through to the various parts of the business And they're like, ohh, yeah, this is a great company to work for. Or you know, I'm really motivated on my job because it can be one of the key leaders and then we'll sort of make another version which might be for external. Commercial stakeholders like franchisees or investors or something like that. That's all right. Then let's package it up for that audience

[Product development, Change agendas, Delivery, Motivations, Sacrifices, Clarity. Translation]

SPK_2

These kind of like sustainability or net zero type transformation projects are hard to configure and deliver. You can deliver so many diverse types of benefit. It's really worth kind of sweating the asset in many ways. We used to call it a margin, but you kind of really take this project and you did you try and. And demonstrate through as many people so that really you're trying to essentially light fires in as many parts of the entity that they then all kind of want to keep growing with it. Because often the stage I'm working at is the beginning of many of these kind of changes. Like I'm just trying to get the first projects off the ground and. There's some baggage of some slightly failed personal pet projects as well that are knocking around the organisation. So you're trying to kind of professionalise it, give it more credibility. And then you do that by communicating the benefits in the right languages to each different kind of stakeholder so that they could see, alright, you know this is this is something worthwhile, it's worth spending management time on, it's worth spending their capital resources on 12 spending. It's worth a slight increase in OpEx or whatever because I can see these different benefits so that you know it's an important part of it is that sort of comes piece at the end. Yeah totally agree and getting the language right and it not it not all feeling like a sort of kind of save the world tree hugging environmentalist thing. It has to. It has to feel like a.

[Sustainability, net zero, Assets, Selling, Organisational alignment, Finances, Timeframe, Language, Stakeholder prioritisation]

SPK_1

The curation and storytelling is actually one of the most important parts of the characterization of it being a grand challenge. And some of the work that's been done in Grand Challenges, particularly that I'm building on here, is really talking about the fact that the sort of curation and storytelling is a really good aid, a really good way of removing obstacles. To being able to deliver quite a big social change project. Do you have any views about that area ?

SPK_2

There's a big section on storytelling. I come from a comms background and I sort of always knew that it had a sort of you know, plays with the net zero climate as a real kind of image and identity problem. And there's some good thinking like there comes agency I've done some great work on, like how to frame and use the right language that motivate people and gives them empowers and gives them choices. So I think, yeah, I've always seen it as a thing. And I guess the other factor is it's often something companies can start with because they if they've got interesting stuff going on in their pipeline or and if they've got good projects and starting to talk about it internally. It's a really good first step before you go external and you know kind of face the music and put your head above the parapet and whatever. But if you start to get your story right internally, it's a good way to yeah to sort of road test it and to get changemakers on board.

[Curation, net zero, Climate change, power, the future, internal alignment, changemakers]

SPK_2

And the other the other thing that really comes out from sort of grand challenges is the positioning of net zero and you know the sort of spaces that we both work in. It's not something that you can tackle. You know, it doesn't have a finite endpoint or start point, you know, so tackling it is really the wrong positioning. It's about identifying blockages. It's about being able to navigate your way through the pathways. I get the sense and that resonance again.

[Navigation, Grand Challenge, Tackling, Alignment, Methods, Engagement]

SPK_2

One of the key words that often people sort of latched onto is enablers. So I often talk about what I'm creating stuff in the in our strategies we'll often have stuff that's around goals, ambition and targets, that kind of stuff. And then we'll have enablers which are the sort of internal quite operational unlocks that we need to do that, that help the businesses move forward. I think you're in the way of you thinking about this. You know, identifying blockers, navigate pathways like that. Is what you're trying to do like it's you can

have this kind of dot on the horizon you're working towards, but you sort of need to translate that to like the To Do List for this week and that's a really difficult like bifocal thing to help organisations achieve. So yeah being able to you know to sort of build something like an infographic that sort of can show you the journey from today to 2030 or something. It's like it's like quite a powerful thing And then making that something that you can communicate and like it's part of everyone's every day. Like that's sort of the big challenge and that's like the interesting stuff I see in change changing all organisations nowadays. I like the sort of grassroots bottom-up tool type of thing that are empowering people every day. Like if you look at tools that have enabled businesses to become more horizontal and more self-organising, you know it's like Slack and Trello and you know these sort of like things that took the sort of self-organisation I self-organisation could sort of community building tools out of the out of just people social slides and started to apply it into the world of business have been successful. I don't know. It's not a new idea of people trying to do like internal social networks forever and they've never really quite.

[Enablers, Strategy, Blockages/ Barriers, Navigation, engagement, Challenge, Empowering, boundaries, self-organising organisational skills, social networks]

SPK_2

Instant messenger for work like that. Slack is a good thing for that. And then just what nice thing that Slack does is it starts to pull in functional hooks that are deeper in the organisation. You know, can I raise a purchase order, Can I set up a bug ticket for my, you know, technical issue or can I, can I access another team or whatever. So you get sort of a bit of intelligence embedded into it and I think that's something interested in interesting in how we can type these kind of nice and net zero tools, things like carbon accounting and stuff that's starting to help businesses get their head around it. But how do we like pull some of that intelligence and that ability to cause action, to create action down into people who are doing stuff at the everyday? And it's like a little example.

[Communication, dissemination, alignment, engagement, Clarity, Convening, alignment, skills]

SPK_2

For example, you know, just even when you're trying to book corporate travel and you're just thinking about like, how am I gonna get there? Like, who else needs to be there? Is this meeting worth it? Does it align with our carbon, you know, targets? Whatever. Like

all of those considerations are pretty much impossible for any individual employee to work out. But it could be really easy. Like you could be able to, in your process of booking travel, be able to see, like your team's carbon budget or be able to see what another option would look like. You know, there, there, there are totally. But you know, it's not, it's not beyond the wit of man to be able to create these tools. But I think there's just not quite the attention on like dragging down some of those decision-making into the into the front.

[Carbon footprint, empowerment, Detail, Assessment, Measurement]

SPK_1. The number of people I've spoken to where they are sitting within a sustainability team. And you know, the sustainability team has no. accountability. How do you find organisations are structured ?

SPK_2

Innovative organisational structure to be able to tackle some of these problems because they aren't simple problems. But that requires a different that requires quite a forward-thinking culture of the organisation. And the other thing to think about these when an organisation is trying to tackle these big challenges is, is the use of other entities. So, like cross sector organisations like the Sustainable Restaurant Association, those would be one. Or like usually there's within anyone category, there's someone trying to think about the challenges of that, of that, you know, industry or that sector. So, I think that's a good thing for companies to get involved in and to start to share knowledge. And one of the things I've always found really refreshing into trainability that there is the willingness to share and sort of operate in some sort of precompetitive way because there's a sort of sense of, I guess on the one hand like doing it for the common good. I think the other slightly lightly sort of more tangible thing is a lot of companies are aware especially when we reach a certain scale is that actually they kind of need to improve the credibility of their sector as a whole. Yeah. And that's what tends to drive them. It's like, we kind of we have to improve you know the reputation or planning or the reputation of healthcare or whatever because I think because a lot of the research and statistics happen at a sector level. So you get like whatever Healthcare is worth 40% or maybe it was a country we like the 5th edition of the emitter or something. There's always like a stat that sort of his he's around the sector you know that then tends to motivate people to collaborate and try and address it I suppose and

then to try and be the ones swimming at the front and being part of the change and whatever. So, I've certainly seen that I've yes, even with retail, which is extremely competitive sector attended, they tended to be happy to collaborate.

[Innovation, Organisational Structures, Culture, MSP, Collaboration, Partnerships, Challenges, Knowledge sharing, ethically right thing to do, Credibility, Institutional Norms]

SPK_1

Absolutely. You're probably all or you're a lot closer to an I am in terms of the sort of. Sort of artificial intelligence software stuff there is around, but I'm doing this work at the moment and I've been talking to people at Councils and they're very heavily embedded in climate systems. Data is everything I think ?

SPK_2

Yeah, certainly. is it the sort of data piece is good, it's good, really good thing to think about exactly like the work that the, the venture on building now is very focused on how people can make sense of and produce better nature-based data. And one interesting thing around data share natural capital biodiversity is people sort of look at it and go ahead exposed like there's too many indicators. It's exceedingly difficult to measure biodiversity, like could you ever do it and actually the answer is yes, you can. Yeah, they're quite a few different data sources that can be used. Everything from remote sensing satellite to environmental DNA to really old school you know counting species and looking at the number of worms in a sort of sample that you can do all these things and it but it's often about scaling that data up to a level that can be used by a large entity might be that big corporate or investment bank or whatever but that's that is quite a challenge and being able to align some of that data to good standards. So, nature is like a few years behind where carbon is really, but we've still got the same emerging standards. So, the TNC which time sports and nature related disclosures good science-based targets for nature are coming out like we have good now methodologies and standards that we can start to use. So, I think there is, that's what I'm focused on. But I know that from a from a carbon point of view for a long time there's been a real focus on trying to get businesses to understand their own emissions. The big hurdle now is scope three of course like how they start to get more and more understanding of the rest of their scopes. And so, I think this is happening being able to get kind of granular data on a company's own operations such that they can then measure progress against their targets. That's like the big, the big hurdle

that everyone wants or if you're a council like I guess understanding you know what's happening in your region and managing that and managing risk and risk and resilience. And yeah, I think that's there's still a lot to be done in that area and I still not be. There'll be a lot of innovation.

Data, Nature, LG, Environmental Footprint, MSPs, Scope 1 2 3, Emissions Data, Measurement, Council, Risk, Resilience, Action. Delivery]

SPK_2

Some of the councils are doing some really interesting work Cause I've been trying to reach a few different accounts and actually you might be interested in that fractal and nature because I spoke to someone in there's like a York and Leeds group, I think they're looking at it, working hard on net zero and decarbonisation. Because like every council, you know, you know, I think it has been quoted in public, they don't have a dedicated budget for sustainability. Therefore, they are scrambling around in order to work out how to do this and how to do the next thing out of existing budgets,

[LG, Empowerment, Decarbonisation, Net zero, Sustainability, Financial Pressures]

SPK_1

The other thing that I am trying interested in, I do not know, just suit going scaling up a bit. When you look at the history on the UK's industrial strategy. You know we had an industrial strategy, but it has not ever been used. It was ditched. Today, we do not have an industrial strategy. Yet decarbonisation growth and the UK's growth are really all sort of connected. And I just wondered from your experiences about having a national strategy

SPK_2

I have not followed the industrial strategy that closely. Would it be, is it what directs investment? So, I know Innovate UK have a bunch of like core themes for example that they then they then tend to invite proposals for, and they structure their grants around. So, I remember I think seeing something around industrial strategy and the course that you think one was a I and whole bunch of

other stuff, advanced manufacturing, and things. It has. If that's correct and it does it does influence entities like Innovate UK funding, then I think it has a role in helping the entrepreneurs and it helps umm early stage companies or even bigger companies with R&D projects to try and make sure they are well to achieve to obtain funding and support and help them progress. I think R&D support in general in the UK lacking behind a lot of our other peers in other in other countries. That's stifled. I think our innovation; I think industrial strategy should have a role in driving us towards a lower carbon future. In that sense, there is something around that. And there was quite a lot in the papers over the weekend about changes in the budget to R&D investment and completely. It's so linked into the political conversation in that sort of trying to depoliticise it to a greater extent. Yes, you know, the growth and success of the UK. Seems to have been built around green energy and how we deliver that level of success. But it seems to me since to go wider than that into some of the areas that you are talking about in terms of biodiversity or have. I do not know whether there is a country that is a leader in biodiversity and whether that's relevant to the UK. I just, I'm just interested in that what are the drivers of green sustainable growth and. The UK is. A bit lacking in direction, but I would say that may just be a political conversation. I mean there is a bunch of stuff like what we tend to have here is exceptionally good rhetoric, but you know, we have got really, you know, even we have the only what legally binding net zero target in Europe for example. But at the same time, you know what, the government backs and our environmental policies do not really stack up there. So, you know, pulling back on the solar subsidies by the effective ban of onshore wind for so long, like there has been a lot in our renewables industry that has held us back. In terms of sort of easily or having a sort of ecosystem of early stage funding venture capitalist, yeah, you know the sort of it's much harder to raise money in the UK than it is say in the US just because of the environment that that the investors have to operate in and then they sort of limitations that they have. And you know even with Brexit starting to curtail the sizes of the market that startups can talk about accessing or scale up. So, while it is possible to you know and Tech National points out that huge successes of the of the UK early-stage startup community. I think if you actually look at it with a more critical eye other countries like the Nordic countries have done you know much bigger deals and grown startups much faster and so is North America and so I think there's been there is a bit of a challenge when it comes to the sort of funding available to create innovation in in green products that's definitely been an issue. There has been a like in biodiversity and nature in the world that I am looking at, like we have this thing called the biodiversity net game requirements now for construction. It came into it became approved that it was, it was going to be enforced in November. But there is a sort of, you know, Defra the, the agency that is supposed to be giving us all clarity is still very, it is not clear how it is going to be enforced or how there will be any sort of governance around it. So then I think we get quite a lot of like good sounding press releases and good sounding policy announcements, but then the sort of backup of like actually how this, how this would be enforced and you know the pullback of negative actions doesn't really seem to happen like sort of control on water companies.

[Industrial Strategy, R & D, Innovation, Low Carbon, Start up's, Sustainability, Green Finance, Coercive, Financial pressures, Policy, Large Scale Delivery]

SPK_1

There appears to be a gap between policy and delivery is do you have any views on that ?

SPK_2

At a seminar last week actually and Theresa Coffey was on it, opening it and it was all about post COP 15 and the commitments to enable finance and biodiversity. And one of the questions from the House was like, yeah, what? What companies and investors are looking for is like a good understanding of when some of these commitments might translate into legislation like that. Are there going to be anything else that will that'll make it clearer for businesses to who are operating in the UK to understand their requirements around disclosure, recording or what's Andrew Finance and Theresa Coach's response was, I don't think we need any more legislation. We've got too much legislation. We need action. I said that these two things are not, they're not mutually exclusive. In fact, legislation would drive action. So, it's just one of those kinds of cognitive dissonance going on.

[Political will, Politicians, Legal Frameworks, Legislation, Institutional Pressure, Action, Local Delivery]

SPK_2

The host who was questioning the tried a little bit more but then it was clear that this was a kind of party-political line, and they were not going to budget on it. So, they just moved on to the next question. But it was quite clearly sort of fell flat because it just did not line up with the big rhetoric that had gone before. So, yeah, I think I think that's what we tend to see is and you know it's been a sort of yeah, I guess what I kind of and a lot of hype and a lot of you know a lot of big statements and sort of grand promises. And I think the sort of progress has been much harder to make good businesses. And yeah, it's much if you're in, if you're in a scale up who's

trying to do the right thing by the environment, you know you're mainly doing it because you believe it's the right thing, not because you necessarily getting much enablement or incentive from government or even perhaps from your investors.

[Investors, Politics, Rhetoric, Narrative Story, Enablers, Good Business, Normative]

SPK_1

The last area is about economics and when you are talking to investors about this whole space. What are the characteristics of that conversation in terms of risk, in terms of return etc

SPK_2

So I've been speaking to climate tech focused investors, so people who are who have already decided that climate sustainability like where they want to place their bets. What is interesting though, there's quite a lot of stats going around at the moment to say that if you look at bazillions of venture deals, so money flowing into early-stage companies, most sectors, but I think all sectors bar climate, tech have seen quite a big dramatic drop. So, the other places that were very buoyant, you know fintech, insurtech, obviously crypto because of this subset of Internet retail like all of these other areas where there was a lot of money flowing into it over the last five years have seen quite a substantial drop. But actually, climate focused businesses are still seeing, yeah, increasing volume of cash going in and increasing check sizes. And that's I think partly because it recognises some of the long-term bets that need to be made in this space. The fact that it is quite early stage and any early stage fast growing industry will have a lot of will produce some good winners but that's been a big thing. There's a sense that in for example in direct air capture so carbon CCS like that as an industry is continuing to grow. People are still searching for the right technology, but they know they need more they know they need more innovation in that space. And if you look if you like the way of VC venture capitalist fund works, is you might know is already, but they might make 2020 bets on companies and like one company is pay it off. And I think it just climate is particularly on climate change particularly in this space where it's a good time to make lot of bets because actually there's a lot of potential routes out of this stuff. So, you know new forms of food, bioreactors, novel proteins, all of these things are like stirring, showing good potential. So that's an early stage at the late stage. So ESG ratings on funds, that kind of thing you've probably seen in the news there's been like a sort of North America backlash against the wokeness of MSG. But I think that is that is quiet, that is actually quite contained within North

America. And what we're seeing now is a lot of the particular European and UK analysts saying well that's just a bit of like sort of rhetoric coming out of the more kind of Republican states. There's quite political it's not really if you're a sensible long-term analyst on a fun you can see the importance of good environmental credentials and what they're more what they're seeing is actually it's a time for integrity. It's a time for not over promising. It's a time for aligning with things like the EU taxonomy on you know what you can and can't say on better ratings. So, what they're really what I'm into is I've been doing is trying to get closer to the top analysts at the really big and buns and saying like how are you de risking this? Like how you are being sure that your companies are invested in one, managing climate and two, how is you as a business making sure you're compliant with your responsibilities of not say funding climate change and not correcting capital towards things that are bad for the environment. So, they're taking this quite seriously. So, they're doing, you know, I've spoken to data scientists, people are like all over the tech. I'm talking about satellite observations like you know, they really getting deeper into like getting objective data on businesses and that's like the best and most progressive. Obviously, there'll be a long term of course, really worrying about it, but that for me is encouraging. And I think when we talk about you know 200 billion a year motivate typical or mobilise for nature and diversity like that. But he's got to come from somewhere. There are sovereign wealth funds or another big like source of capital that that are trying to major investments that are going to be beneficial for the for the long term and divest away from fossil fuels and something like that. The fascinating stuff around debt for nature swaps which is great. So, where you've got big sovereign debt and you know they're sort of producing those in in return for nature restoration recovery programmes and so those like those I think they're fascinated in early-stage fascinating to capital. [Green Finance, VC, Investors, Capital Paybacks, Timeframes, Enablers, Strategy, Timeframes, Social benefits, Fossil Fuels, CC, Nature and sustainability]

SPK_1

That's really helpful. Thank you very much for your time. That's really good.

Decision - Ethics ETH2223-0057: David Durie

😊 ↩ ⏪ ⏩



○ University of Derby <uodresearchsystem@derby.ac.uk>

Wednesday 9 November 2022 at 16:51

To: 📧 David Durie

University of Derby

Dear David

ETH2223-0057

Thank you for submitting your application to the College of Business, Law and Social Sciences Research Ethics Committee, which has now been reviewed and considered.

The outcome of your application is:

approved.

Feedback on your application is available [here](#).

If any changes to the study described in the application are necessary, you must notify the Committee and may be required to make a resubmission of the application.

On behalf of the Committee, we wish you the best of luck with your study.

Yours sincerely

Elina Spitieri

Ethics ETH2223-0057: David Durie



Date:

Dear XXXX/ Participant,

I would like to invite you to participate in a research project:

A study of understanding, expectations, and engagement with the UK's "Net Zero by 2050" policy initiative: A multiple-stakeholder perspective.

This data collected during the course of the project will be used for the purposes of developing a deeper understanding about net zero by 2050 and how organisations can respond to this public policy. Specifically the study is focussed on the Derbyshire and Nottinghamshire region, its economic strategy and how the region can possibly decarbonise faster through multiple stakeholder partnerships.

If you are happy to be involved, you will be required to take part in a one to one semi structured interview with the potential for a follow up focus group, depending on the subject matter discussed and its significance to the study. All responses are anonymous and kept confidential.

If you are interested in participating, please let me know and I can provide further details.

Thank you for your time.

David Durie

Post Graduate (PhD) Researcher. University of Derby Business School/



I have been given the chance to ask questions and if I have asked questions I have been given a satisfactory answer Yes ☐ No ☐

I understand this study is related to the above named researcher for the purpose of their academic assessment Yes ☐ No ☐

You can withdraw your data up to [Click or tap to enter a date.](#) after your participation. After this time your data will be anonymised and the original, identifiable, data destroyed. Please provide an ID below which we will use to remove your data if requested.

Chosen identifier (Last 4 numbers from your telephone number)

I give my consent to participate in this study:

Name

Signed

Date

Signed by the researcher:

Signed

Date

Researcher name: David Durie
Researcher email: [REDACTED]
Study title: A study of understanding, expectations, and engagement with the UK's "Net Zero by 2050" policy initiative: A multiple-stakeholder perspective.
Supervisor: Dr Polina Baranova
Supervisor email: [REDACTED]

Privacy Notice

Thank you for agreeing to take part in this research project. The information that you supply will be recorded and processed in line with the UK GDPR / Data Protection Act 2018 / EU GDPR.

The information collected from this research will be used by the researcher and their supervisor only in the context of their research and to meet the requirements of their studies at the University of Derby. The University of Derby is the data controller.

Data taken from the research and any recording will be anonymised.

We retain the data and any recording until 01 January 2026 after such time it will be securely destroyed.

Our lawful basis for processing this data is your explicit consent.

I give my explicit consent for my details to be used as stipulated above Yes ☐ No ☐

As a data subject you can request withdrawal of consent at any time up to 01 November 2023 by contacting gdpr@derby.ac.uk

Our Data Protection Officer (DPO) is Mrs Helen Selby on 01332 591954. Alternatively you can email gdpr@derby.ac.uk.

Further information on how we handle your information and details of our DPO can be found on our website: <https://www.derby.ac.uk/its/datagov/privnotice>

Research consent

I confirm I have been given an information sheet explaining the purpose of this research and contact details of the researcher. Yes ☐ No ☐

I understand that the data and answers I provide will be stored securely, used only by the research team, and anonymised before publication Yes ☐ No ☐

I understand that my participation is voluntary, that I do not have to take part, that I can refuse to answer any questions, and what my rights to withdraw are Yes ☐ No ☐

Appendix Nineteen Quantitative demographics

63 responses in total

95% have worked on net zero projects in last 12 months

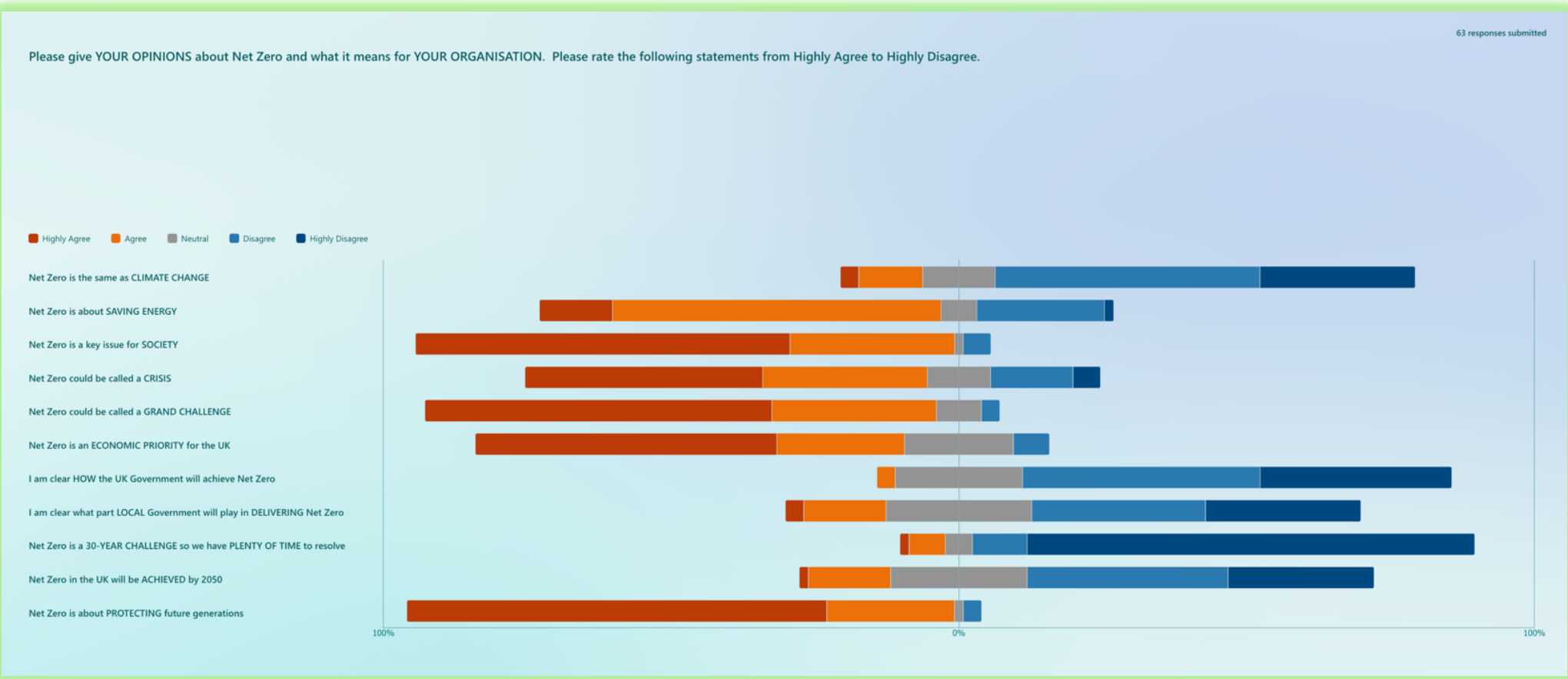




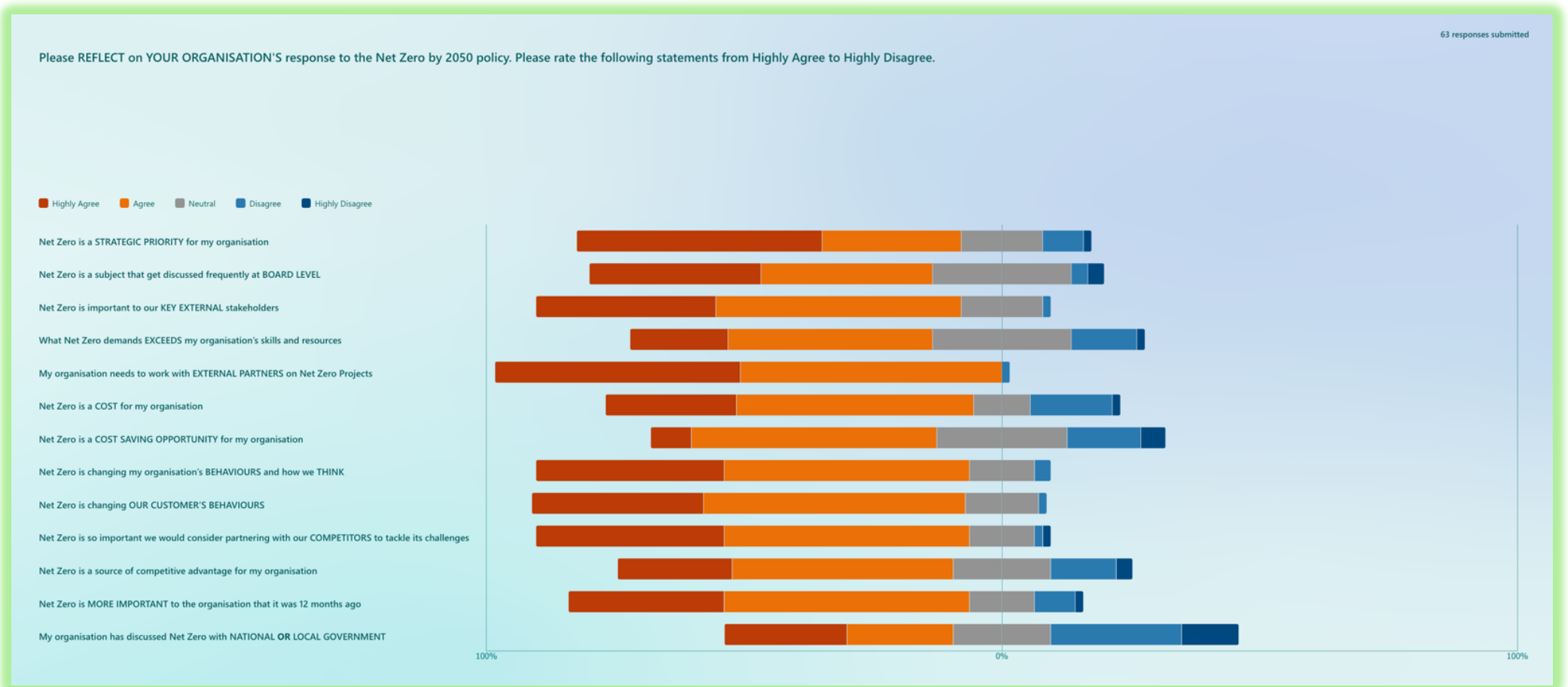


Appendix Twenty Quantitative results: Banks one, two and three

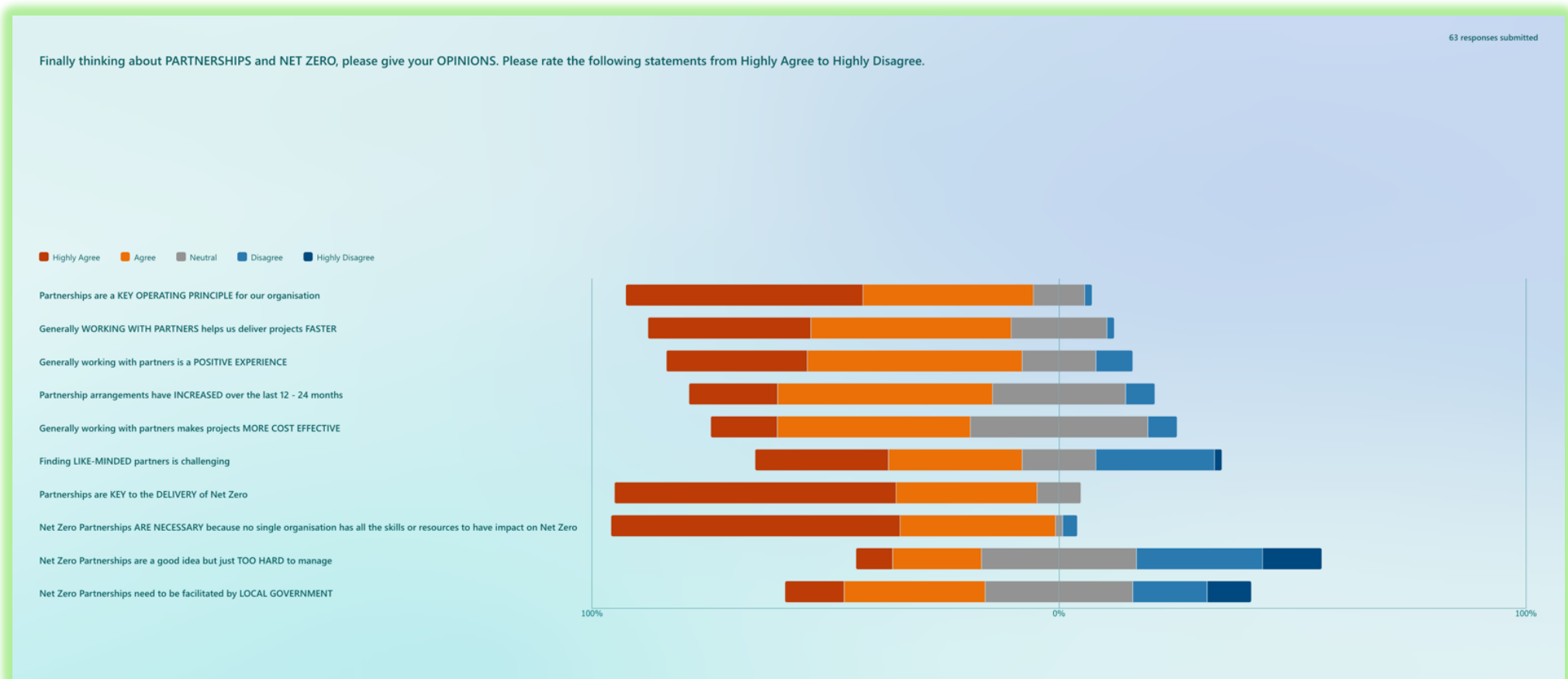
Question bank one



Question bank two



Question bank three



Appendix Twenty-one Qualitative interview contributors: Code, role, expertise, years' experience

Coded reference	Role	Expertise	Estimated years' experience
RC1	Sustainability manager, NGO	International sustainability	11
RC2	Architect, sustainability lead	Decarbonisation	8
RC3	CEO, SME	Food sustainability	35
RC4	CEO, large corporate	Stakeholder leadership	27
RC5	Sustainability director, large corporate	Sustainability strategy	22
RC6	CEO, Public relations sustainability consultancy	Sustainability communications	27
RC7	CEO, Local enterprise partnership	Policy, strategy, industrial growth	17
RC8	Sustainability manager, Local Government	Local sustainability	14
RC9	Sustainability director, Local Government	Local sustainability	15
RC10	CEO, SME in sustainability and energy transition	US and EU energy	12
RC11	Sustainability manager, NGO	Partnership building	7
RC13	CEO SME, energy transition, green finance	Consulting	15
RC14	Department manager, sustainability NGO	Partnership building	17
RC15	Department manager, responsible for net zero	Local industrial growth	16
RC16	Climate manager, Local Government	Local decarbonisation	15
RC17	Strategy manager, combined local authority	Local sustainability	12
RC18	CEO, local enterprise partnership	Policy, strategy, industrial growth	15
RC19	Director, large corporate	Partnership building	15

RC20	Director, large corporate	Governmental affairs	20
RC21	Manager, small NGO	Partnership building	10
RC22	Sustainability department manager, retail & hospitality	Operational sustainability	6
RC23	Purchasing director, large corporate, responsible for decarbonisation	Global leader	25
RC24	Sustainability manager, Local Government	Local sustainability	15
RC26	Member of UK parliament	Local MP	25
RC27	CEO large city council	Local Government leader	20
RC28	Chair large county council	Politician	25
RC29	CEO lobby organisation	Organisational leader	30
RC30	Government minister and member of UK parliament	Politician	25
RC31	Director Sustainability and social leadership	Partnership building	16
RC32	Director of green finance and social change	Finance	23
RC33	Director of large strategy consultancy	Consulting	20
RC34	Manager, academia	Researcher	20
RC36	Manager net zero lead, climate change consultancy	Consultancy	25

Coded reference	Interview length	Interview date
RC1	28 minutes	07/02/23
RC2	59 minutes	10/02/23
RC3	1hr 15 minutes	10/01/23
RC4	45 minutes	17/01/23
RC5	1hr 21 minutes	20/01/23
RC6	1hr 13 minutes	12/01/23
RC7	1hr 10 minutes	17/02/23
RC8	1hr 27 minutes	06/02/23
RC9	1hr 11 minutes	04/05/23
RC10	1hr 25 minutes	02//2/23
RC11	1hr 18 minutes	19/01/23
RC13	42 minutes	14/02/23
RC14	1hr 20 minutes	05/05/23
RC15	1hr 26 minutes	10/01/23
RC16	49 minutes	14/06/23
RC17	59 minutes	24/05/23
RC18	1hr 8 minutes	10/05/23
RC19	55 minutes	26/05/23
RC20	1hr 3 minutes	26/05/23
RC21	51 minutes	10/05/23
RC22	1hr 4mins	15/06/23
RC23	30mins	15/05/23
RC24	1hr 2 minutes	22/03/23
RC26	20 minutes	01/02/23
RC27	20 minutes	26/04/23
RC28	10 minutes	26/04/23
RC29	1hr 4 minutes	22/02/23
RC30	15 minutes	30/03/23
RC31	22 minutes	31/03/23
RC32	15 minutes	31/03/23
RC33	21 minutes	30/03/23
RC34	20 minutes	03/07/23
RC36	23 minutes	03/07/23

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