



Developing tools to help smaller local authorities improve governance and decision-making in a Climate Emergency

By

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Abstract

Over 85% of local authorities in the United Kingdom have declared a Climate Emergency. However, the role of councils remains poorly defined by central government with no single, robust governance framework linking national and local ambition. This has led to councils struggling to formulate governance and delivery, which the National Audit Office (2021) and others consider is not fit for purpose.

The research presented in this thesis explores the barriers to governance and decision-making arrangements using evidence drawn from the literature and insights of practitioners. It highlights shortcomings which bind public administration. Where local governance structures are emerging, the research reveals a lack of coherence and scale needed. Smaller councils are getting left behind by their metropolitan, mayoral counterparts. This creates a growing credibility and performance gap.

The thesis sets out an overarching governance framework for local net zero delivery, along with a supporting toolkit to improve current arrangements. The governance framework adds depth beyond the research literature identified in the research which tends to recommend generic solutions less relevant to smaller councils outside metropolitan areas. A diagnostic barriers and solutions identification tool is presented utilising a modified Delphi approach. A suite of governance models is proposed based on governance theory and real-world examples. Using these models, a tool is put forward to assess the strengths and weaknesses of local net zero governance arrangements. Initial testing, including with local authorities typifying non-metropolitan public administrations, suggests that the tools can be applied effectively with minimal resource.

The framework and toolkit recognise that every area is different. However, the principles and values that make for good governance and decision-making are the same, with the toolkit demonstrating that solutions exist within and beyond the domain of public administration, helping councils learn from others. Recommendations are made to improve and validate the toolkit.

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Author's declaration

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Signature:

A handwritten signature in black ink, appearing to read 'Peter Gudde', with a long horizontal flourish extending from the end of the name.

Printed Name: Peter Gudde

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Chapter 1: Introduction

1.1 Introduction

In 2019 this research started to explore the state of the Climate Emergency landscape across England with the aim of understanding whether the political ambition exhibited at local level could be harnessed and aligned with central government climate commitments. Having worked in the professional field of sustainability and energy within both local and central government for over thirty years, the researcher concluded that there was value to approaching one of the core foundations of '*transformational change*' for net zero, that of effective governance (Regen/Scottish & Southern Electricity Networks, 2020).

This research, therefore, aims to address one of the major concerns about the role of English public administration; how can local authorities play a meaningful role in addressing *climate change* when the issue to address is complex, costly and typically defined in techno-political framing as an *Emergency*?

1.2 Contextual background to this research

Using the political declaration of a *Climate Emergency*, over 85% of local authorities¹ in the United Kingdom have committed to cutting Greenhouse Gas (GHG) emissions by or ahead of the national government statutory net zero target of 2050 (UK Parliament, 2019; HM Government, 2021; Climate Emergency UK, 2024). The role local councils can play in climate change mitigation has been highlighted by policy makers, in academic research and in wider society alike (HM Government, 2021; Tingey and Webb, 2018; National Audit Office, 2021). Unified political leadership under a programme of devolving power from central government is helping the English metropolitan areas to marshal resources to tackle climate change (Sandford, 2023). Where devolution is not a driver there is still evidence that local government is gearing up to deliver programmes to try to meet their political commitments ahead of the national statutory target (Warrington Council, 2022). Yet, despite successive Westminster parliaments and numerous policy changes across government departments over the last decade, the role of local councils, whether through statute or common practice, remains poorly defined and lacking a coherent framework, leaving English local government in a bind. Central

¹ Local government is taken in this thesis to refer to the tier of government below central government but excluding the parish or town council '*third*' tier. Although this research learns from and has relevance to all councils, the focus is on non-metropolitan areas with multiple tiers of local government. The terms '*local government*', '*local authorities*' and '*councils*' are used interchangeably in this research, acknowledging that for some this may leave some ambiguity when compared with their use in other literature.

government and the devolved administrations² in Scotland, Wales and Northern Ireland have not created a consistent overarching policy message or delivery framework with each declaring different net zero carbon targets. In the absence of a mandated local-authority duty to tackle climate change along with well-designed and financed governance and delivery models, local authorities in England are having to choose their own routes and finishing lines shaped by the complex ecosystem of organisational, societal, economic and environmental factors.

Over the last 25 years, local government has had a significant part to play in securing decarbonisation across their administrative geographies whether driven by global sustainable development initiatives, national policy agendas of the prevailing national government or through locally impactful activism. This is more evident in larger, metropolitan authorities which, although not explored in detail in this thesis, can be linked to a range of key influences and pressures including their unified leadership and locally determined policy and strategy directed through delivery mechanisms backed up by significant resources (Webb, Tingey and Hawkey, 2017).

Local authority activity has traditionally been defined by and delivered through specific council functions, responsibilities and budgets for example in the areas of local development planning, housing, transport or waste. The principal route to support for delivery has been through central government programmes which typically require local authorities to compete for finite, time-limited funding. However, a small but growing non-metropolitan cohort have established and maintained core revenue and capital funding programmes for decarbonisation (Warrington Council, 2022; West Berkshire Council, no date; UK Infrastructure Bank, 2024).

1.3 Why focus on local government?

Local government is identified in the UK Government Net Zero Strategy as having a major role to play in decarbonisation, with direct or indirect control and varying degrees of influence over 82% of carbon emissions (HM Government, 2021). In its report scrutinising national government's arrangements for achieving net zero, the National Audit Office considered that:

'Local authorities have significant scope to influence emissions in their area, both by leading decarbonisation of sectors that account for a substantial

² 'Devolution' is the term used to describe the process of transferring power from the UK central government to the nations of Scotland, Wales and Northern Ireland and regions of the United Kingdom (Torrance, 2024). The process has resulted in establishing mayoral local authorities in parts of England with the latest 'city' and 'county' deals seeing the inclusion of climate mitigation for the first time (Sandford, 2023).

proportion of the UK's emissions, including housing and transport, and by influencing local businesses and residents to take climate action themselves. This includes the potential to lead a local decarbonisation plan that manages interactions between different sectors locally and is appropriate to the conditions in their area, such as the nature of the housing stock and local sources of energy generation.' (NAO, 2020, p.36).

The NAO's 2021 report focussed on how effectively central and local government are collaborating on net zero. It concluded that:

'Central government has not yet developed with local authorities any overall expectations about their roles in achieving the national net zero target' (NAO, 2021, p.7).

Yet, councils and local politicians see the gap that central government is leaving. In evidence to the House of Commons Environmental Audit Committee in 2021, Claire Holland in her capacity as vice-chair of the Transport and Environment Committee at London Councils, Leader of Lambeth Council Councillor, stated:

'...without local authorities delivering on the ground, the Government will not meet their own net zero targets.' (House of Commons Environmental Audit Committee, 2021, p.5).

Similarly, Councillor Rachel Blake, Deputy Mayor in the London Borough of Tower Hamlets, representing the Local Government Association, commented:

'Local authorities across the country are ready to step up and be partners with national Government in order to deliver on net zero. We are place shapers. We can convene with our citizens and our communities. We are delivery agents. We have local spending power and understanding of our local supply chain. Of course, we are also owners of our assets.' (ibid, p.3).

1.4 Why is this research important?

Three decades since the work of the Brundtland Sustainable Development Commission and the Rio Earth Summit leading to the United Nations Framework Convention on Climate Change, the issue of sustainability and more specifically climate change action, has been repeatedly coupled then decoupled from local governance and delivery (United Nations,

1987). The responses to climate change at sub-national level have gone through multiple iterations and initiatives, documented later in this thesis. The challenge is finding relevant, real-world solutions within academic climate governance research with Broto (2019) referring to the literature tending to focus on city-scale innovation rather than the more mundane reality of *'a mass of undifferentiated cities whose urban experiences are thought of as ordinary'* (ibid., p.253).

Broto's research takes the view that the State³ must change to tackle net zero; to move away from governing climate change from a centrist perspective (Hysing, 2009), towards multi-actor networks where the State is a partner with others in delivering common goals (Van Bommel, 2008). This is reflected in evidence to the Environmental Audit Committee by Councillor Richard Clewer, leader of Wiltshire Council and chair of the Countryside Climate Network in 2021, who stated:

'We must remember that we do not get to net zero until everyone gets to net zero. It is no use London with a metro Mayor and the ability to focus getting to net zero if Wiltshire hasn't. I would not underestimate the complexity and difficulty of that.' (House of Commons Environmental Audit Committee, 2021, p.9).

This has led local authorities either to not trying or, conversely, artificially imposing models of governance onto local areas which do not demonstrate the characteristics suited to the time, needs or circumstances. As Lange et al. note that *'there is neither agreement on ways to meaningfully distinguish and understand governance modes nor a foundation of the aspects to be chosen for this endeavour'* (Lange et al., 2013, p.404).

Authors from across the literature express concern that there is a general lack of empirical research which considers how to evaluate governance arrangements supporting Sustainable Development (SD). Adger & Jordan (2009) observe *'a need to move beyond grand theorising and typologies of governance and undertake more detailed empirical testing to assess the extent to which the world is indeed witnessing a shift from government to governance'* (ibid., p20). In advocating collaboration in innovation, Torfing (2019) notes the lack of related

³ A working definition of the 'State' is used in this research to refer to the two layers of public administration of national and local government, noting that some national functions of the UK Parliament sit with the devolved administrations in the Scotland, Wales and Northern Ireland. Further, this is made more complex through devolution in England (UK Parliament, 2022).

research within the public compared to the private sector and calls for more focus on *'the formation of networks, partnerships and other forms of collaborative governance'* (ibid, p.8) through an empirical evidence base. The need to understand appropriate models and forms of local governance is reflected in commentary by Lange et al. (2013), saying that *'one of the most important questions in the search for suitable governance for SD is which governance mode (or mix of modes) is best suited to promoting SD and therefore ought to be advocated.'* (ibid., p.404).

No single, robust governance framework exists in the UK linking national policy and statutory objectives to local area ambitions or commitments. Furthermore, there is little practical guidance to help English local government operating in multiple tiers of public administration to improve their governance and decision-making processes. The Committee on Climate Change recommended in 2021 *'a framework for local delivery to deliver ambitious climate objectives at different scales (that is, devolved administrations, regions and local authorities), through workable business models, removal of barriers to action, dedicated resource and an approach that facilitates sub-national action to complement action at the national level'* (CCC, 2021, p.31). The Green Alliance called for a national framework *'developed jointly by local and national leaders, which clearly delineates the role of local government in meeting the net zero carbon goal and supports them in doing it their way'* (Borrowman et al., 2020, p.20). Their proposals, however, only go as far as defining the relationship between central and local government with a focus on policy alignment.

Adger & Jordan (2009) note that much of the focus of net zero governance research and policy development has been confined to larger, urban authorities where political structures and resources are better marshalled with a relative dearth of literature considering arrangements in non-metropolitan areas. Russell and Christie (2021) conclude that there remains little clarity as to the division of labour between different actors in what is increasingly becoming a complex *'multi-level system in relation to climate action'* (ibid., p.16), suggesting that more work is needed on this level of governance, particularly at the micro-level. Russell and Christie further argue for enhanced understanding of *'the development of institutions and processes for coping with climate change'* stating that *'better understanding of local governance of climate crisis could help to improve its processes and outcomes, and thereby contribute to climate change mitigation and adaptation'* (ibid.; p.2).

The research set out in this thesis fills a gap identified by other researchers in focusing on non-metropolitan local authorities, operating within a multi-tier administrative structure. These are the under-represented in both the academic and government programmes of research

literature (Kuzemko and Britton, 2020). The research and resulting output presented in this thesis has endeavoured to develop a coherent framework supported by realistic models of governance, practical decision-making and self-assessment tools designed for use by public administration to improve their local net zero impact.

Barriers faced by local authorities as they try to deliver their net zero commitments have been extensively explored in the literature (Institute for Public Policy Research North, 2017; Brummer, 2018; Billington, Smith & Ball, 2020; Beechener et al., 2021; National Audit Office, 2020). However, the specific challenges faced by smaller local authorities are less well represented (Kuzemko and Britton, 2020). This has been recognised by UK Government through a recent shift in the focus of the United Kingdom Research and Innovation programme, *Prospering from the Energy Revolution*, which has funded research to accelerate innovation in smart local energy systems (UKRI, 2023a). The resulting *Net Zero Living programme* was launched by Innovate UK during 2023 to explore ‘*innovative approaches to unlock non-technical systemic barriers to the delivery of net zero targets*’ (Innovation Funding Service, 2023).

1.5 The financial challenge faced by English local government

The scale of investment required to achieve the nationally mandated net zero 2050 target far exceeds successive national government funding pledges. The cost of achieving net zero is estimated at around £50 billion each year to 2050 (Committee on Climate Change, 2020). Taking account of current Government spending pledges (pre-2024 election), the annual investment gap would be around £33 billion each year (Institute of Public Policy Research, 2020). Local government budgets have experienced nearly two decades of constrictive pressure (Davis, 2021; Gardner, 2021). The impact of recent global events has put further pressure on council budgets and spending, leaving some in or close to statutory central government financial control (LGA, 2023). Many councils are increasingly concentrating spending on statutory duties away from discretionary activities like climate change mitigation (NAO, 2021). Neither His Majesty’s Treasury nor the Ministry for Housing, Communities and Local Government, the lead department for local government, are clear on how much central government funding is provided to local government for net zero (ibid. 2021). Where provided, direct grant funding is piecemeal, fragmented and dominated by competitive bidding processes which impose short delivery time horizons, creating winners and losers and stop-start programmes (House of Commons Environmental Audit Committee, 2021).

The funding challenge becomes manifestly more onerous and urgent where area-wide Climate Emergency declarations are adopted with delivery deadlines ahead of that of national

government (CEUK, 2024). The public sector response is at best ambitious, at worst wholly untenable and politically naive, given that commitments to achieving net zero ahead of the national target will need to unlock investment in zero carbon solutions at a far faster rate and scale than has been modelled by HM Treasury, the Committee on Climate Change or the Office for Budgetary Responsibility (Office for Budget Responsibility, 2023; 2024). The task is even more challenging where public administration functions are split between multiple tiers of government. Of the three hundred and seventeen local authorities in England there are twenty-one county councils and one hundred and sixty-four district or borough councils in two-tier areas with different responsibilities and arrangements for delivering services (Department for Levelling Up, Housing and Communities, 2023).

1.6 The research context

This thesis considers English local authority responses to self-declared Climate Emergencies which first appeared in 2018. The declarations lay along a multi-decadal timeline of public sector policy and action to address climate change. As a global issue of concern stimulating their response, local authority activity extends back to the UN Earth Summit in 1992. The Earth Summit marshalled global agreement for the first Conference of Parties in Berlin in 1995 and the United Nations Framework Convention on Climate Change (UNFCCC, 1995).

The Framework's articles define climate change as '*a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods*' (UNFCCC, 1995). The term *net zero* is formally defined by the Intergovernmental Panel on Climate Change; '*net zero emissions are achieved when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period*' (IPCC, 2018a). The concept of *net zero* forms part of the approach to Greenhouse gas emissions reduction which was globally-endorsed in the Paris Climate Agreement following the United Nations Conference of Parties (COP21), underpinned by scientific evidence and rationale set out in Special Report 15 (IPCC, 2018b).

For the purposes of this thesis, the terms *net zero* and *net zero carbon* are employed in the manner adopted by the public sector and public administration in particular since the publication of SR15. This research is principally focused on England but recognises that UK Government has amended the Climate Change Act 2008 to commit to net zero by 2050, while the devolved administrations of Scotland Wales and Northern Ireland have variously set their own statutory positions.

This thesis takes a predominantly energy system perspective of net zero when it considers, for example, how councils make decisions to invest in renewable energy technologies. This is done for pragmatic reasons as a way of exemplifying and drawing out evidence, which may mean that the strict use of terminology of net zero strays into broader public policy and academic research domains of energy and climate change. However, the research findings apply to the wider local authority response to net zero, for example waste management, spatial planning and climate change engendered by the Climate Emergency.

1.7 The research questions

At the start of this research there were over four hundred separate local authorities across England. The literature presented in this thesis sets out a demonstrable case that local government has a critical role in tackle climate change. It also reveals a complex policy, regulatory and organisational landscape within which public administration in the UK, and more specifically England, are required to operate. Although the country is committed to achieving net zero by 2050 through amendment to the Climate Change Act 2008, UK government has yet to establish either a statutory responsibility or policy path for English councils to follow. It seems legitimate, therefore, to challenge the resulting expectation of a coherent public administrative response; that public authorities will act similarly and with effectiveness to achieve the UK net zero commitment.

The research is structured according to a hierarchy of research questions. The first area of research focuses on how local authorities make decisions, the barriers that they face and solutions open to them, in pursuit of their Climate Emergency declarations and resulting net zero action plans.

What barriers do local authorities face when delivering their Climate Emergency commitments? Can we identify potential solutions?

'By understanding the barriers, what needs to change to help local authorities scale up net zero activity to meet local and national ambitions?'

The second area of research explores the coherence of the response of UK local authorities to the Paris Agreement (COP21) of 2015 which led to a legally binding international treaty on climate change on 4 November 2016 (UN, 2015). The Treaty's overarching goal is to hold '*the increase in the global average temperature to well below 2°C above pre-industrial levels*' and pursue efforts '*to limit the temperature increase to 1.5°C above pre-industrial levels*' (UNFCCC, 2016). The scientific report SR15, on which the Paris Agreement is based, is seen by some as the catalyst for councils declaring Climate Emergencies (IPCC, 2018).

How coherent is the local government response to tackling climate change where the scope of each organisation's Climate Emergency declaration is a function of different factors, constraints and political wills?

Given that the declarations constitute political 'Statements of Intent,' how has this translated into action?

Can we develop a net zero governance framework to establish coherence of response in the absence of a specific duty to act?

The research moves on to look specifically at smaller local authorities, particularly those within multiple-tiered administrative structures, to understand how climate action-related governance and decision-making function.

What does Climate Emergency governance look like for smaller local authorities?

What are the key components of the governance models that currently exist?

Finally, using the findings that arise from asking the previous questions, the following challenges are posed.

How can local government's approach to net zero governance be improved?

Can we develop tailored guidance for smaller local authorities to help them improve their net zero governance?

By exploring these questions this research endeavours to create an overarching governance framework for local net zero delivery in the absence of a national-determined legislative mandate, supported by a set of practical, cost-effective tools to help local authorities improve their current arrangements.

1.8 The research methodology

The research has focused developing solutions for institutions who wish to play their part but as evidenced here and elsewhere across the literature, do not have the tools or resources or even agree on their role. The philosophical approach followed is, therefore, fundamentally pragmatic. It has used a suite of research methods and primary and secondary data sources principally of a qualitative, subjective nature. It has been carried out over a five-year period

which has witnessed major, diverse shocks to the systems within which the public sector is operating. These perturbations have meant that the research evidence has been constantly changing. A decision has had to be taken as to when a sufficiently robust and stable evidence base can be said to have been gathered. The methods used to gather primary data have been designed to make them easy, time-effective and unobtrusive given that participants have given their time and viewpoints without reward, on request and with due regard to their busy work schedules and day-to-day responsibilities. The resulting outputs have been similarly designed so they can be easily applied by practitioners whose time and resources are likely to be stretched.

Different research time horizons have been adopted over the five-year research period. Data gathered at the early stages of the research have been reviewed and updated where necessary to ensure currency and relevance. Multiple literature reviews have been carried out at different periods in the research whilst an overview of the published literature has been maintained throughout. The outputs, in the form of the governance framework, models and tools were developed sequentially. Each output has been subjected to peer review, whether through publication in journals, conference presentations and associated submission into the proceedings, or as part of a comparative discussion with others both in research and practice.

The geography of the East of England (Figure 1) is used both as a source of practitioner insight and a testbed to pilot ideas and tools. This region exhibits the characteristics of the public administrative structures and local authorities seen across much of non-metropolitan England. The East of England demonstrates the full range of local authority types whilst being dominated by the two tier (District-County) council administrative arrangement observed elsewhere in England.

Given the nature of the evidence gathering processes involved in this research, including interviewing and surveying individuals to elicit their points of view and professional opinions, there was a need for a formal research protocol (Appendix 1). This was developed in 2020, receiving academic Ethics Committee approval in 2021. Data management and analysis software has been accessed through the Universities of Suffolk and East Anglia or procured following a market testing exercise. These include NVivo and Smart Survey. The standard Microsoft 365 suite of tools has been used to manage and analyse data and prepare any outputs.



Figure 1. Study area for the thesis – The East of England

1.9 Thesis structure

The thesis contains ten chapters with the structure, workflow and outputs shown in Figure 2.

Chapter 1 introduces the area of research, why it is important, the research questions that are posed, the approach that has been followed and the thesis structure.

Chapter 2 outlines the policy landscape of climate change and net zero in the UK, the origins of and concepts engendered by the term *Climate Emergency*, the rise of Climate Emergency declarations as statements of political intent by local authorities in the UK, the influence of activism on this rise, and the challenges faced by local authorities as they endeavour to achieve such declarations.

Chapter 3 focuses on the structure, function and governance of public administration in the UK, local democracy and Devolution, how councils make decisions and the challenges faced by decision takers in public administration.

Chapter 4 turns to defining governing and governance, reviewing governance theory and models, how the concept of public administrative governance has developed, the role of collaboration in public governance, and the implications for the later stages of the research.

Chapter 5 explores the barriers to net zero delivery with particular focus on renewable energy (RE) technology deployment as a way of identifying and exemplifying a specific challenge that is faced in delivering net zero, using the literature as the basis for mixed methods research. The research results are discussed in the context of local authorities when trying to make decisions affecting net zero delivery. Potential solutions are outlined and discussed to improve their approach.

Chapter 6 builds on chapter 5 by developing and testing a diagnostic tool to help local authorities improve their decision-making to deliver net zero. The method is tested with three local authorities drawn from different tiers of public administration in the East of England study area. The results are discussed and limitations of the tool outlined along with recommendations for improvement.

Chapter 7 uses an exploration of Climate Emergency declarations in UK public administration to map trends in post-declaration activity. This research provides the basis for a proposed framework of net zero governance linking national and local policy to delivery.

Chapter 8 outlines a mixed methods approach from which a suite of models of net zero governance are derived with their key features discussed.

Chapter 9 puts forward a governance assessment tool. As an illustrative test, the tool is used to compare the models outlined in chapter 8 with three real-world examples of governance drawn from the East of England study area as a way of helping to identify how these arrangements could be improved. The results are discussed and limitations both of the tool and the models outlined along with recommendations for their improvement.

Chapter 10 concludes the thesis with a general discussion of the findings, and the value to smaller local authorities in the UK of the governance framework and tools that have been developed.

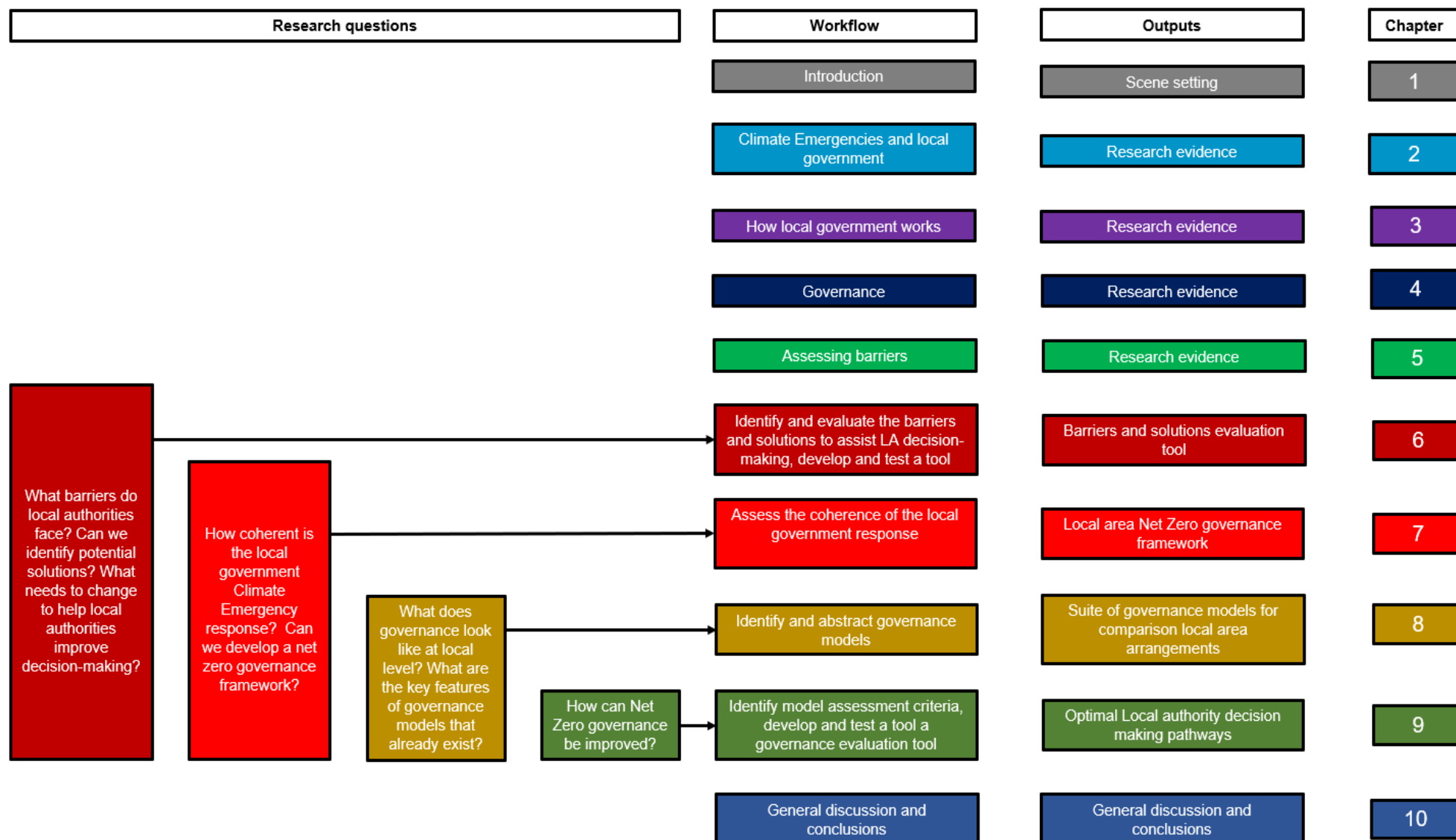


Figure 2. Thesis structure (n.b. colour coding has been used to link research questions to the relevant research stage and thesis structure)

Chapter 2: The Climate Emergency and local government

Preamble

The chapter provides background to the Climate Emergency declaration as a concept and its emergence as a citizen-led movement within UK local politics. The principal content is based on a research paper titled '*The role of UK local government in delivering on Net Zero carbon commitments: You've declared a Climate Emergency, so what's the plan?*' published in Energy Policy in 2021 (<https://doi.org/10.1016/j.enpol.2021.112245>).

2.1 The policy landscape in the UK

In June 2019, the United Kingdom became the first country to sign into law a net zero carbon emissions target by 2050, building on its previous commitment to an 80% reduction target established by the Climate Change Act 2008. The Scottish and Welsh devolved administrations have taken their own positions by setting more stringent targets, with the Scottish Parliament introducing into law a 2045 net zero target and the Welsh Assembly declaring a Climate Emergency setting a carbon neutral public sector target by 2030. The Committee on Climate Change first reported in 2012 and then in 2020 that local authorities are crucial to tackling climate change (CCC, 2012; 2020). This is both from the perspective of their direct emissions and through the impact of their functions on local area greenhouse gas emissions reduction, since they hold a particular and wide-ranging sphere of influence in shaping long-term energy planning and carbon reduction at local level (Evans, 2020). A policy-based mandate issued by Central Government to local areas was first outlined in 2017 stating that '*moving to a productive low carbon economy cannot be achieved by central government alone; it is a shared responsibility across the country*' with local areas able to '*embed low carbon measures in strategic plans across areas such as health and social care, transport, and housing*' (HM Government, 2017, p.118). However, including the current Labour Administration, no UK government has translated this into a clear legal responsibility. Rather, Central Government has looked to devolution deals with local administrative bodies, primarily under the directly elected Mayoral structure, with additional powers and responsibilities created by the Cities and Local Government Devolution Act 2016 (HM Government, 2016).

The policy vacuum created by Central Government continues. There are only two references to local authorities in the British Energy Security Strategy published in 2022 (HM Government, 2022), while in the refresh to the national position in 2023 the policy paper *Powering Up Britain* makes only one reference, that being to local planning powers (Department of Energy Security and Net Zero, 2023). Its companion policy statement *Powering Up Britain - Net Zero Growth*

Plan is more expansive about the importance of councils with references across a range of areas of policy and delivery. In the statement, the 2023 Government recognised the role of local authorities, stating '*Local authorities have strong powers, assets, and responsibilities across many of the areas where emissions reductions are needed*' (Department of Energy Security and Net Zero, 2023, p.109). Of relevance to the delivery role of local authorities, the 2023 Government emphasises the potential of councils to attract private investment and grow '*green jobs and skills*' (ibid., p.109). Whilst recognising the importance of local authorities, at the time of writing the 2024 Labour Government has yet to publish policy which extends their role.

Other commentators on national government policy see local authorities as critical to delivering national net zero obligations (Committee on Climate Change, 2022). As Tingey and Webb (2018) observe, local government plays three key roles; enabling, advising and investing in the energy future at local level, meaning '*that they are uniquely placed to contribute, and are critical to meeting the UK's carbon targets*' (p.30). Former Energy Minister the Rt Hon Chris Skidmore MP, who led a review in 2022 of the UK Government's approach to net zero, specifically calls for an enhanced role of local authorities '*as a key partner*' to central government (Skidmore, 2022, p.12).

2.2 The origins of the Climate Emergency as a concept

To understand the development of the Climate Emergency as a concept, a literature search was undertaken both early in the research in 2020 and subsequently in 2024 using the Science Direct academic reference search engine (Search run: 30 August 2024). Based on a scoping search to identify terms used to encapsulate the urgency required in response to the scientific evidence for climate change, the following search terms were explored: ["Climate Crisis"]; ["Climate Catastrophe*"]; ["Climate Surprise"]; ["Climate Disaster"]; ["Climate Emergency"]; ["Climate Emergenc*"]. No language or date boundaries were set to ensure that any publications containing the search terms in the title or body text were captured. Publications identified in the search were checked to confirm that the search terms were present and in context. Citation chaining was then applied to specific publications which appeared particularly relevant to capture additional material. The identified literature formed the basis for the subsequent consideration of the Climate Emergency in the thesis.

The concepts and language of urgency to address climate change can be traced back more than fifty years in the academic and policy literature. The Club of Rome's seminal report (Meadows et al, 1972) refers to carbon dioxide emissions as one of '*the many disturbances*' that human activity '*is inserting into the environment at an exponentially increasing rate*' (ibid., p.78). Hansen et al (1998) talk of the '*loading of the climate dice*' (ibid., p.4114). The terms

'*climate catastrophe*' (Budyko, 1999; Baranzini et al 2003; Hansen, 2010), '*climate crisis*' (Hasselmann, 1991; Lenssen & Flavin, 1996), '*climate disaster*' (Doerell, 1999; Williamson et al, 2002) and, although rarely adopted, '*climate surprise*' (Streets & Glantz, 2000) are used to describe the impact of global warming on a range of environmental, social and economic systems.

The term '*Climate Emergency*' is not clearly defined in the literature. References to '*Climate Emergency*' in the academic literature become prominent from 2018 (Figure 3), while the scale of use of the phrase is reflected in popular media with 11.6 million hits returned when running the term ["Climate Emergency"] through the Google search engine (Search run: 7 April 2020). In an early reference, Delina & Diesendorf (2013) refer to '*the need to develop contingency plans now for possible future emergency climate mitigation*' (ibid., p.371), and the existence of an '*emergency situation*' (ibid., p. 372) drawing on historical accounts of national preparations for World War II to explore public acceptance for climate change action. With a strong hint of irony, they observe that public support in countries showing resistance to action would be '*greatly assisted by an acute climate emergency*' (ibid., p.377). Galvin (2020) refers to the social forces that channel and inhibit human behaviour as a valuable area of research to develop '*a tentative sociology designed for use in a climate emergency*' (ibid., p.2).

The environmental pressure group *Climate Mobilization* defines the Climate Emergency declaration as '*...a piece of legislation passed by a governing body such as a city council, a county board of supervisors, a state legislature, or even a national government. It puts the government on record in support of taking emergency action to reverse global warming*' (The Climate Mobilization, 2020). The declaration engenders the concepts of '*crisis*' or '*emergency*' with a reframing of the science-based language and the need for urgent action typically driven by citizen awareness, activism, and protest as a call to act. The declaration accelerates the mission to decarbonise human activity beyond the 2°C global temperature-ceiling to 1.5°C based on the associated modelling published in Special Report SR15 (IPCC, 2018). Of note, the Special Report subsequently becomes the touchstone for local authority declarations to address the Climate Emergency without the term being mentioned in the published text.

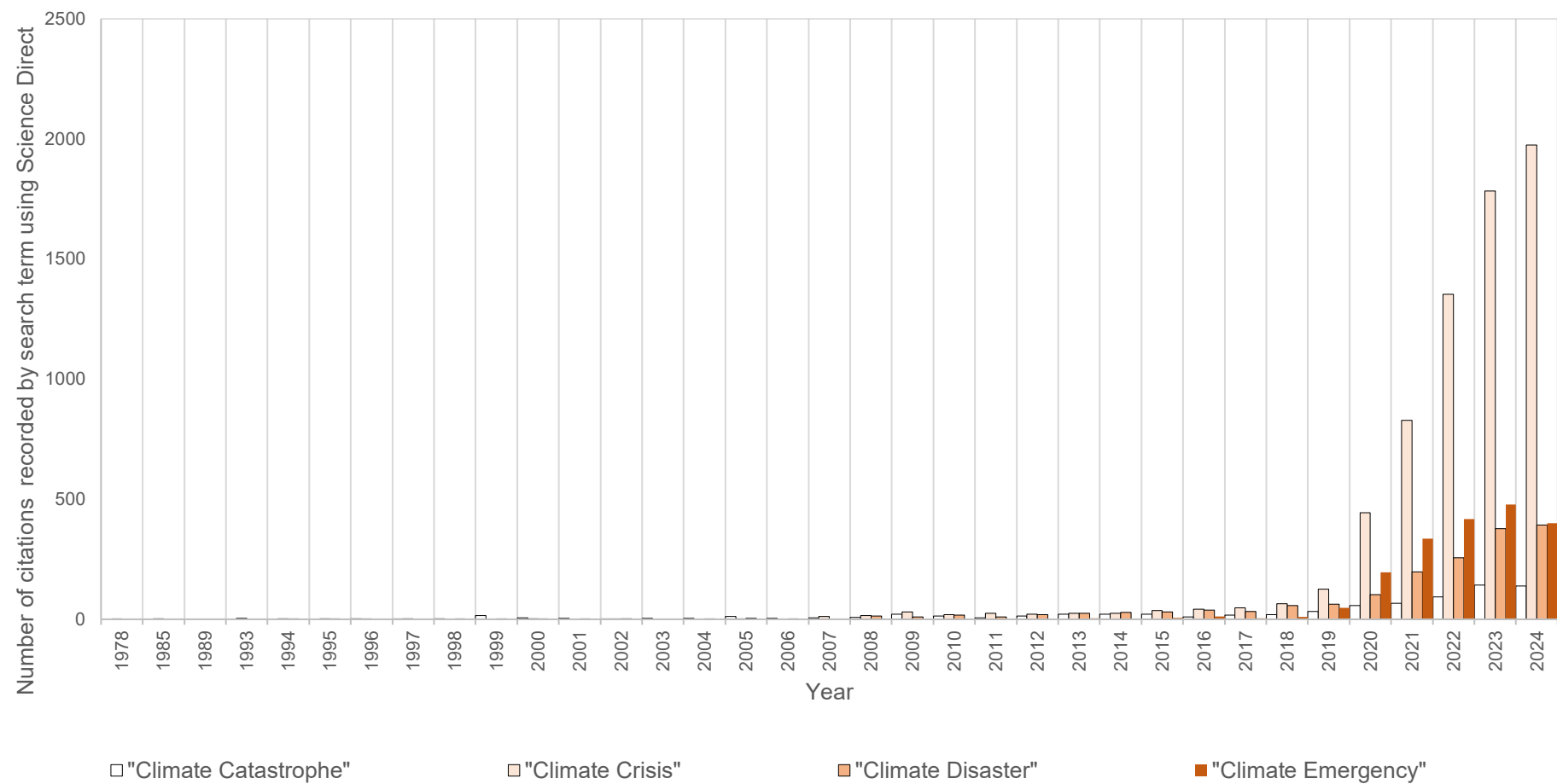


Figure 3. Citation frequency over time of climate-related terms in peer-reviewed literature (using Search Direct. Search run 30 August 2024)

Generally, but not without exception, declarations include or are accompanied by a pledge to achieve '*net zero*,' rather than carbon reduction, as an end state by a specific date. However, treatment of such terms in popular literature is both ambiguous and interchangeable. The final feature of declarations, which may be in line with citizen action observed across the world, is that they take a bottom-up, locality-centric approach. This may reflect the opinions of activists and supportive local politicians alike that neither the State nor international leaders are responding in a sufficiently robust way to the scientific evidence.

2.3 *The influence of activism*

Although climate change protest is over five decades old, the rise of Climate Emergency activism is linked more recently to the Paris Climate Agreement of 2015 and the subsequent publication of SR15. The concept of the Climate Emergency as a citizen-driven movement has been documented widely in the grey literature with public media attention focussing initially on the campaigning of the environmental activist, Greta Thunberg, and the direct-action movement, Extinction Rebellion. The resulting international protests witnessed since 2018 are therefore not a product of conventional institutional frameworks, shaped and orchestrated by political parties, trade unions or established non-governmental organisations. Rather, they have been citizen-led with various features discussed below influencing the scale and form of the activities that have been witnessed.

Public protest has tended to respond to the view that conventional political processes have failed to address climate change, with activism being borne out of '*disillusionment with the system at a time of growing distrust*' (Pickard, 2019, p.5). Those taking such action have used social media in ways that have not been witnessed before to engage and organise mass protest. The role of key individuals has captured and engaged popular attention through broadcast media. Participation has been observed across all ages in the UK, although the involvement of younger generations including protests by school children using the mechanism of school strikes has been a notable characteristic in the early stage (Fridays for Future, 2020). The witnessed level of participation by school pupils may, in part, be a function of broader awareness of environmental issues compared to older generations, whether created through institutional learning within the national teaching of geography and science at Key Stage 3 for 11 to 14-year-olds since 2013 (Department for Education, 2013) or wider exposure to the impact of global environmental pollution on ecosystems and humans through popular and social media.

The role of Extinction Rebellion has been a key factor in the translation of Climate Emergency from popular protest into institutional policy (DeSmog UK, 2019). Extinction Rebellion shaped

the tone of citizen participation, by publishing and advocating that governments and other institutions '*tell the truth*' about climate change, making a public climate and ecological emergency declaration (Extinction Rebellion, 2017), advocating the establishment of Citizens' Assemblies as a means for '*ordinary people to investigate, discuss and make recommendations on how to respond to the Climate Emergency*', and calling for urgent action to reduce greenhouse gas emissions to net zero by 2025 (Extinction Rebellion, 2020).

This model of grassroots pressure is like that of a precursor pressure group, 360.org, with their mode of operation described as '*building people power*' through multiple self-organising, local voluntary groups using digital communications and online platforms' (Gunningham, 2019., p.197). However, Extinction Rebellion has been able to cross from mass activism and civil disobedience to influencing government climate policy at both national and local level to achieve their aims.

2.4 The response of local authorities to the Climate Emergency

Although there is a body of academic literature addressing the development of Climate Emergency declarations in a range of domains including educational, health, civil engineering and emergency planning/hazard and risk, there is a relative lack of research material specific to local government activity. A targeted search using the terms ["Declar*" AND "Climate Emergency"] in the EBSCO search engine (search run: 06 June 2024) identified four papers which specifically reference local government, while a separate search using the terms [Declar* AND "Climate Emergency" AND "Local Government"] returned seven references.

Local authorities have had an active role in addressing climate change for over three decades through a range of statutory and voluntary initiatives (Table 1). In that time, councils have employed public declarations as a tool for showing their intentions, from the Sustainable Development Local Agenda 21 commitments following the Rio Earth Summit in 1992, the Nottingham Declaration on Climate Change in the early 2000s and more recently the Local Government Association's Climate Local Commitment (LGA, 2020). Over eighty per cent of local councils across the UK have made their own commitments using the Climate Emergency declaration (Figure 4) with uptake mirroring the rise of public activism following the Paris Agreement. Furthermore, over three quarters have an action plan to tackle either their own or their administrative area carbon emissions (Table 2).

Table 1. Examples of initiatives influencing local authority carbon reduction activity

Intervention/activity	Summary	Timeline	Scope of participation
RIO Earth Summit 1992	Local Agenda 21 plans based on the principles of sustainable development adopted at the United Nations Conference on Environment and Development (UNCED) in 1992.	Early 1990s onwards	Voluntary
National Indicators	Reporting linked to performance monitoring by Central Government. NI185 – Percentage CO ₂ reduction from local authority operations. NI186 – Per capita reduction in CO ₂ emissions in the local authority area.	Early 2000s-2012	Mandatory
Sharing information on greenhouse gas emissions from local authority own estate and operations	Introduced to replace NI185 moving from a requirement to a request for local government administrations to publish their GHG emissions inventories annually.	2011 onwards	Voluntary under memorandum of understanding
Carbon Reduction Scheme (Formerly the Carbon Reduction Commitment)	The scheme aimed to incentivise energy efficiency and cut emissions in large energy users in the UK's public and private sectors. The scheme was introduced through regulation following passing the Climate Change Act 2008 and withdrawn in April 2023.	2010-2023	Mandatory for larger local authorities
International Standards Organisation - ISO14000 and ISO5000	Management systems quality standards-based approach to managing energy and carbon emissions and more generally environmental performance.	Mid 2000s onwards	Voluntary, global, cross-sector
Local Area Agreements	Funding agreements between central and local government to incentivise action at local level to meet national objectives.	Mid 2000s-2010	Mandatory for participating administrative areas
Voluntary carbon management programmes	Schemes run by organisations like the Carbon Trust and Energy Saving Trust aimed either specifically at local authorities or sectors in which local authorities participate e.g. fleet management, staff behavioural change.	Early 2000s onwards	Voluntary

Intervention/activity	Summary	Timeline	Scope of participation
Use of Resources Key Line of Enquiry reporting	The Audit Commission Value for Money Key Line of Enquiry (KLOE) auditing regime included ' <i>Managing resources</i> ' (KLOE3.1). The regime was withdrawn following the demise of the Audit Commission.	2000s-2012	Mandatory for selected organisations
Nottingham Declaration on Climate Change	The Declaration committed signatories to prepare an action plan to bring down their own emissions and those of their local communities.	2000 onwards	Voluntary
Climate Local	Launched by the Local Government Association as the successor to the Nottingham Declaration.	2012 onwards	Voluntary
UK100	Membership network of local political leaders who have ' <i>pledged to lead a rapid transition to Net Zero with Clean Air in their communities ahead of the government's legal target.</i> ' (UK100, 2024)		Voluntary
Covenant of Mayors	The Covenant of Mayors was launched in 2008 in Europe with the ambition to gather local governments which are voluntarily committed to achieving and exceeding the EU climate and energy targets.		Voluntary
Local Authority Energy/Carbon/Climate Change Strategies and Action Plans	Individual local authorities have developed strategies and action plans based on their own ambitions and commitments.		Voluntary

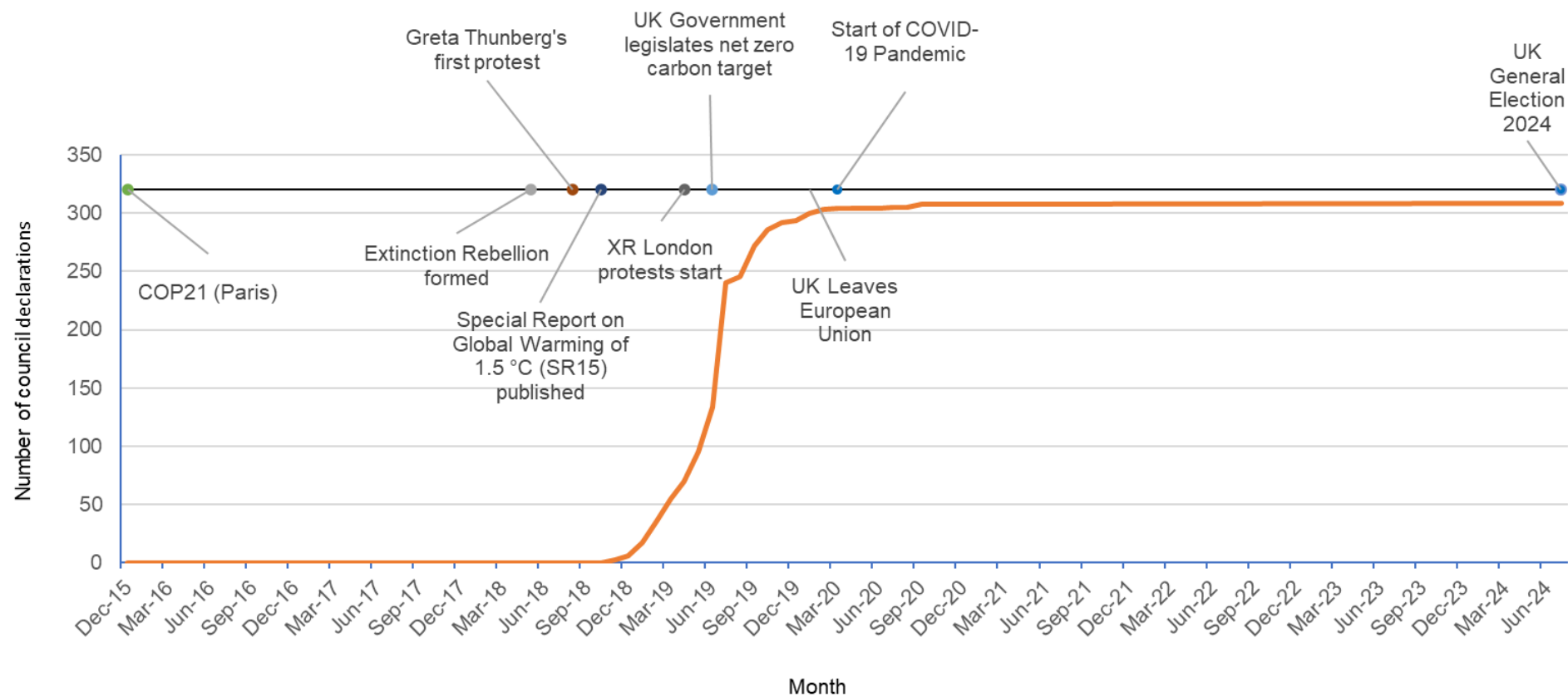


Figure 4. Progression of the Climate Emergency declarations across local government in the United Kingdom (CEUK, 2024, accessed July 2024)

Table 2. Action planning - data collected 16 September 2024 (CEUK, 2024)

Type of council	Total (N)	Action plan in place (n)	
County Councils	21	18	86%
District and Borough Councils	164	145	88%
Unitary Authorities	117	97	83%
Metropolitans Councils	36	31	86%
London Boroughs Councils	32	27	84%
City of London Corporation	1	0	0%
Combined Authorities	7	5	71%
Northern Ireland councils	11	3	27%
	389	326	84%

Analysis of local authority public records in conjunction with data gathered by Climate Emergency UK (CEUK, 2024) reveals that although local authorities may be drawing on the same authoritative scientific evidence, SR15, the approaches that they are adopting vary significantly. Of the three hundred and ninety-four councils recorded by CEUK, three hundred and thirty-seven have set a target date for achieving commitments with two hundred and sixty-four councils having adopted targets ahead of the national 2050 target, while two hundred and three have committed to 2030. This may reflect several factors including the type of local authority making the declaration, their functional responsibilities, and their ambition and track record for taking climate action.

2.5 The challenge of delivering Climate Emergency declarations

The public sector response is ambitious given that the local commitments give no clarity on how they will be funded or delivered. Notable progress is being made by the major regions in the UK where local authorities have been able to establish innovative and ambitious approaches, utilising their scale and leadership role. Examples include Bristol City Council who have contracted with a strategic commercial partner to invest and deliver low carbon infrastructure programmes across the city (Bristol City Council, 2022), Leeds City Council who have decided to invest £7.2m in the next phase of the city's heat network (Leeds City Council, 2022) and Warrington Council with an investment of £60m into 60MW of solar generation and 27MW of power storage (Warrington Council, 2022).

Such high-profile examples hide what has been described as '*the reality facing local leaders*,' the lack of a nationally coherent plan for local authority participation in net zero, insufficient powers '*to drive the big changes*' and inadequate capacity to act where relevant powers exist (UK100, 2021). Research by the UK Climate Change Investment Commission, put the

investment challenge in a range between £112Bn and £206Bn across the UK's cities alone (Beechener et al, 2021). Yet, local government investment directly into green energy technologies has yet to make a significant change to the energy system, delivering for example less than 1% of local heat demand in 2017 (Tingey, Webb & Hawkey, 2017).

The task is even more challenging where functions are split across the tiers of local government. The reality of delivering net zero for councils operating in multi-tier administrative areas is quite different to that of their metropolitan counterparts. They wrestle with the political and administrative dynamics of multi-tier administrative working and politics which Webb (2019) describes as a conundrum with '*a multitude of decisions each of which could be made differently*' (ibid., p.297). There is a significant gap between the ambition of local politicians approving Climate Emergency declarations and their understanding of what needs to be done to achieve net zero (Howarth, Lane, & Fankhauser, 2021). They are more likely to lack the capacity, capability and unified political agency seen in the major cities (Beechener et al, 2021). Specifically, they lack the resources and ability to create investment opportunities at the scale needed to lower transaction costs (Webb, Tingey and Hawkey, 2017). In addition, the ability to play their part has been heavily constrained through what Tingey and Webb (2020, p.2) describe as '*neoliberal governance reforms*' which, despite central government's devolution intent, have moved power away from the regions to central government, exacerbated by more than two decades of budgetary pressure (Davis, 2021). This has led to what Lowndes and Pratchett (2012) describe as '*austerity localism*', where '*local authorities themselves... have to mete out the cuts*' (Ferry and Ahrens, 2017; p.550). These conditions are likely to adversely affect the availability of financial and human capital needed well into the late 2020s and beyond (Hoddinott, Fright and Pope, 2022).

Some relevant powers and duties are available to local authorities across a range of functions and service areas. However, the Committee on Climate Change (2020) considers them insufficiently robust '*due to gaps in key powers that prevent systems-scale or holistic approaches, policy and funding barriers, and a lack of capacity and skills*' (ibid, p.5) and calls for a net zero delivery framework (Ibid., p.8). The Climate Change Committee concludes that such a framework is needed which accommodates the diversity that exists across local government, allowing '*local flexibility to deliver an agreed national outcome*' (ibid, p.9). These recommendations have been reiterated by others (Regen/Scottish & Southern Electricity Networks, 2020; Russell and Christie, 2021; Skidmore, 2022).

Chapter 3: How local government works

Preamble

This chapter sets out the role and responsibilities of public administration in the United Kingdom, how local authorities make decisions and how these decisions are scrutinised. The role of councils as investors in net zero delivery is also considered.

The principal content is based on two research papers: '*The role of UK local government in delivering on Net Zero carbon commitments: You've declared a Climate Emergency, so what's the plan?*', published in Energy Policy in 2021 (doi.org/10.1016/j.enpol.2021.112245) and '*The role of local authorities in renewable energy investment: Getting the money to flow*' presented at the International Sustainable Ecological Engineering Design for Society (SEEDS) Conference 2021, awaiting publication in Conference Proceedings (in pre-print, Springer Nature).

Reference is made to both English and UK local administration. Similarities and differences between English, UK and devolved administrative contexts are identified where appropriate.

3.1 Introduction

The nature of local government varies in structure, scale and function across the UK. Local authorities have specific institutional characteristics that, as the lowest autonomous unit of government, place them in a position of authority and influence at local level albeit within defined parameters. They operate under democratically elected representation which links their purpose directly to the local electorate with legal powers, duties and functional resources traditionally defined by national parliament through statute (Ladner et al, 2016). Their longevity of purpose and wide scope to shape the places over which they have administrative responsibility puts them in a unique position within local economy and society, with '*leverage and influence through their services, planning and enforcement roles, housing, regeneration, economic development activities, education and skills services and investments*' (Evans, 2020, p.5).

The public sector has experienced nearly two decades of budgetary pressure since the economic downturn of 2008 (NAO, 2021). Councils have seen an erosion of the traditional funding base of revenue support grant derived from national taxation, leaving them having to cut budgets and find other ways of funding public services for example through local taxation, income generation and investment (LGA, 2018). The COVID-19 pandemic has exacerbated

the situation, with several commentators expressing the view that the impact on local government finances has and continues to be both immense and far-reaching (UK Parliament, 2020; Institute for Fiscal Studies, 2020; LGA, 2020).

3.2 The structure and function of public administration

The top-down nature of public administration in England and Wales has prevailed since the Local Government Act 1972 (Figure 5). The Act led to the formation of fifty-two county councils with the urban and rural district council layer undergoing functional and boundary reforms into larger boroughs and districts as a third layer of government. The three countries of the United Kingdom excluding England are now devolved national administrations for a range of functions while UK Parliament still prevails across key functions of government (Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government, 2023). The two-tier local government system generally prevails in England, where responsibility for control of services is split between County and District Councils.

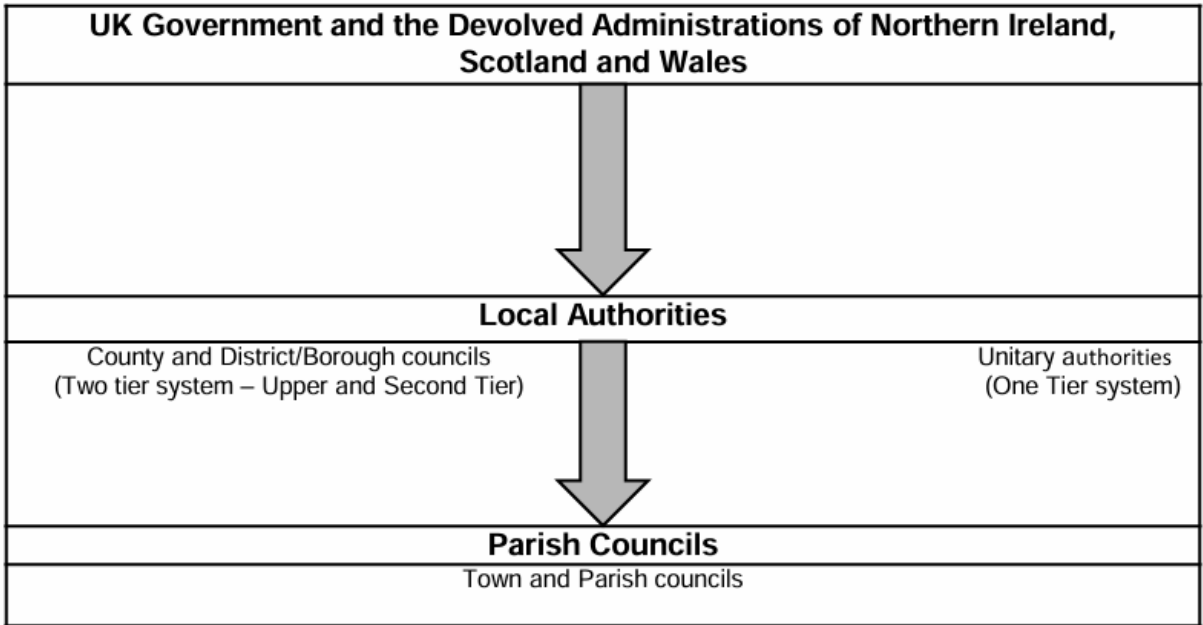


Figure 5. Structure of public administration in the UK.

See footnote 1 for a working definition of Local Government and public administration.

The devolution of central government powers and duties has emerged in specific parts of the country creating single tiered administrative structures with one statutory body responsible for locally delivered public services. The Local Government Act 2000 led to the introduction of democratically elected mayors either with sole responsibility for administering services or continuing in a multi-tiered structure with existing district and county councils (Table 3). This process of transferring responsibility from central government to local areas has continued with

'*devolution deals*', with the most common arrangement establishing a combined authority with a democratically elected mayor (Sandford, 2024).

At the time of writing, there are four hundred and eight principal (unitary, upper and second tier) councils in the UK: twenty-six county councils, one hundred and ninety-two district and borough councils, and one hundred and ninety unitary authorities with different responsibilities and arrangements for delivering services (Department for Levelling Up, Housing and Communities, 2023; Local Government Information Unit, 2024). Below this tier are parish and town councils, of which there are around ten thousand across England holding a range of powers specific to their administrative area (Sandford, 2021). These do not form part of local authority administration and are not the focus of this research.

Table 3. Functions of English local authorities (Extract from the Committee on Climate Change, 2020, p.28)

Councils in England	Number*	Responsibility
District Councils	192	Building Regulations, Council Tax and Business Rates, Local Planning, Housing, Parking, Waste collection, Environmental Health, Economic Development, Leisure, Parks & playing fields
County Councils	26	Transport & Highways, Emergency Planning, Trading Standards, Education, Economic Development, Public Health, Social Services, Minerals & Waste planning, Waste Disposal
Unitary and Metropolitan Councils	55 & 36	All the above
London Boroughs and the City of London Authority	32	All the above
Scottish Councils	32	All the above
Welsh Councils	22	All the above
Northern Irish Councils	11	Housing, Planning, Highways, Libraries, Environmental Protection, Waste collection
Combined Authorities/Mayoral Authorities	11	Varies depending on the devolution deal but can include: all the above for Unitary Authorities, Strategic planning for Built Environment, Transport, Economic Development, Skills and Education

* As at the time of publication in 2020.

3.3 Local authority governance structures

Before the Local Government Act 2000, English local authorities organised their political decision-making structures and processes on a set of committees with specific responsibilities for the functioning of the council. Evidential research commissioned by central government to assess the effectiveness of these arrangements expressed criticism of the committee model: decisions may be subject to private party-political discussion prior to the decision being taken (Coulson and Whiteman, 2012), and their functional separation creates what Coulson (2011) portrays as effectively a closed shop existing within silos, with '*entrenched departments whose senior officers worked closely with the committee chairs*' (ibid., p.102). The evidential research

observed that the process of decision-making on issues that straddled multiple issues across multiple committees was both time-consuming and complex to exercise effectively, concluding that there was a case for change.

The 2000 Act introduced flexibility to organise, or otherwise be directed to adopt, according to a constitution and standing orders following one of four operating models. These are: the conventional committee system, a leader and cabinet sometimes known as an '*Executive*', a directly elected mayor and cabinet, or directly managed arrangements prescribed by the Secretary of State (LGA, 2022). In many local authorities, the Cabinet model, with or without a directly elected mayor, replaced the committee system. This model centres on a small number of councillors appointed to specific portfolios. The cabinet is empowered under the council's constitution to make decisions on a range of matters which have been previously subject to approval by the Full Council, comprising of all elected members. Despite these reforms, Cook (2021) considers that the way councils make decisions remains bureaucratic with '*decisions and approvals often follow very prescribed and gated routes*' (*ibid.*, p.2).

3.4 *Devolution of power and net zero*

Devolution is the political and administrative process of transferring powers and funding from central government to other parts of public administration (Torrance, 2024). In the UK, this has led to the establishment of devolved administrations and assemblies under statute in the nations of Northern Ireland, Scotland and Wales. In England, the devolution process has led to transfer of arrangements for powers and funding to local government in key localities. This is seen both by central government and others as vital to getting decision-making and funding placed at the most appropriate tier of public administration, where decisions are made closer to those likely to be affected by the outcome (*ibid.*).

English devolution through the *County Deal* to non-metropolitan areas where two-tier (i.e. county-district council) public administration predominates (County Councils Network, 2022) has led to twenty-one devolution deals as of May 2024, in addition to those existing with mayoral and combined authorities (Sandford, 2024). The latest devolution round has witnessed the so-called *Trailblazer* deals for the larger conurbations led by the West Midlands and Manchester.

Successive UK governments have considered a devolution framework as one opportunity for '*innovative local proposals to deliver action on climate change and the UK's Net Zero targets*' and expect local areas to produce their own solutions (DLHC, 2022, p.18). A feature of the latest deals where existing devolution agreements undergo a refresh is the inclusion of

requirements for local areas to establish net zero governance and delivery arrangements. In return, the area will receive hypothecated financial settlements, for example to fund domestic retrofit programmes currently administered by central government (HM Government, 2023). Some view this as a real opportunity for local flexibility to deliver action on climate change with the opportunity for those with pre-existing devolution arrangements able to take a strategic role on net zero in collaboration with government (Sandford, 2023). However, the evidence showing the pace of roll-out of devolved powers and responsibilities to embed effective net zero arrangements could be seen as insufficient to deliver local Climate Emergency commitments, given the coverage of current devolution deals in England, the time taken to negotiate the deals and the need in some localities to secure a mandate from citizens (Fig. 6). As Torrance (2019) describes, this is likely to create an administrative landscape that is *'asymmetric, in that different parts of the UK have different forms of devolution and varying degrees of power'* (ibid., p.4). Recent stalling of negotiations between central government and Norfolk and Suffolk highlights the existential risk of this situation occurring (BBC, 2024).

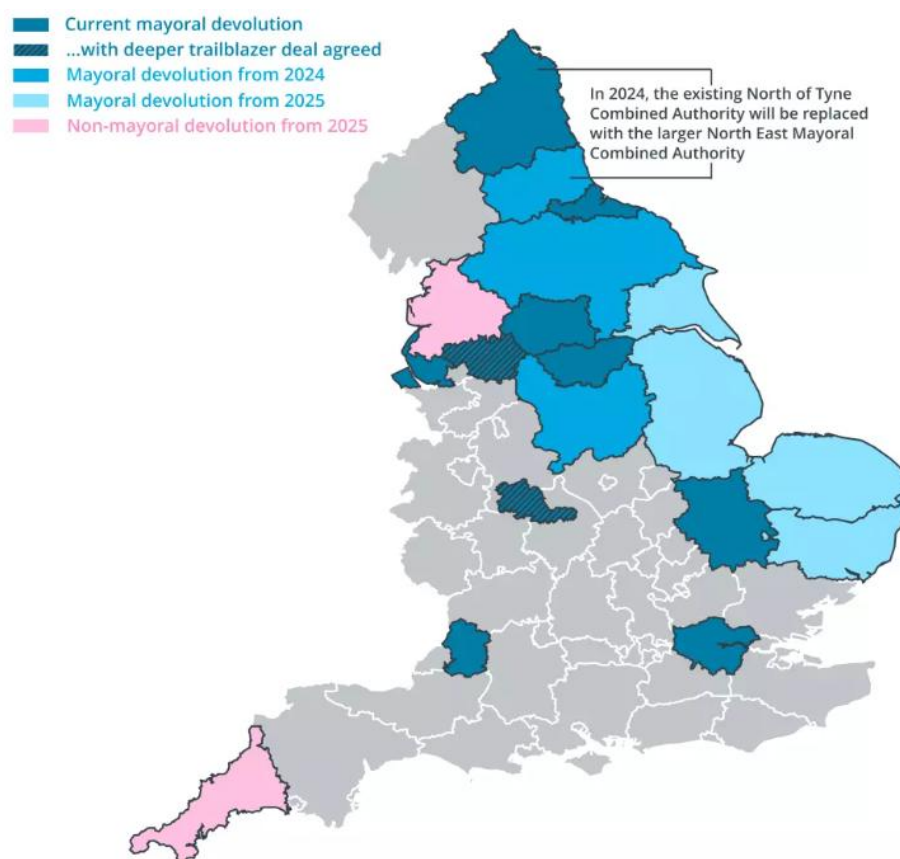


Figure 6. Existing and proposed devolution in England, as of December 2023

(Extract from the Institute for Government, 2023)⁴

⁴ Grey shading indicates that there were no devolution plans at the date of inclusion in the thesis.

3.5 How local authorities make and scrutinise their decisions

Local authorities work within defined legal, constitutional and democratic structures. In all but the governance structure where the Secretary of State has taken over the functioning of a council, the strategy and budget for the organisation is set by a *Full Council* of all elected representatives. In the *Cabinet* model a sub-set of councillors have the responsibility for specific portfolios of council activity with powers and authority to make certain categories of delegated decision, termed *key decisions*, relating to policy and spending that have been first agreed at full council. The composition of the cabinet is decided by the leader of the ruling party. Opposition councillors can observe cabinet business but not influence, halt or overturn any outcomes unless through the council's approved oversight and scrutiny process. In the *Committee* system, these decisions are considered by the relevant committee for approval at a full council (HM Government, 2012; LGA, 2022). In all structures, certain democratic functions may be devolved to paid staff according to a scheme of delegation which forms part of the council's constitution. The most significant decisions made by councils are subject to a call-in process, including a '*standstill period*,' during which the decision can be challenged and referred to the council's *Overview and Scrutiny* process prior to the final outcome being published and implemented.

Standards in UK public life applying across both the political and the paid staff working in public administration are defined by the *Nolan principles of public office* (Committee on Standards in Public Life, 1995). Regarding the latter, Bergin (2023) reflects that the level of responsibility that public officials are entrusted with '*is critical to the well-being of our society, economy and security*' (p.104). The Nolan principles cover seven themes: selflessness, integrity, objectivity, accountability, openness, honesty and leadership. All decisions made in public administration face scrutiny given that UK government is built around the principles of public, democratic accountability. Scrutiny of government is defined as '*any activity that involves examining (and being prepared to challenge) the expenditure, administration and policies of the government of the day*' (Institute for Government, 2015, p.1). The primary purpose of scrutiny is to improve effectiveness in terms of processes and outcomes (ibid.). The use of scrutiny within the political decision-making process in local authorities grew out of the agenda of modernising local government in the late 1990s (Maer and Sandford, 2004). Evidence showed that the decisions were often made along party lines, curtailing debate, whilst conversely delaying decisions by virtue of the proliferation of committees (ibid.). The ability for others to hold decision-takers to account for their decisions in public life is a key component of a well-functioning democracy (MHCLG, 2019). The function of the *Overview and Scrutiny Committee* in local authority governance was established by the Local Government Act 2000, providing a statutory mechanism for non-executive members to

scrutinize decisions that the executive *'is planning to take, those it plans to implement, and those that have already been taken/implemented'* (ibid., p.5).

The role of scrutiny in local government has been the subject of review by Central Government with recommendations made by the Select Committee to the Ministry for Local Government (MHCLG, 2018). In particular, the Select Committee called for clarity on and assurance of the independence of the overview and scrutiny functions from the executive and more impartial advice and resources to support the work of the scrutiny process (ibid.). Concern for better scrutiny echoes comments made by Clive Betts MP. In his statement to the House of Commons during consideration of the 2018 Select Committee report, he argued for a stronger role of overview and scrutiny as part of the decision-making process in more complex areas of local authority work *'rather than simply looking at something after the event, take policy initiatives and help to develop policy'* (Hansard, 2018). Betts further called for wider participation of external stakeholders in this process, extending to specialist expertise and the public (ibid.).

3.6 The challenges faced by decision-takers in public administration

Ronquillo and Avellaneda (2010) observe little empirical research into how decisions are made by public institutions. They draw out substantive differences between the public, private and not-for-profit sectors which shape the processes of decision-making: purpose, motivations and driven behaviours; ownership, funding, levels of autonomy and flexibility to operate; the relationship with those that are recipients of their actions, and the resulting organisational structures that are employed. Public servants are faced by requirements for transparency and disclosure, legislative constraints limiting information gathering to inform decision-making, and complex internal reporting processes (Nutt, 2005). Nutt considers that private sector organisations *'have smoother decision-making processes'* than their public sector counterparts, who *'experience more turbulence, interruptions, recycles, and conflict'* with *'vastly different kinds of expectations and accountability that may call for different decision-making practices'* (ibid., p.290).

Ronquillo and Avellaneda (2010) conclude that compared to other sectors, public sector institutions must make highly complex decisions in very dynamic environments based on sub-optimal information. This may lead to them adopting more intuitive approaches compared to private organisations (ibid.). Citing Elwyn (2010), Bergin refers to a shift in public administration towards the use of evidence-based decision making following predefined approaches like the Green Book (HM Treasury, 2020) noting that the *'evaluation of the quality*

of the decision-making process is a more reliable evaluator of good decision-making than merely relying on the outcome' (Bergin, 2023, p.105).

This highlights the challenge of '*bounded rationality*' (Simon in Schwarz et al., 2022; Permana and Wening, 2024) where the decision process is overloaded by the combination of complexity and a lack of coherent evidence typical of the '*wicked problem*' described by Roberts (2000). In their consideration of decision-making in complex public service systems in the US and Ireland, Meek and Rhodes (2014) define the environment in which public sector decision-makers operate. They observe that '*contending accountability demands from citizens, overlapping jurisdictional authorities, diverse revenue sources and policy directives make it difficult for agents to operate and administer services effectively*' (ibid., p.4). They identified four environmental conditions that influenced decision-makers: funding uncertainty, agency capacity, stakeholder variation and project timeline.

3.7 *The role of the individual in public decision-making*

Although not a focus of this research, there is a large body of literature which considers individual cognitive behaviours and group decision-making dynamics as opposed to institutional process and practice. For example, Kelman et al. (2015) argue that academic research has focussed on the processes of information gathering and cost-benefit analysis involved in complex decision-making whilst ignoring the personal '*moral*' dimension. They advocate an '*ambidextrous*' approach to decision-making whereby the decision-taker uses multiple sources of evidence gathering and consultation alongside introspective reflection to lead to '*doing the right thing*' (ibid., p.469). In some degree, this contrasts Bergin who, in citing Bellantoni et al. (2023), concludes that '*while the correctness of decisions is notoriously subjective, having an appropriate decision-making process to ensure quality decision-making is far more objective*' (Bergin, 2023, p.105).

3.8 *The need to change decision-making to improve net zero investment*

There is evidence that local authorities are developing tools and methods to assist decision-takers when asked to consider climate or social justice impacts of institutional decisions. Cornwall Council, for example, has developed a decision-making framework based on the '*Doughnut economics*' model to present the multi-faceted impacts of complex challenges in ways that are easier to rationalise than conventional techno-economic evidential business cases (Raworth, 2017). The Cornwall Development and Decision Wheel is used in cabinet decisions to illustrate and draw politicians' attention to the positive and negative impacts of the

decision based on the principles of balancing '*the boundaries of a thriving society with those of a thriving planet*' (LGA, 2021).

Despite this example of a more integrated approach, council decision-taking processes remain one of the systemic barriers to net zero delivery in the UK. Investment decisions in councils are dependent on and a function of their specific constitutional structures, internally agreed processes and thresholds of delegation. These are defined according to their own circumstances having regard to the statutory framework that applies to local government. There appears less focus in the literature on the barriers facing councils arising from how they make decisions in the context of achieving their Climate Emergency declarations, compared to the barriers preventing investment in renewable energy (Institute for Public Policy Research North, 2017; Brummer, 2018; Billington, Smith & Ball, 2020; Beechener et al., 2021; National Audit Office, 2020). Furthermore, Kuzemko and Britton (2020) note that smaller local authorities are under-represented in the research literature. There is, therefore, a valid research gap concerned with how councils make decisions that impact delivery of their Climate Emergency declarations which this thesis aims to explore in more depth.

Chapter 4: Governance in the context of the Climate Emergency

Preamble

This chapter explores the literature across academic and sectoral domains to consider what is meant by *governance* in the context of this research, the forms that governance arrangements can take, and the principles by which different governance models may be evaluated to determine their efficacy. The evidence that is presented is used in later research in the thesis to provide a basis for considering an empirical approach to abstracting models of governance developed later in the thesis.

4.1 Methodology

Reviews of the literature were undertaken between 2020 and 2023 as part of each research stage discussed later in the thesis. The reviews covered political and social science research as well as consideration of the specific fields of sustainable development, environmental and social governance (ESG) and public administration. The WorldCat Discovery and EBSCO library search engines available through the Universities of Suffolk and East Anglia were used alongside non-academic web-based searches, citation chaining, and identification of relevant material through formal interviews and informal discussions with individuals involved in activities related to net zero governance.

The latest review was carried out in December 2023 using EBSCO to identify material relating to public governance and public administration (Table 4).

Table 4. Search criteria using the EBSCO search engine – search run in December 2023

Ref	Target	Search criteria	Results count
S1	Public governance	<TI governance AND TI public>	27,371
S2	Literature reviews covering public governance	<TI governance AND TI public AND TI (literature review or review of the literature or overview or systematic review or meta-analysis)>	145
S3	Governance and public administration	<TI governance AND TI (public administration and management)>	154
S4	Literature reviews covering governance in public administration	<TI governance AND TI (public administration and management) AND TI (literature review or review of the literature or overview or systematic review or meta-analysis)>	0

The top five hundred results of Search S1 were reviewed alongside all results returned in the three other searches. Relevant papers were identified, their abstracts reviewed, and key papers downloaded for more detailed consideration. Attention was given to published

systematic literature reviews including Ruhlandt (2018), Heidingsfelder & Beckmann (2020), Gjaltema et al. (2020), Ruijter et al. (2023), Gallouj & Savona (2008), Lynn et al. (2000), Rose (1973) and Scognamiglio et al. (2022). Citation chaining was applied to identify further relevant literature.

4.2 Defining governing and governance

There is both a rich and deep academic research tradition exploring the theory and practice of *governing* and *governance*. By describing *governing* and *governance* as '*processes of management and rule*', Tiihonen (2004) considers that the concepts are both simple, yet complex to define because of the way that they are used interchangeably. Governance is seen by some as '*inherently political*' in engendering policies, rules, guidelines and norms, resources and values, and comprising of both formal structures and informal arrangements (Lynn et al, 2000). In the context of democratic public administration, Howlett, Rayner and Tollefson (2009, p.385) defines *governing* as '*what governments do, that is controlling the allocation of resources between social actors; providing 'a set of rules and operating a set of institutions setting out 'who gets what, where, when, and how' in society*'. It is, however, overly simplistic to confine *governing* and *governance* to political administration: that governments govern, with focus on the relationships that exist between the governmental and non-governmental actors in the most traditional sense (Howlett et al., 2009, p.385). Kooiman (1993, in Adger and Jordan, 2009, p.6) declares that the two concepts are very different where governing centres on interactions which '*seek to 'guide, steer, control, or manage*' while governance describes the '*patterns that emerge*' as different participants engage within a set of defined behaviours, norms and practice. Leaning on Kooiman's definition, Lang et al. (2013) discriminate between *governing* as the formal administrative process of government institutions, and *governance* where the boundaries between the '*state, market and society*' may become intertwined and blurred (ibid.). In '*Models of Governing*', Rose (1973) argues that the role of governing differs depending on who '*governs*' and who is '*governed*', emphasising that governing is about relationships where governance deals with the governing process.

The conventional view is that *governance* is defined as '*the means by which an activity or ensemble of activities is controlled or directed*' (Hirst, 2000, p.24) and seen as the practices through which societies exercise '*purposeful effort to guide, steer, control, or manage sectors or facets of societies*' (Kooiman, 1993, p. 2). Lynn et al. (2000) refer to the strong inferential appeal of the concept which leads to issues of definition due to its common usage by those using the term in different contexts and applications. Despite this ambiguity, the authors describe *governance* as '*a means for achieving direction, control, and coordination of wholly or partially autonomous individuals or organizations on behalf of interests to which they jointly contribute*' (ibid., p.235). Van Zeijl-Rozema et al. (2008) describe *governance* as '*a collection*

of rules, stakeholder involvement and processes to realize a common goal' (p.411) while Adger and Jordan (2009, p.11) base their definition on Ostrom (2005) as *'the patterns that emerge from the governing activities of diverse actors that can be observed in what is deemed acceptable norms of behaviour, and divergent institutional forms'*. In their review of how academic researchers use the term, Lopes & Farias (2022, p.117) summarise *governance* as *'an attempt to improve coordination among relatively dependent actors in order to solve common problems among them'* such that *'governance structures, in their various models, aim to achieve the direction, coordination, and control of individuals and organizations in pursuit of an expected result.'*

Bridge and Perreaul (2009) see the concept of *governance* as both dimensionless yet, paradoxically, all about scale where specific arrangements are inherently defined by the locality. Adger & Jordan (2009, p.11) consider it as *'not tied to a particular period of time or geographical place'*. However, the concept of a clear and coherent hierarchy of arrangements is rarely cited in the literature, where overlapping powers, bureaucracies and interests within governance regimes and scales operate together. As Boudon (Cited in Hamman,2020) says in this context, *'when size changes, things change'*.

4.3 Models of Governance

The emergence of governance models particularly in public administration may be a response to what has been describe in academic research as *'wicked problems'* (Rittel and Webber, 1973; Roberts, 2000; Termeer et al., 2015; Alford and Head, 2017). These can be defined as highly disruptive external stimuli affecting multiple systems, with climate change an example that is cited in the literature. Although there is extensive theoretical consideration (Williamson, 1985; Thompson et al., 1991; Lowndes and Skelcher, 1998, Lange et al., 2013), the literature review for this thesis did not identify a predominant categorisation or nomenclature defining, delineating or evaluating models of governance.

Based on research by Williamson (1985), Thompson et al. (1991) propose three general governance forms, described as *'models of coordination'* (ibid., p.2): a *'hierarchical'* form which operates by imposing structure using bureaucratic processes and practices; a *'market'* form where governance revolves around *'contractual relationships over property rights'* (ibid., p.318) with actors preferring to be independent and choosing to collaborate only when they see particular personal benefit; and a *'network'* form derived from the opportunity and desire for actors to find common ground and work on the basis of trust, loyalty and reciprocity. The *market* form is seen to offer a high degree of flexibility to create alliances although competition may limit the scope and willingness to work together (ibid.). The *hierarchical* form establishes central control but is considered to demonstrate inflexibility and reduced opportunities for

innovation while the *network* form is characterised by its loose relationships which may lead to less focussed goal achievement. Goss (2001) concludes that this third form prevails as '*a natural consequence of the failure of the state and the market in a (post) modern society, emphasizing networks rather than hierarchies or markets*'.

Kooiman (2003) introduces three models which differ from each other in the extent to which governmental and non-governmental actors are involved in governing. The first, '*hierarchical governance*', refers to governing as the domain of government with non-governmental actors in a '*subservient role*.' The second, '*self-governance*', sees distance and individual agency between the state and non-governmental actors. The third, '*co-governance*', sees collaboration between state and non-state institutions '*who can only achieve beneficial outcomes if they work together*' (ibid., p.44). *Co-governance* contrasts classical notions of '*top-down government*' where networks of state and non-state actors are jointly involved in steering or '*governing*' specific activities (Sibeon, 2000). Arnouts et al. (2012) subsequently propose a sub-categorisation of the '*co-governance*' form into '*closed* and *open co-governance*' with the former exhibiting restricted, structured and fixed features of co-governing between state and non-state actors whereas the latter exhibits flexibility, autonomy and '*liberal pluralism*' (ibid., p.44).

When considering '*sustainability governance*', the literature highlights a '*hierarchy*' versus '*non-hierarchy*' debate with much of the recent research into climate change governance, for example, taking a global perspective (Hamman, 2020). This direction of academic research appears to Hamman to downplay the analysis of command-and-control versus multi-level governance models (ibid., p.17). Ostrom (2010) sees the need for a polycentric stance to *governance* as a response to the top-down model when trying to address issues that operate across geographic scales and vectors. The conventional theory of collective action is that no-one will react without a single external authority imposing enforceable rules, such that independent actors will decide what action to take based on self-interest even where those actions impact collectively. Empirical research cited by Ostrom indicates to the contrary, that '*while many instances of free riding are observed in the array of empirical research, a surprisingly large number of small- to medium-scale groups facing collective-action problems do cooperate*' (ibid., p.551). As an alternative, Ostrom describes '*polycentric systems...characterized by multiple governing authorities at differing scales rather than a monocentric unit*' (ibid., p.552).

Driessen et al. (2012) distinguish between five ideal models of governance: '*centralized*', '*decentralized*', '*public-private*', '*interactive*' and '*self-governance*'. In the case of the first two models, either central, regional or local governments take the lead, and the market and civil

society are the recipients of governmental incentives. This compares to *public–private* governance where co-operation is mainly between government and the market. *Interactive governance* is based on a wider participatory platform with governments, market actors and civil society collaborating on equal terms. Finally, in the *self-governance* model the principal actors are drawn from the private sector where environmental goals are achieved through private efforts and investments.

Heidingsfelder & Beckmann (2020) observed in the literature the distinction between *hard* and *soft* law approaches in different governance models. *Hard law* refers to regulation by the State compared to *soft law* through non-State self-regulation, leading to researchers defining three models of ‘*public*’, ‘*private*’ and ‘*hybrid*’ governance. The first centres on nation states and governmental bodies as *governance setters*, while *private governance* is shaped by and formed around institutions from civil society and the private sector. The *hybrid governance* model draws from both modes in a range of arrangements in ways that ‘*a plurality of actors can work together and bring in their respective competencies and resources...to create more than the sum of its individual parts*’ (ibid., p.375).

In the context of climate change, Russell and Christie (2021) refer to a substantial body of academic literature dealing with the conceptualisation and implementation of both ‘*multi-level governance*’ and ‘*poly-centric governance*’ models. The attraction of such models is their ability to operate across scale, being able to act flexibly by adapting to stimuli and address systemic challenges. Mulgan (2020) talks of how countries can organise a ‘*governance mesh*’, defined as ‘*an integration of multiple tiers, acting together, sharing data, lessons and insights*’ (ibid., para.5.). This is seen as a response to complexity, with removal of hierarchy through digitalisation and decentralization, and the breakdown of previously demarcated boundaries to problems and solutions. The model goes beyond the layering of structures and processes where institutions work within their own domains, to a more vertically and horizontally integrated collaboration creating flows of knowledge and trust. The level of collaboration is an important factor in the success of such arrangements. Too little and the network collapses through lack of supportive interactions. Too much duplicates effort and time leading to inefficiencies and excessive system redundancy (ibid.).

Lange et al. (2013) develop a meta-framework to conceptualise governance models using three dimensions of *politics*, *policy* and *polity*. The last of these dimensions refers to the institutional architecture within which policies are made and operate, with the interactions between actors described as the institutional ‘*rules of the game*’ (ibid., p.409).

Of importance in the development of governance theory is whether these forms or models co-exist or organise within some form of maturity pathway. Mainstream academic thinking has

focussed on moving from '*governing to governance*' along a linear, hierarchical path (Lange et al., 2013). Arnouts et al. (2010) go further to argue that Kooiman's previously outlined frameworks of *hierarchical*, *co-governance* and *self-governance* can be viewed as sequential and separate (Arnouts, 2010). However, Weber et al. (2011) recognise the co-existence of state and society-centric models rather than drawing what may be seen as a simplistic conclusion that the first is naturally replaced by the second. When considering governance in Sustainability, Hamman (2020) considers that presuming a transition from *hierarchical* to *non-hierarchical* forms of public governance is a simplistic and inaccurate interpretation, such that progression '*from governing to governance*' is not a natural or consequential pathway (ibid., p.29). This suggests therefore that governance models can shift along a continuum with co-existence between hierarchical state intervention and societal autonomy, driven by multiple influences within and between actors, and leading to new rules being formed (Lange et al. 2013).

4.4 Regional models of climate governance

Prior to the 15th Conference of Parties (COP15) in Copenhagen in 2009, Greenhouse gas emissions reduction, as a mitigatory policy and delivery response to climate change, was seen as the domain of nation states through formal multi-lateral agreements. The failure of negotiations at COP15 to secure a common global position is seen as '*an inflexion point in climate politics*' leading to more focus on voluntary sub-national governance structures looking to fill the gap in climate action (Castan-Broto, 2017, p.1).

Much research has considered the Multi-level and Poly-centric approaches to decentralised climate governance as ways to consider how actors participate and make decisions both across tiers of administration and with wider society (Bulkeley & Betsill, 2005; Hooge & Marks, 2010; Kern, & Alber, 2008; Homsey & Warner, 2015; Lee & Painter, 2015; Abbott, 2017). They provide a perspective from which to consider the layering both of government and '*spheres of governance*' through which climate and sustainability decision-making can function at the local level (Bulkeley & Betsill, 2005, p.48). Hooge & Marks (2010) delineate between a *Type 1* approach which focuses on the competence and interactions between tiers of government and *Type 2* where lateral, poly-centric relationships and structures overlap and co-exist. Poly-centric governance takes a '*many centres of decision-making*' viewpoint to decision-making by autonomous jurisdictions given that '*interdependent policy problems are frequently so complex that they require multiple decision-making centers to take coordinated actions in order to resolve an issue.*' (Heinen et al., 2022, p.61). It could, however, be argued that although Polycentrism presumes that power to act exists at that level, this may not always be the case in an environment where administrations, whether at central government or regional

level, continue to operate traditional '*command-and-control*' model of governing, thus stifling local actor agency and innovation (Lee & Painter, 2015, p.568).

Comparative research of six metropolitan areas in the UK and Germany by Bulkeley & Kern (2006) observed the changing role of regional government in climate governance. Based on this research, Kern & Alber identify four governing modes which they consider significant in the analysis of regional climate governance; *local authority self-governing*, *governing through enabling* for example by co-ordinating and facilitating partnerships, *governing by provision* shaped through service provision, and *governing by regulation* with local authorities using their mandated powers '*in very creative ways*' (Kern & Alber, 2008, p.179). A conclusion drawn by the researchers, which continues to resonate, is that due to the changing nature of conditions both within public administration and across society, local government needs to become more effective at '*enabling capacity*' for concerted, well-coordinated action at local level (Bulkeley & Kern, 2006, p.2238). This leads to opportunities for new, innovate forms of regional and sub-regional governance.

Considering climate governance in this way acknowledges that local authorities are not the only players with a responsibility to lead or the capability and agency to act. This opens up opportunities for a range of non-state actors at local level to deliver '*intervention and supporting action where there is little capacity*' (Castan Broto, 2017, p.4). Eckersley (2018) considers multi-level governance useful as a way to illustrate involvement of numerous stakeholders but does not help understand the processes that operate or relationships. This hinders identification of those with most influence, particularly where the interplay is beyond layers of public authority. Kern & Alber (2008) conclude that effective multi-level arrangements are dependent on collaboration between actors both laterally and vertically in administrative hierarchies. The former can take the form of collaboration between areas where there is a shared competence, geographically and functionally. A lack of collaboration in the latter can lead to '*harmful competition*' resulting in '*a race to-the-bottom in the area of environmental and efficiency standards*' (Kern & Alber, 2008, p.183).

The diversity of form that sub-national climate governance arrangements can take lead Hooge & Marks (2010) to conclude that as the breadth and scale of externalities affecting governance varies immensely so should the scale and nature of response. The research literature shows '*no agreement about how multi-level governance should be organized*' (ibid., p.17) which leads to counterviews; one view of governance at different but nested geographical tiers of jurisdiction with the assignment of distinct functions. An alternative view is conceived with specialised task-specific jurisdictions with no fixity, able to adapt as needs for governance change, with '*no up or down*', *no lower or higher*, *no dominant class of actor*' (ibid., p.21).

In their consideration of the relationship between climate policy and action, Fuhr et al. (2018) introduce the concept of upscaling climate action from local climate policies within multi-level climate governance; horizontally between cities through good practice transfer, replication and '*policy mobility*'; and vertically between leaders and followers at regional and national government levels.

Much of the analysis of regional climate governance has and continues to focus on urban, metropolitan geographies. Researchers have been attracted towards '*forerunner actions and leading networks*' developing in '*strongly branded cities*' (Castan-Broto, 2020, p.242). This dominance in the literature assumes that the city is a single coherent unit operating in isolation of a hinterland. It also identifies urban environments as analogous with other localities exhibiting different characteristics, for example administrative jurisdictions, demographics, resources and challenges. It could be argued that much of climate governance literature sets a deterministic framing that what happens in urban areas will influence patterns of governance and relational behaviour beyond non-metropolitan municipal areas. Wolfram et al. points in particular to city governance pathways not being the panacea, since cities unlike their non-urban counterparts are more blessed with '*room to manoeuvre to walk new ways*' (Wolfram et al., p.15) given their scale, concentration of resources and challenges and how they function politically, economically and socially.

Given the skewing of academic research towards urban environments, the premise that place shapes everything, and that local governments experience of climate governance is at best '*muddling through*' (Castan-Broto, 2017, p.4), it is argued that the translation of climate governance learnings from the city to non-metropolitan areas of England is '*likely be inaccurate*' and lack coherence (ibid., p.2).

4.5 Governance and public administration

Torring & Triantafyllou (2014) characterise how governance arrangements have shifted from a classical form of political administration, through an era of deregulation and liberalisation in the 1980s, towards more pluralistic collaborations between State and societal actors. This trend is reflected in changing modes of political administrative governance (Table 5).

Table 5. Political governance systems in public administration (After Torfing & Triantafillou, 2014, p.12)

System	Input	Withinput ⁵	Output	Feedback
Classical Public Administration	Voting plus pressure groups	Bureaucracy: public, based on professional standards	Authoritative rule-based regulation and supply-driven services aiming to ensure equity	Periodic elections and constitutional accountability
New Public Management	Voting plus user satisfaction and choice	Strategic performance management and quasi-markets: public vs. private	Deregulation and demand-driven services aiming to ensure efficiency and user satisfaction	Performance measurement and sanctions through competition
New Public Governance	Voting plus arenas for <i>empowered participation</i> bringing together public and private actors in continued dialogue	<i>Collaboration</i> between different levels, sectors, and actors: public plus private	<i>New tools</i> empowering and engaging stakeholders in public problem-solving and service production	<i>Multiple forms of accountability</i> based on a variety of standards attuned to organizational learning

The emergence of the '*new public management*' governance model in local government has been driven by organisational and functional fragmentation and the orientation of public services towards external delivery. This has created opportunities for commercial and not-for-profit organisations to compete to deliver goods and services traditionally the function of local government (Denhardt & Denhardt, 2002). Behind this are more fundamental forces of political ideology favouring privatisation and a more mixed public service economy, demands for increased efficiencies in the face of generation-long pressure on public spending and a rise in the appetite to do things differently. The New Public Management movement is, therefore, seen on the one hand as '*a response to the challenges of a networked, multisector, no-one-wholly-in-charge world and ... shortcomings of previous public administration approaches*' while on the other capturing '*a collaborative and democratic spirit, content, and governance focus*' (Bryson, Crosby and Bloomberg, 2014, p.445).

Learning from the COVID pandemic, Scognamiglio et al. (2022) emphasise the need for robustness within public governance strategies. This is, in part, demonstrated by the emergence of co-created '*proto-institutions*' (ibid., p.66), described by Lawrence et al. (2002, p.283) as '*institutions in the making*', that are not observed in more stable circumstances. From the perspective of conventional state-led governance structures this trend could be viewed as a potential threat not witnessed in less disruptive environments with their ability to undermine existing democratic institutions. Ansell, Sørensen and Torfing (2021) call for the

⁵ According to Easton (1957), defined as internally inspired demands within a political administrative system as distinguished from external demands.

public sector to act creatively and with agility to meet such turbulence using '*robust strategies*' which build cross-societal partnerships (ibid., p.952).

4.6 Public administration collaboration through partnership

Partnerships are proposed in the literature as one way to address the so-called '*wicked problems*' referred to earlier (Rittel and Webber, 1973). Multi-agency partnerships for example, as Lowndes and Skelcher (1998) discuss, can provide the opportunity for more open decision-making and a complement to more formal democratic processes. The authors highlight the proliferation of partnerships in the UK in the 1990s particularly those established at local level. These take various forms ranging from the *single-procured relationship* for infrastructure or service delivery, through *public-to-public* administrative arrangements to *complex collaborations* across geographies.

Private financial initiatives (PFI) and *public private partnerships* (PPP) are contractual mechanisms which have resulted in national and local public bodies and, principally, the private sector engaging to deliver new public assets like schools, hospitals and public realm infrastructure without direct state funding (Sabry, 2015). Both PFIs and PPPs are characterised by their *single customer-single supplier* structure, operating over long contractual terms. There is debate whether PPPs constitute a new form of governance model, a re-branding of existing public procurement practice with the private sector, or contractually-governed collaborations (Hodge and Greve, 2015). The PFI model in the UK has come under critical professional and public scrutiny with arguments for and against their efficacy legion over two decades (Wall and Connolly, 2009; NAO, 2018; Rowland, 2023). Of relevance to this thesis, the latest example of this form is the Bristol City Leap contractual strategic partnership between Bristol City Council and the Vattenfall-Ameresco consortium (Bristol City Council, 2018). This is seen by UK Central Government as a possible best practice model for delivering cross-geography decarbonisation under central government's pilot *Local Net Zero Accelerator* programme (Department for Energy Security and Net Zero, 2024).

The second form, *public-to-public*, envisages arrangements between public bodies for the purpose of delivering common objectives. These arrangements may see local councils, for example, share resources as a way of securing efficiencies, undertaking innovation, reducing risk, or sustaining or improving their performance. The governance models may vary significantly from non-contractually binding memoranda of understanding through to unification of sovereign administrative areas by statute (Local Government Association, 2011, 2023; Sandford, 2019).

The third form of *complex collaborations* is typified by arrangements between the state, business, voluntary and community sectors for such purposes as urban regeneration (ibid.,

p.314). The Regional Development Agency (RDA) model (Hall and Mawson, 1998) established under the Regional Development Agencies Act 1998, and subsequent Local Enterprise Partnerships which replaced them until March 2024, were formalised through multi-party agreements delivering activity according to a strategy or shared vision. Lowndes and Skelcher (1998) argue that, as a model of governance, such partnerships cannot be considered analogous with looser, non-contractual networks which operate on '*mutual benefit, trust and reciprocity*', given that they are established under statute (ibid. p.314).

4.7 Towards innovative collaborations

Torfin in Roberts (2000) endorses a collaborative approach to public innovation in governance which '*eschews the idea that innovation results from the heroic efforts of great individuals*' and supports the idea that '*positive and negative incentives combined with a new focus on performance measurement will greatly stimulate innovation in the public sector*' (ibid., p.2). Torfin concludes that '*multi-actor collaboration is superior to both hierarchy and competition when it comes to developing and implementing innovative solutions*' (ibid., p.3). However, the downsides of collaboration are various and highlighted in the literature: a lack of collaborative capability and experience in more traditional public sector institutions and functions; entrenched hierarchical decision-making structures; and increased complexity and cost associated with additional participants. These all lead to the observation that '*collaboration requires practice*' and is not a guarantee of success (ibid., p.7).

Lopes and Farias (2022) conclude that collaborative governance models will only be successful where top management and managers with decision-making power are actively supportive and committed to the process. With clear vision and needs identified, and tools used '*to facilitate communication, interaction, and the sharing of information and knowledge*' innovation is stimulated that is both relevant and beneficial to stakeholders (ibid., p.114). An example where the opportunity for this type of model is emerging in the context of climate change is the *smart city*. These are defined by the European Commission as '*a place where traditional networks and services are made more efficient with the use of digital solutions for the benefit of its inhabitants and business*' (European Commission, 2024). Key to uptake of this model is the state of existing governance arrangements, their ability to change, their novelty where there is a shared willingness to try something different and external driving forces discussed previously.

Bunning (2014) identifies six governance models through which renewable energy and low carbon energy district schemes within a *smart city* could be effectively managed (Table 6). Bunning concludes that no single model pre-dominates, with the appropriate choice reflecting local contexts and conditions.

Table 6. Six governance models for smart cities (After Bunning, 2014; p.77-78)

Governance model	Description
Joint venture partnership (JVP)	<i>'the supplier of a low or zero carbon equipment entering into a joint venture'... with the ability to sidestep economic barriers...'</i>
Public private partnership (PPP)	<i>'a long-term partnership typically between government or quasi-government and a private sector consortium.'</i>
Co-operative	<i>'the model allows a diverse range of government, private sector or community members to join together...'</i>
Community-owned	<i>'a company is set up and the shareholders are the individual community members and organisations who have raised the money...'</i>
Municipally owned	<i>'the company has its own board of directors and elected members by the city council, which includes private enterprises. The company is funded in part by the municipal budget, and in part by private markets.'</i>
Independent power producer (IPP)	<i>'a private consortium driving the project's development.'</i>

Research by Regen (2021) highlights the importance of robust governance structures and decision-making processes to *'unlock local authorities' role in energy network planning and investment'* (ibid., p.12). The recent emergence of Local Area Energy Planning (LAEP), as both an innovation concept and a strategic approach to planning and delivering local decarbonisation pathways, is stimulating local government to engage more directly with both incumbent energy actors and local stakeholders (Energy Systems Catapult, 2018). Guidance developed by the Energy Systems Catapult (2022) provides an illustrative governance framework showing the interactions of stakeholder in the LAEP process and spatial planning at local level.

4.8 Evaluating Governance models

There is little observed unanimity in the literature on how to evaluate governance models *'nor a foundation of the aspects to be chosen for this endeavour'* (Lange et al., 2013; p.404). Furthermore, Hamman (2020) identifies a need for multiple ways to understand governance. In their proposals for a smart city governance, Ruijer et al. (2023) envisage a conceptual toolbox for professionals to use as part of their normal business activities consisting of seven categories of methods and instruments (Table 7).

Table 7. Seven categories of smart governance tools (After Ruijer et al., 2023)

Tool Category	Purpose
1. Context tools	Tools aimed at identifying the rules and legislative local context and available resources in which the collaborative smart city practices take place
2. Stakeholder tools	Tools aimed at identifying stakeholders and their interest and commitment in collaborative smart city practices
3. Structure tools	Tools aimed at the organizational formation of collaborative smart city practices such as identifying and supporting the division of

	roles and responsibilities in collaboration and gaining management and political support
4. Process tools	Tools aimed at facilitating communication and participation with stakeholders in smart city practices, tools aimed at building a collaborative culture and supporting leadership
5. Exchange arrangement tools	Tools aimed at the constitution of the relationships between different stakeholders in smart city practices, in the form of contracts, tenders, and business models
6. Technology tools	Tools that either facilitate decision making about the use of technology in smart city practices or the development of technical skills in collaborative smart city practices
7. Outcome tools	Tools aimed at measuring the substantive and procedural outcomes of collaborative smart city practices

A “*form follows function*” argument is promulgated in the literature to establish practical and analytical links between governance and the issue that is being addressed (Lange et al., 2013, p.418). In this approach, a governance model needs to satisfy two requirements: firstly, that the arrangements are aligned with the core purpose for which it has been established; secondly, there is a form of ‘*transformative collective action*’ such that real change will happen (Hamman, 2020, p.23). Termeer et al. (2015) argue that much of the research considering governance systems to address *wicked problems* like climate change focus on developing *how-to* action strategies and the components of a successful governance approach. Two additional dimensions are required: ‘*observing the wickedness of problems*’ and ‘*enabling the conditions of the governance system in which actors operate to deal with these problems*’ (ibid. p.681). The authors argue for consideration of four capabilities by actors in the evaluation of their governance systems: to be able to deal with complex and intractable problems (*reflexivity*); amend or change course as system conditioned external stimuli change (*resilience*); respond without reserve to change (*responsiveness*), and constantly refresh and energise, particularly in the context of policy (*revitalising*).

4.9 Implications for this research

The literature search demonstrates the volume and diversity of research and opinion when defining *governing* and *governance* and developing models and methods to evaluate their efficacy. The changing nature of public administrative *governance* is a key theme in the identified literature. The literature highlights the challenges faced by State and non-State actors to establish robust forms of *governance* where the issues of concern go beyond ‘*business as usual*’ when dealing with those ‘*wicked problems*’ that transcend individual institutions, geographies and timescales.

Two conventions will be explored later in the research when reviewing real-world examples of local net zero governance. Firstly, it is governments who *govern* and that *governance* is inherently political. Secondly, that governance models follow a linear developmental and hierarchical-to-decentralised path.

It is evident from the identified literature that there is no consensus on how to evaluate *governance* to establish what *good* looks like. The '*form follows function*' argument discussed by Lange et al. and Hamman could, therefore, be applied. In the context of sustainability and climate change, there is neither agreement on ways to distinguish or undertake meaningful evaluation (Lange et al., 2013). Therefore, there is value to exploring ways to evaluate governance arrangements in the context of Climate Emergency declarations to answer the research questions posed in chapter 1.

Chapter 5: Barriers and solutions to local authority net zero delivery

Preamble

The principal content of this chapter is based on two research papers presented at the International Sustainable Ecological Engineering Design for Society (SEEDS) Conferences in 2021 and 2022; *'The role of local authorities in renewable energy investment: Getting the money to flow'* awaiting publication in Conference Proceedings (in pre-print, Springer Nature); and *'Improving decision-making in smaller local authorities to facilitate Net Zero Delivery - Practitioner insights'* (<https://hdl.handle.net/10779/leedsbeckett.c.7799300.v2>).

5.1 Introduction

At the time of writing, the UK Government expects local areas in England to develop their own solutions to net zero. The tone is set by the devolution programme, that it should be the opportunity for *'innovative local proposals to deliver action on climate change and the UK's Net Zero targets'* (DLHC, 2022, p.18). However, many councils are likely to experience barriers and steep learning curves to achieve this, for example, with respect to their understanding of technology choices, funding solutions and local routes to deployment.

The research presented in this chapter, therefore, aims to answer the following questions using renewable energy investment and deployment as its focus in order to exemplify the issues that are faced:

What barriers do local authorities face when delivering their Climate Emergency commitments?

Can we identify potential solutions?

By understanding the barriers, what needs to change to help local authorities scale up net zero activity to meet local and national ambitions?

Published literature and insight from practitioners are used to explore the barriers faced by local authorities in delivering net zero, along with some of the possible solutions available to them. This exploration forms the basis for a diagnostic tool developed in chapter 6, which is designed to help local authorities overcome those barriers in the context of their own circumstances. Particular attention is paid to exploration of the decision-making processes of local authorities wishing to invest in renewable energy (RE) technologies as part of their response to declaring a Climate Emergency.

5.2 Methodology

5.2.1 Outline

A research protocol was prepared, receiving University of Suffolk Ethics Committee approval in December 2019 (Appendix 1). The protocol was based on the rapid evidence assessment (REA) principles and approaches advocated by the Center for Evidence-Based Management (CEBMA, 2017),

A mixed methods approach was adopted for the research. A review of published academic and technical literature formed the basis of two primary evidence gathering activities to identify the nature of the challenges faced by those developing RE projects. The first activity was a cross-sectoral attitudinal survey of RE project developers. The second comprised of interviews of local authority staff involved in net zero project development.

5.2.2 Identifying barriers using a cross-sectoral survey

The literature review informed the design of a cross-sectoral RE project developer survey carried out in 2020. The EBSCO (University of East Anglia) search engine was initially used to identify key academic research material with the search widened to gather relevant grey literature. Citation chaining techniques were used to expand the scope of the literature search.

Twenty research papers were identified covering a range of sectors and geographies (Table 8). The papers informed the design of the survey and provided comparative data and information on the commonalities and differences of approach to RE investment decision-making. The survey was tested with a sample of organisations drawn from the public, business, and community sectors. The feedback was incorporated into a final version (Appendix 2) which was distributed using the online survey software, *SmartSurvey*. The survey targeted organisations involved in RE technology deployment within three specific sectors to allow comparison: local government, small and medium-sized enterprises (SME), and community and associated not-for-profit energy organisations.

The research found no publicly available databases which record the quantum of individuals or organisations involved in net zero or RE projects across the UK. The sectors targeted by this research vary significantly in population size ranging from local government (n=343 as at 2019), the third sector with the best estimate of voluntary and charitable organisations used as the notional population (n=circa 167,000) and SMEs (n=circa 5.9 million). The survey-based literature showed no consistency of sample size or sampling strategies. Defining the population size for each sector was considered impractical. Since the research aimed at soliciting attitudes from individuals rather than being representative of the general population, it was decided, therefore, that a pragmatic, purposive sampling approach was acceptable.

Table 8. Survey-based research considering renewable energy (RE) development identified in the literature review

Author(s)/Organisation	Geographical coverage	Type of data sources used	Principal sector(s) covered by the survey	Size of sample	Period of data capture	Description of survey approach	Limitations identified
Billington P., Smith C.A. & Ball M. 2020	UK	Primary	Local authorities	5 regional workshops with 347 people involved in developing and financing local energy projects. 20 people over 4 city/local authority programmes were interviewed. Challenge session – 22 participants from across the private and public sector	Winter 2019/Spring 2020	A mixed method was used; UK100 with partners held a series of workshops, followed by publication of an issues paper. A literature review was undertaken. UK100 held a challenge session with experts active in promoting and developing investment in local clean energy projects to test their initial recommendations prior to publishing a final report	Not stated
Bourcet and Bovari, 2020	France	Primary/secondary	Investors - Crowdfunding community	Sample size of 2,968 individuals	Between February-March 2019	An online questionnaire was sent to a stratified sample of RE crowd funders along with a contrast group of individuals identified from national datasets. The purpose was to gather opinions and attitudes towards the RE sector as well as socio-economic characteristics	The researchers note that the issue of behavioural change needing to drive RE investment was not addressed
Braunholtz-Speight T. et al (UKERC), 2018	UK	Secondary	Community organisations	Utilisation of other published data sets: Community Energy England State of the Sector 2017 dataset, Community Innovation for Sustainable Energy Survey carried out in 2011. Desk survey of Community Energy Initiatives support programmes carried out in 2004-05	Various based on the specific data set used by the researchers	The principal focus was on the financing of community energy, and on community energy business models	The survey was undertaken because of the lack of quantitative evidence; given this observation the analysis that is presented is recognized to be based on partial evidence

Author(s)/Organisation	Geographical coverage	Type of data sources used	Principal sector(s) covered by the survey	Size of sample	Period of data capture	Description of survey approach	Limitations identified
Braunholtz-Speight et al., 2019	UK	Primary	Community energy organisations	Not stated	2018	Survey of community energy projects and a Community Energy Listening Event	Not stated
Brown et al., 2019	UK	Primary	Private sector	9 semi-structured interviews of practitioners with an overview of their organisation and wider supply chain	Winter 2018-19	A qualitative mixed methods approach, involving a baseline documentary analysis and in-depth semi-structured interviews. Interview data was supplemented with a review of academic literature alongside and technical publications surrounding distributed energy, new business models, and the prosumer phenomenon in the UK.	Not state
Burer and Wustenhagen, 2009	Europe and North America	Primary	Private Equity and Venture Capital investment community – fund managers	60 responses	2007	Stated-preference approach	The data set was limited to the Venture Capital and Private Equity investment communities. The listing of policy instruments was a simplification of real-life complexities. There was a tendency for respondents to consider their responses to individual cases in specific countries
Community Energy England (CEE), 2019	UK	Primary	Community organisations	31 community organisations responded to the survey of the fifty initially identified	Between September – November 2018	The survey was designed to explore the needs and barriers that community energy groups face with a specific focus on flexible energy services, innovation, and the transition to a Distribution System Operator (DSO) model	None stated
Community Energy England (CEE) State of the Sector Database Version 2.0, 2020	UK	Primary	Community organisations	Responses from 300 community energy organisations	Between January-April 2020	163 community energy organisations were surveyed, with a data gathered on a further 137	Not stated

Author(s)/Organisation	Geographical coverage	Type of data sources used	Principal sector(s) covered by the survey	Size of sample	Period of data capture	Description of survey approach	Limitations identified
				throughout England, Wales and Northern Ireland		organisations via desk-based research.	
Egli, 2020	Utrecht and Berlin	Primary/secondary	Investors and academics	490 interviews	Between September 2017-April 2018	Two workshops with RE Technology investors and academics, comprising of risk identification and participant ranking followed by network analysis of participant response to identify the drivers of changes in investment risk	Not stated
Global Impact Investing Network (GIIN), 2020	Global – international region	Primary	Ethical investment community	266 respondents	Between January-February 2019	The survey was conducted to assess the activity of “ <i>impact investing organizations</i> ”	A handful of outliers in a sample can have outsized influence on aggregate findings. Some respondents to the Annual Survey manage comparatively large impact investing portfolios, potentially skewing analysis. Where appropriate and feasible, this report presents analysis including and or excluding outliers to enable more nuanced interpretation of findings
Herbes at al., 2017	Germany	Primary	Community organisations	Approximately 100 Renewable Energy Co-operative (REC) websites reviewed, 15 REC Annual General Meetings attended, and 38 interviews undertaken	2016/2017	An exploratory approach was adopted with the researchers conducting desk research and the analysis of RECs websites, followed by non-participant observation in the annual general meetings of RECs. This was followed by qualitative interviews of diverse stakeholders in the RECs using semi-structured interviews. All interviews were transcribed and	The researchers’ goals were not to provide quantitative data or provide in-depth case studies. The researchers recognised that the relative importance of their findings could change when conducting a quantitative survey of a larger number of RECs

Author(s)/Organisation	Geographical coverage	Type of data sources used	Principal sector(s) covered by the survey	Size of sample	Period of data capture	Description of survey approach	Limitations identified
Hillman, J., Axon, S. and Morrissey, J., 2018	UK	Primary	Social-enterprise organisations	Seven participants were interviewed	Between February-October 2016	underwent a qualitative content analysis Semi-structured interviews of practitioners using a qualitative, adaptive data gathering approach with an interpretative approach applied to data analysis	No specific limitations identified; as a note the researchers commented that the content of each interview as unique, differing from other interviews regarding experiences, tone, personal and organisation involvement
Hussain & Thirkill, 2018	UK	Primary	Small and Medium-sized Enterprises (SMEs)	Approximately 100 SMEs were contacted to undertake the survey, although the report does not state the response rate		The research was conducted in three stages; a landscape review to provide examples of types of pre-existing multi-energy vector systems, technologies and approaches; a stakeholder engagement activity to provide an indication of the degree of understanding within the UK Small and Medium-sized Enterprise (SME) community of multi-energy vector opportunities. Finally, analytical work was conducted to identify several opportunity areas for UK SMEs arising from a move to multi-energy vector integration	Not stated.
Hrovatin et al., 2016	Slovenia	Secondary	Private sector – manufacturing	The data set was based on an unbalanced sample of 848 firms	2005-2011	Empirical meta-analysis of public dataset produced by the Statistical Office of the Republic of Slovenia. Quantitative statistical analysis of financial, investment, Research & Development activity and environmental performance	Given the data sets used the researchers have applied a range of measures to minimise the inherent biases introduced by the datasets

Author(s)/Organisation	Geographical coverage	Type of data sources used	Principal sector(s) covered by the survey	Size of sample	Period of data capture	Description of survey approach	Limitations identified
Local Government Association (LGA), 2020	England	Primary	Local authorities	Of the 339 councils in England, a total of 98 replied	February 2020 (although the survey was online until October 2020)	An online survey of all Directors of Environment in English councils aimed to assess what actions councils have already taken to mitigate and/or adapt to climate change and to ask them what policy changes would enable them to do this more effectively in future	In recognition of the extreme pressure placed upon councils by the COVID-19 pandemic, the survey was left open for an extended period for any councils still able to take part
Masini and Menichetti, 2013	Europe	Primary/secondary	Private Equity and Venture Capital investment community	136 responses to the survey were received of which 93 responses were ultimately retained for the analysis	Between June-September 2009	The research design included a combination of qualitative and quantitative methods commencing with a documentary analysis and interviews to refine a conceptual model of non-financial investment drivers followed by a web-based survey questionnaire of institutional investors	The study was restricted to a specific empirical and geographical context. Dependent variables used in the models were self-assessed. No financial investment variables were included in the model although the researchers believe that omitting these had negligible effect on the factors included in the model
Pons-Seres de Brauwier and Cohen, 2020	Europe – 31 countries	Primary	Individual citizens	16,235 participants	2019	A representative choice-based experiment survey that collected responses to different hypothetical investment options on for citizen-led investment of renewable energy schemes	The researchers noted that the approach requires that all citizens have access to community investment options provided by reliable institutions which was not the case. The resulting computations were likely to fall short of capturing the national market conditions for the technology being assessed
PriceWaterhouseCoopers (PwC) B2B Smart energy, 2019	UK	Primary	Mixed – across the public and private sectors	Responses from 504 businesses	Biennial survey with the latest conducted in 2019	The survey used a mix of question types. Follow-up interviews were undertaken with a sub-set of survey participants to gain further insight	The choice of question styles was considered by the researchers to be a compromise between the depth and granularity of information retrieved from a respondent and ease of completion

Author(s)/Organisation	Geographical coverage	Type of data sources used	Principal sector(s) covered by the survey	Size of sample	Period of data capture	Description of survey approach	Limitations identified
Richter, 2013	Germany	Primary	Energy utilities – targeting directors, department heads and senior managers mainly from the renewable energies department or business development	18 companies	Not stated	Qualitative semi-structured interviews	The researchers state that the adopted qualitative research approach does not allow derivation of statistically relevant information. The results for the regional and local utilities may not easily be generalized. The study does not provide a general status of the industry but intends to highlight the latest developments
UK Department of Energy & Climate Change (DECC), 2014	UK	Primary	Community organisations	177 community groups and energy professionals		A review of the existing evidence base relating to community energy in the UK. Following mapping and data validation, an online survey was undertaken, targeting practitioners undertaking or interested in undertaking community energy projects	The researchers identified potential for bias in estimating the scale and profile of community activity in the UK. The database significantly under-represented recent activity. There may have been a tendency for larger, more established groups with more significant energy projects to respond to the survey

Different approaches were used to promote the survey including dissemination through intermediaries, social media, and direct mailings to potential participants in the three sectors, with the aim of attracting a sufficiently meaningful sample of responses. No financial incentives were offered since it was hoped that the value of the research would attract participation. Individuals from the same organisation were allowed to take part to gain different perspectives. Furthermore, responses were included from participants who were not in positions of seniority if it could be determined that they had participated in their organisation's RE investment decision process.

The survey was published between February and August 2020. Uptake was monitored, and additional promotion undertaken during the period. At the end of the survey period, data was extracted, partial responses removed, and the resulting data transformed using basic statistical techniques. Comparison was made between the survey results and the published literature. Two specific publications were considered to have relevance given that they covered the same geography and sectors and are contemporaneous. These are the PriceWaterhouseCoopers and Energy UK Business-to-Business survey of public and private sector organisations (n=504) and the 2020 Community Energy England State of the Community Sector Survey of community energy organisations across England, Wales and Northern Ireland (n=300).

It is acknowledged that this form of research process is vulnerable to bias. As Norris (1997, p.173) says, *'most of the conventional constructs of validity are inappropriate for naturalistic forms of inquiry'*. The adopted sampling strategy could not guarantee a predefined participation rate. Of note, the survey coincided with the start of the COVID pandemic which may have affected the participation rate. Risks posed to the delivery of the research formed part of the research protocol.

5.2.3 Identifying barriers using local authority practitioner insights

The background research supporting the sectoral survey informed the design of a round of semi-structured interviews of local authority practitioners aimed at eliciting their views and experiences, exploring the effectiveness of their council's approach to investment decision-making and inviting suggestions on how decision-making processes could be improved.

The interview process was undertaken in accordance with the research protocol mentioned above. A purposive approach to interviewee selection was followed using the sectoral knowledge of the researcher and discussions with representative organisations including the Greater South East Net Zero Hub, the Energy Systems Catapult, East of England Local Government Association and Community Energy South. One-to-one interviews with local

authority staff were conducted using a questionnaire developed by the researcher and shared with the Energy Systems Catapult who were undertaking similar research (Appendix 3). A data sharing agreement between the researcher and the Catapult was put in place for this purpose (Appendix 4).

Based on research by Sim et al. (2018), a target sample size was set between ten and fifteen local authorities, the upper figure corresponding to 33% of the study area population (N=54). In total, seventy local authority staff from thirty-seven local authorities were approached. This generated twenty-two interviews with twenty-five staff across twenty-one local authorities (46%). All who participated had direct involvement in RE and net zero activity, employed in a variety of roles and levels of seniority from across the disciplines of sustainability, climate change, energy management, investment, economic development and regeneration, corporate policy, spatial planning, housing and public estate management.

The interviews were conducted between October and November 2021. Interviews were contemporaneously recorded and transcribed using Microsoft Teams™. Each interview was given a unique reference code, structured in [year.month.day] format with an additional suffix if multiple interviews were undertaken on that day. This ensured that comments could be tracked as well as giving interviewees anonymity. All transcripts were reviewed against the recording to correct any mis-transcription then uploaded into the NVivo™ qualitative analysis software (Release 1.5.2). Key text code was created following a classification developed for this research to thematically group components of each transcript. The evidence was then analysed to draw out common themes.

Bias issues related to the process were considered and mitigated in a similar way to the sectoral survey in accordance with the research protocol. Again, the research coincided with the COVID-19 pandemic which led to the use of virtual interviewing. However, it was considered that this had only a minor impact on the participation rate.

5.3 Results and discussion

5.3.1 Barriers and solutions identified in the literature

There is a body of academic and grey literature which explores both the barriers and potential solutions to delivering net zero projects, specifically when investing in RE technologies (Billington et al., 2020; Brummer, 2018; Green Alliance, 2019; Kuzemko & Britton, 2020; Fell et al., 2023). Brummer's (2018) overview of research of social renewable energy projects in the United Kingdom, the United States and Germany provides a basis on which to consider the barriers faced by local authorities. This is summarised in Table 9 which presents the

barriers faced by RE project developers. As a counterpoint to the analysis, Table 10 takes an RE investor perspective. Weber (1997) categorised the barriers encountered by RE projects as follows: those arising from the impact of political institutions, national government, and local authorities; obstacles conditioned by the market, market barriers or market failure; and barriers within organisations. Jordan et al. (2014, p.316) identified five major barriers holding back RE innovation investment by SMEs in Germany: deficits in innovation culture, inter-firm co-operation along the value chain, finance, awareness and take-up of government funds. Saunila et al. (2019) outlined factors driving organisations toward investing in clean energy technologies⁶, including environmental regulations, environmental commitment, customer pressure, managerial concerns, and cost savings. Being a smaller institution does, however, have its advantages characterised by flat management structures, informal and flexible lines of communication and the ability to make quicker decisions outside of the organisational procedures more common of larger organisations (Jordan et al., 2014).

⁶ Clean energy technologies are interpreted in this research as representing renewable energy (RE)

Table 9. Barriers identified from the perspective of the renewable energy project developer

Barriers	Additional references
Organisational issues / Legal framework /Planning requirements	
- time constraints, dependency on small staff resources, little capacity to deliver, lack of organisational capacity	Weber, 1997; CEE, 2019; CEE, 2020; Mirzania et al., 2019; Billington et al., 2020
- high transaction costs	Weber, 1997; CEE, 2020
- small organisations do not generate enough surplus	Weber, 1997; CEE, 2020
- financial regulations, tax rules	Weber, 1997; CEE, 2020; Northern Periphery and Arctic Programme, 2019
- regulations make setting up delivery structures extremely difficult	Weber, 1997; CEE, 2020
- Local authority bureaucracy, complex processes	CEE, 2019; CEE, 2020; Northern Periphery and Arctic Programme, 2019
- pre-planning stage barriers	Northern Periphery and Arctic Programme, 2019
- lack of support schemes/advice	Northern Periphery and Arctic Programme, 2019
Discrimination towards energy sector incumbents	
- market structure, unattractively low energy market pricing	Green Alliance, 2019; Weber, 1997; Northern Periphery and Arctic Programme, 2019
- legal framework	Green Alliance, 2019; Weber, 1997; Northern Periphery and Arctic Programme, 2019
- funding favouring larger organisations/energy sector incumbents	Green Alliance, 2019; Weber, 1997
- grid connection costs and complex application processes	CEE, 2019; CEE, 2020; Green Alliance, 2019; Weber, 1997; Northern Periphery and Arctic Programme, 2019
Lack of institutional and political support	
- renewable energy not on political/policy agenda, lack of political support	Northern Periphery and Arctic Programme, 2019
- risk of losing community support by growing too big	
- policy is complex, changes often; lack of national targets broken down to local action planning	Green Alliance, 2019; Mirzania et al., 2019; Billington et al., 2020; Northern Periphery and Arctic Programme, 2019
Scepticism about renewable Energy Technologies / local opposition	
- perceptions of Renewable Energy Technology reliability	Billington et al., 2020
- risk aversion, lack of interest	
- nimbyism, nature conservation opposition to RE	
- collective action problem / benefit distribution	Northern Periphery and Arctic Programme, 2019
-perception of REC democratic governance as ineffective or negative	

Barriers	Additional references
- <i>demographic development</i> /, lack of public awareness, limited public support	Mirzania et al., 2019
- <i>free-riding behaviour lessens motivation</i>	
Lack of resources / expertise / resilience	
- <i>lack of long-term funding</i> reinvestment options	CEE, 2019; CEE,2020; Mirzania et al., 2019; Northern Periphery and Arctic Programme, 2019
- <i>initial financing problems</i>	CEE, 2019; CEE, 2020; Mirzania et al., 2019
- <i>high institutional costs</i>	Mirzania et al., 2019
- <i>limitations/loss of subsidy support for Renewable Energy projects (e.g., Feed-In Tariff)</i>	CEE, 2019; CEE, 2020; Mirzania et al., 2019; Northern Periphery and Arctic Programme, 2019
- <i>no government-backed bank funding</i>	Mirzania et al., 2019
- <i>low resilience (legal changes, business risks)</i>	Mirzania et al., 2019
- lack of energy expertise/professional support costs	CEE, 2019; CEE,2020; Mirzania et al., 2019; Northern Periphery and Arctic Programme, 2019
- <i>communication and networking resource-intensive</i>	Mirzania et al., 2019
Saturation effect	CEE, 2020
- <i>people are already engaged</i>	
- <i>no new projects realizable</i> , access to suitable sites	CEE, 2019; CEE, 2020
Behavioural barriers	Weber, 1997
lack of historical experience delivering renewable energy projects	Northern Periphery and Arctic Programme, 2019
Note: Italics identify barriers identified by Brummer (2018).	

Table 10. Barriers identified from the perspective of the investor

Barriers	References
Volatile electricity prices and fully exposed investments	Pons-Seres de Brauwier and Cohen, 2020
Very low prices for high-carbon emitters, price risk, market instability	McKinsey, 2021; Egli, 2020; Pons-Seres de Brauwier and Cohen, 2020
Lack of competitive advantage for renewable energy projects	Burer and Wustenhagen, 2009
Project implementation (incl. planning, construction, construction) risks	Egli, 2020
Governments struggling to integrate climate priorities with short-term economic needs	McKinsey, 2021
Delayed investor capital allocation to new lower-carbon solutions due to decreased wealth	McKinsey, 2021
Confidence in the effectiveness of existing policies and unstable regulatory frameworks, policy consistency	Masini and Menichetti, 2013; GINN, 2019; Egli, 2020; Pons-Seres de Brauwier and Cohen, 2020; Burer and Wustenhagen, 2009
Confidence in technology adequacy; lack of experience with renewable energy technologies	Masini and Menichetti, 2013; Burer and Wustenhagen, 2009
Institutional influence of peers, competitive risk (market entry barriers), reliance on internal staff intelligence	Masini and Menichetti, 2013; Elgi, 2020; Burer and Wustenhagen, 2009
Institutional influence of consultants	Masini and Menichetti, 2013
Influence of technical information	Masini and Menichetti, 2013
Attitude toward radical technological innovations, acceptance of renewable energy	Masini and Menichetti, 2013; Bourcet and Bovari, 2020
Knowledge of the energy technology operational performance	Masini and Menichetti, 2013; Elgi, 2020
Legal or regulatory environment	Global Impact Investment Network, 2021
Non-existent or limited reporting regulations;	Global Impact Investment Network, 2021
Force majeure, environmental, theft and natural disaster risk	Egli, 2020
Grid & transmission risk	Egli, 2020

5.3.2 Sectoral survey - Barriers to net zero and RE technology deployment

The survey response rate and breakdown are shown in Table 11.

5.3.2.1 Influences on RE investment decisions

When asked '*what are the greatest influences on your organisation's energy investment decisions,*' local authorities (n=34) ranked reducing energy costs and carbon emissions of equal highest importance followed by the reputational benefits (Fig. 7). The picture was very similar across non-local authority organisations who ranked energy cost savings slightly ahead of carbon reduction followed by gaining reputational benefit (n=26).

Energy project complexity ranked as the most significant barrier to project success followed by the capital costs associated with the technology and securing connection to the power network (Fig. 8). In their narrative responses (Table 12), those surveyed cited competing demands for project finance, insufficient internal resources to take projects forward and the slow pace of internal decision-making as key internal barriers to RE deployment, irrespective of the sector in which the participant was based.

Renewable energy in the UK has traditionally been financed through the balance sheets of the private utilities, energy generation companies or by the banks (Hall et al., 2016). This route to finance is poorly suited to small renewable energy schemes which, from a community or locality-centred model, make it '*difficult to see where expanded civic participation is going to come from without extending the reach of energy and other infrastructural policy into the UK institutions of finance*' (ibid., p.12). Community organisations face difficulties accessing initial '*development*' financing because traditional banks are reluctant to lend based on the borrowing organisation's risk profile. Community organisations do not tend to have the level of capital required to self-finance the development with no prospect of refinancing once the project has been completed (Brummer, 2018). SMEs face similar issues with "*greater difficulties to access funding, loans and contracts than big companies*" (ibid., p.193).

Both academic and grey literature refer to the '*Valley of Death*' where '*no one wants to finance a project without a successful demonstration, yet successful demonstrations require financing*' (Dunbar, 2014; p.133). This investment barrier has been specifically defined as lying between technology concept development and commercialisation (Polzin et al., 2017) since as Mormann (2012, p.687) says '*banks and financial markets are the most reluctant to provide the direly needed capital, much less at low cost*'. This may be less of a problem for local authorities given that historically they have been able to access state-run loans using the Public Works Loan Board (PWLB) and are considered safe counterparties in financial

transactions due to statutory status ensuring that they are unlikely to cease to exist. Local authorities have started to diversify their approaches to investment to supplement more traditional sources, typically using their own capital reserves although some have diversified their approach, for example by launching Community Municipal Bonds (Warrington Borough Council, 2022; West Berkshire Council, no date). This situation is in flux given the dichotomy that exists between political commitments to deliver Climate Emergency declarations, and the long-standing financial pressures faced by the public sector since the global downturn in 2008, exacerbated by more recent domestic and global events.

5.3.2.2 Measuring project performance

The survey suggests that conventional financial performance metrics are most likely to be called upon to inform decisions to invest in RE technologies. Respondents tended towards *payback*, *internal rate of return*, *cash savings* or *revenue generation* (Fig.9). *Carbon* and *energy savings* were identified by local authorities as key non-financial considerations and of slightly greater importance to financial performance. The survey results showed evidence that the public sector is more familiar with project modelling tools than the other sectors, although there was no unanimity (Fig. 10). *Whole life cost* techniques scored higher than other tools (n=24), in particular *social return on investment* (n=13) and *life cycle analysis* (n=12). Nineteen respondents did not identify with the *levelised cost of energy* (LCOE) approach to assessing projects. Respondents stated that either they did not use any modelling tools or did not know about their application. Other methods were suggested by respondents, including *techno-economic modelling*, *carbon abatement* (not explained further in the response), and Internal (organisation-specific) financial cost-benefit modelling. This is interesting given that academic literature has shown increasing focus on *multi-criteria decision making* (MDCM) although there appears to be a lack of recognition of such methods in any of the surveyed sectors.

Table 11. Survey participation rate and sectoral breakdown

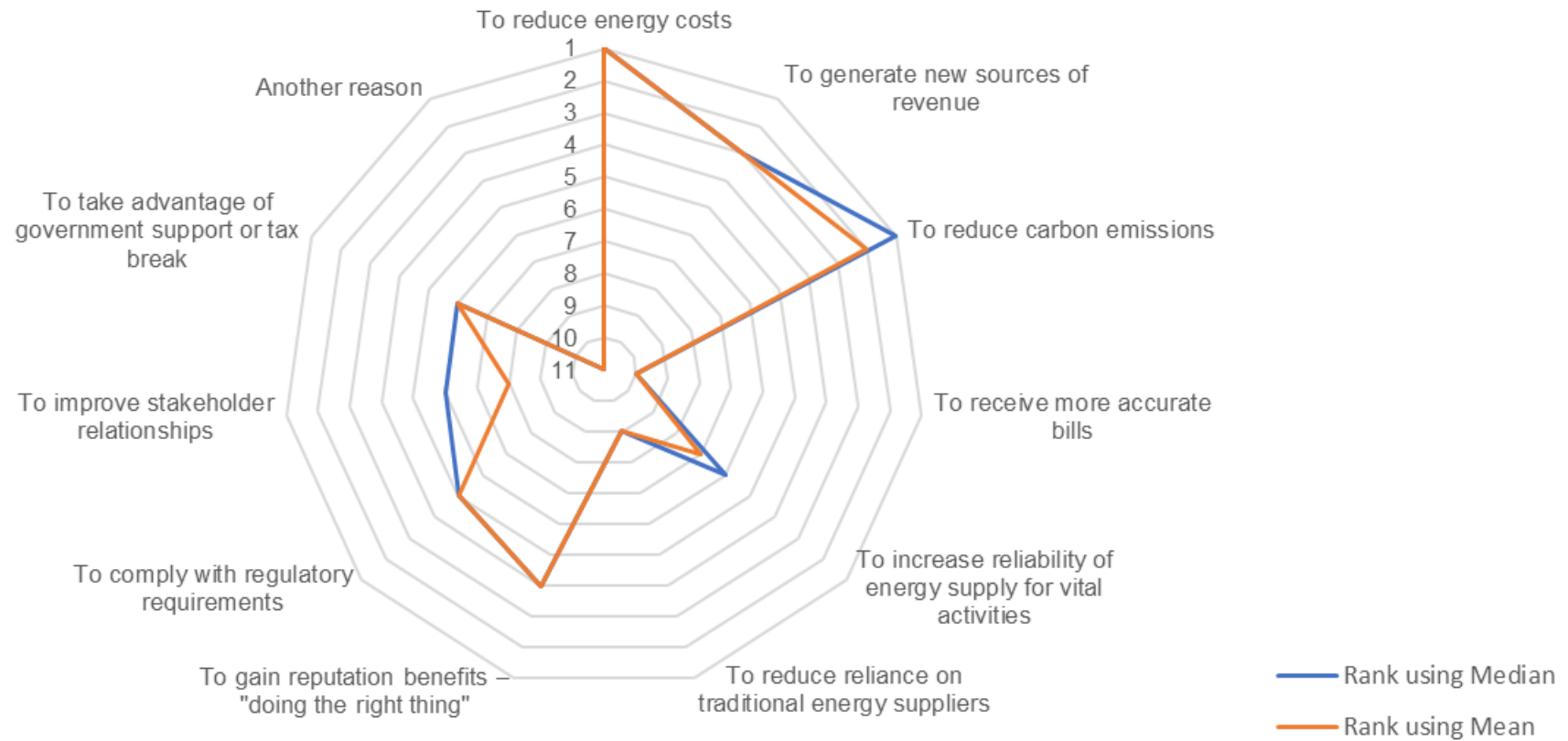
Summary	Raw	Rejected	Accepted		Public sector ³	Private sector	Third sector	Total
Full responses ¹	69	2	67	Responses	39	22	6	67
Partial responses ²	73	73	0	Organisations	31	22	5	58

Notes:

1. Two full responses rejected - one was completed by the researcher as a test; one respondent did not consent to participation but completed the survey
2. Unknown number of partial responses correspond to respondents aborting the survey before completion
3. Public sector breakdown for full responses (N=39): Local Authority n=24, LA-owned organisation n=3, Universities n=6, Schools n=1, National Health Service n=2, Government Agencies n=3

Table 12. Barriers to renewable energy development identified by survey respondents

- *'I rent a space within a building and have no say in these matters'*
- *'Conflicting call on finances - front line services have to be financed first'*
- *'... finance is the main issue'*
- (Note – this response has been paraphrased for inclusion) - *'Driving down total cost of energy is often cited as a motivator. In fact, for most organisations it's a small number compared with property cost and staff cost'...'* risk (fear of failure and resulting backlash) and diverting funds from core business'
- *'At scale projects require collaboration and joint vision. We are making progress on this now.'*
- *'Lack of internal resource to fully deliver in ideal timescales.'*
- *'Slowness of internal decision making.'*
- *'Many of our buildings are listed and/or in conservation areas which can make planning permission a large barrier for certain technologies in certain areas. Additionally, our central London location (understandably and for the best) rules out the implementation of certain technologies e.g. Biomass or CHP (Combined Heat and Power).'*
- *'A key barrier is understanding the priority order of competing demands both from other projects and from an equity standpoint. The current financial model in terms of payback is largely unsuitable and we are in the process of transitioning from this way of thinking to one that will deliver the needs of the community, but during in this transition, decision making is complex.'*
- *'Time, Not Enough staff. Lack of understanding in other teams, property, project management.'*



n=34

Figure 7. Rank order of influential factors offered by local authority representatives in response to the question, 'Which of the following factors would have/have had the greatest influence on your organisation's energy investment decisions?' Rank order from highest (1) to lowest (11) importance

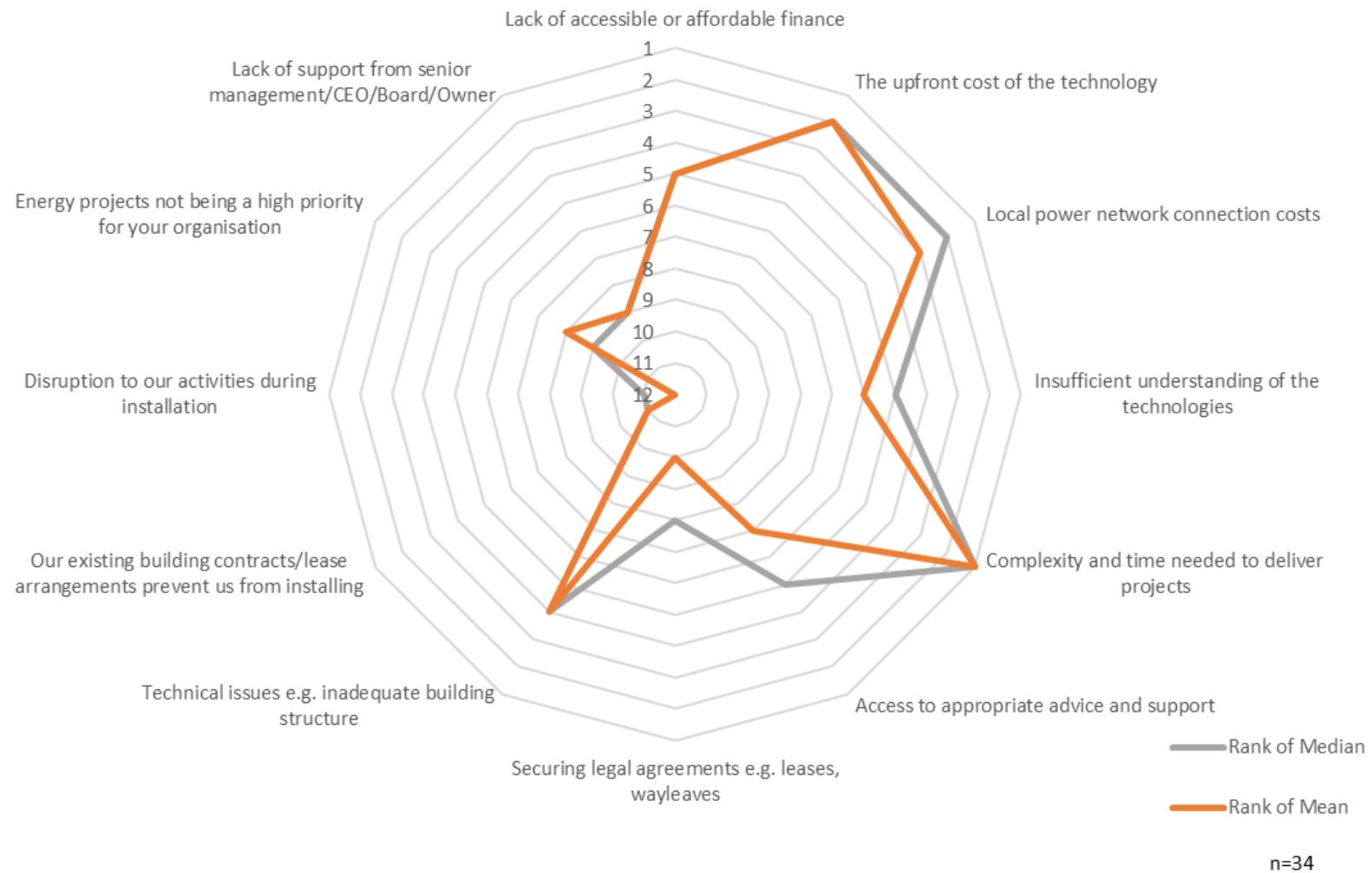
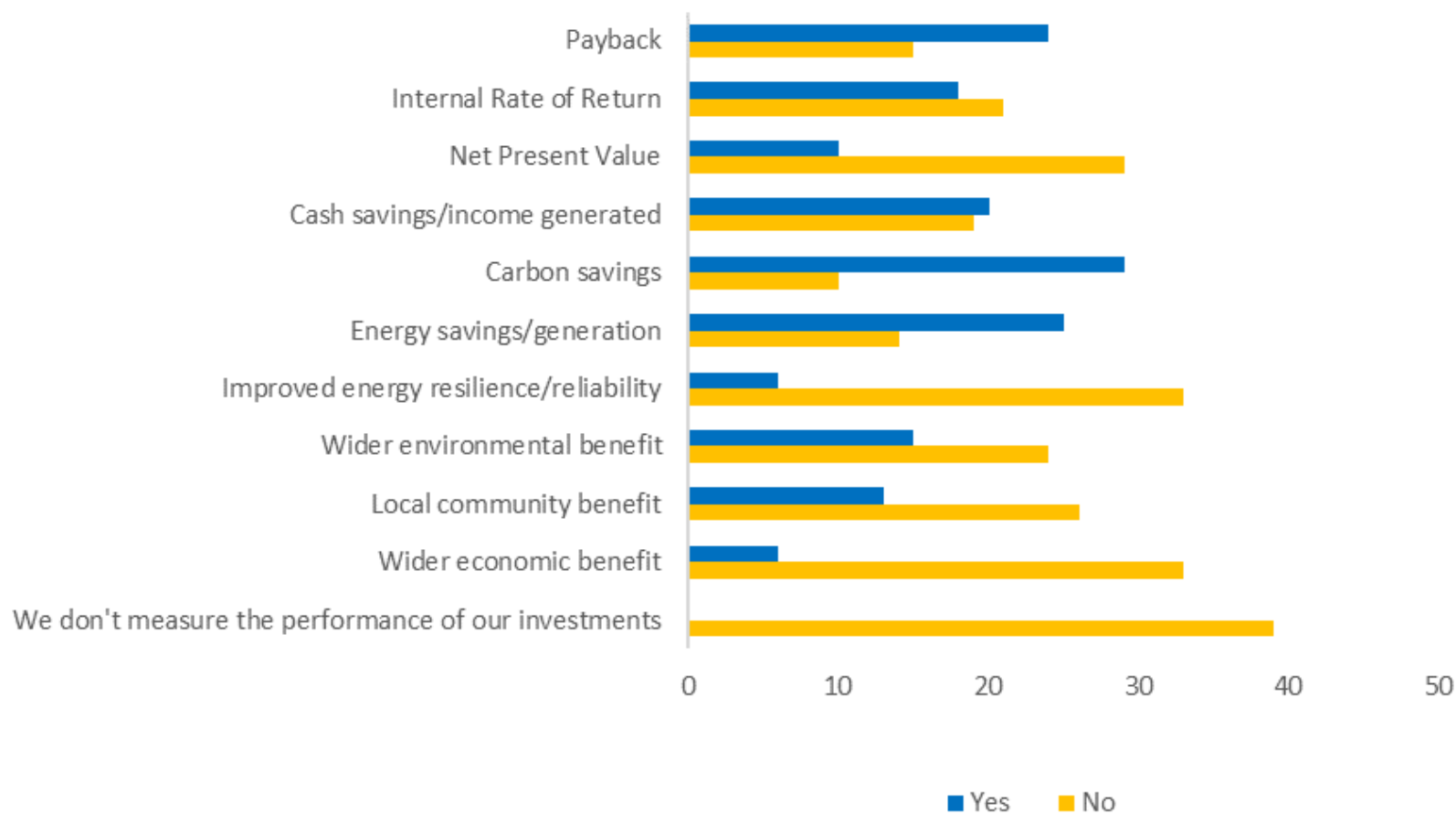
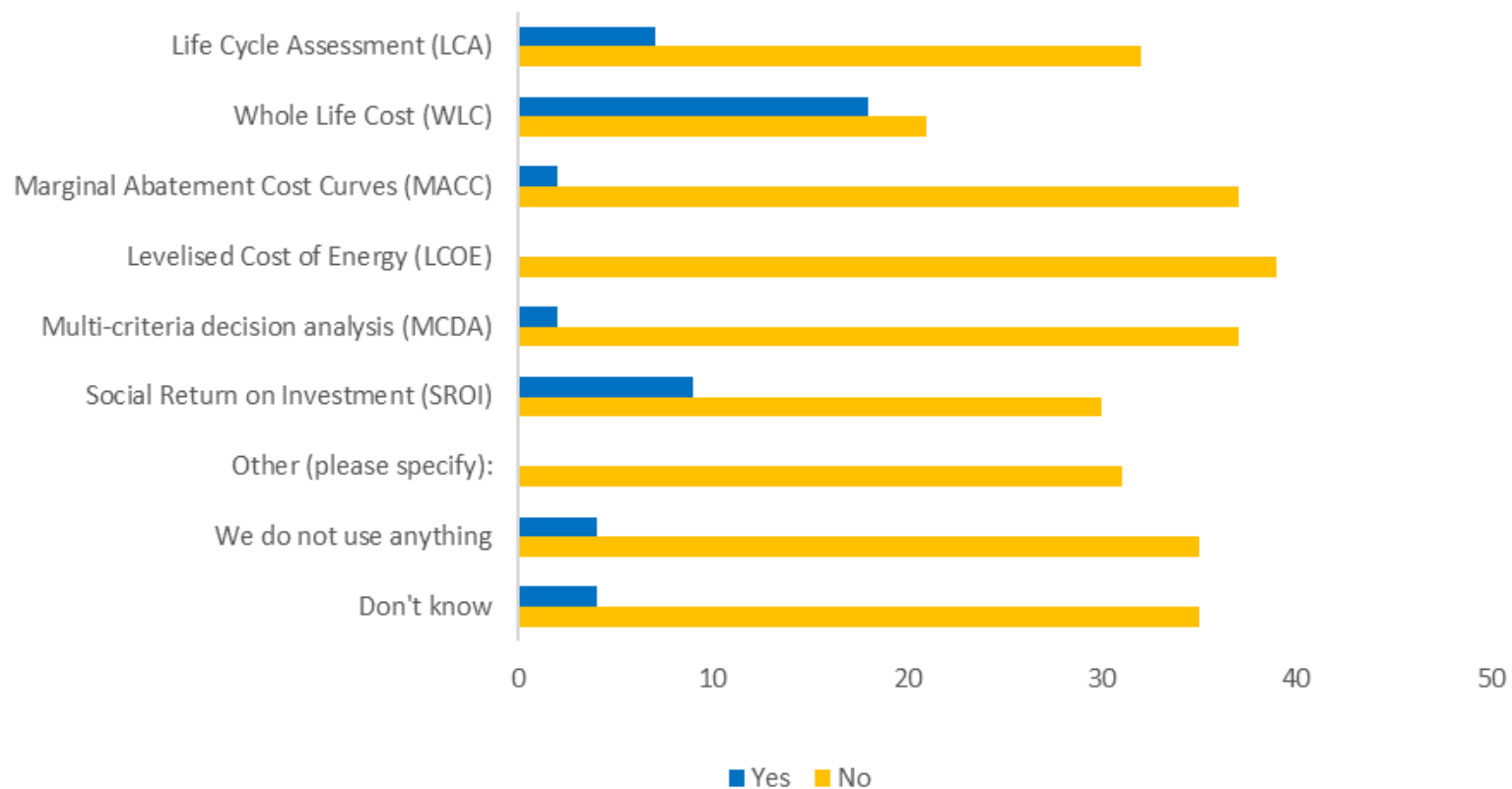


Figure 8. Rank order of barriers identified by local authority representatives in response to the question, 'what are the greatest barriers to your organisation's investment in energy technologies?' Rank order from highest (1) to lowest (12) importance



n=39

Figure 9. Responses by local authority representatives to the question 'How do you measure the performance of your energy technology investments?'



n=39

Figure 10. Responses by local authority representatives to the question 'Do you use any of the following performance modelling tools when assessing investment in energy technologies?'

5.3.3 Insights from local authority practitioner interviews

Participation rates in this research stage are presented in Table 13.

Table 13. Interview participation rate

	Total	District and Borough Councils	County Councils	Unitary authorities
Total number of councils in the study area	55	41	5	9
Approached for interview	35	32	3	-
Interviewed	21	18	3	-
Percentage interviewed in tier	-	43.9%	60.0%	-
Percentage interviewed in the study area	45.7%	39.1%	6.5%	-
Total number of staff interviewed	25	20	5	-

The results of coding the interview transcripts using NVivo are presented in Table 14.

Table 14. NVivo code classification applied to the local authority practitioner interview transcripts

Code	Sub-code	Number of Files reviewed	Number of References found
Barriers	<i>General</i>	17	45
	<i>External</i>	4	5
	<i>Internal</i>	9	15
	<i>Investment finance</i>	16	37
	<i>Procurement</i>	4	5
	<i>Staff resourcing</i>	9	22
Changes required		15	50
Decision influencers		12	26
Decision takers		7	11
Decision taking	<i>General</i>	14	37
	<i>Approval criteria & thresholds</i>	7	11
Interviewee characteristics	<i>General</i>	2	2
	<i>LA Job title</i>	20	22
	<i>Responsibilities</i>	13	36
Interviewee perspectives		14	43
Political process	<i>General</i>	5	6
	<i>Political structure</i>	20	39
	<i>Politicians</i>	12	27
Stakeholder engagement		6	9
Stakeholder involvement		4	5
	<i>External</i>	7	12
	<i>Internal</i>	4	7
Types of activity		1	4

5.3.3.1 Staff roles and resourcing

All who participated had direct involvement in net zero activity in their respective local authority and represented a variety of roles and seniority across a range of relevant disciplines. When asked about their role in net zero delivery within their organisations, only three of the twenty-five interviewees declared that their role was dedicated (2021-11-08[1], 2021-12-03, 2021-10-

05[1]). Three interviewees each held roles in more than one local authority. Those with dedicated roles had been appointed to their position within the last year with two post holders employed on fixed term contracts linked to the council declaring a Climate Emergency (2021-12-03 and 2021-10-05[1]).

Lack of staff resource, both in terms of staff capacity and capability, was a core theme across the research and seen as a particular problem for smaller local authorities. This was identified as a key barrier to RE development in particular; the impact of long-term lack of investment in public services [2021-10-05[1]C] with officers in smaller local authorities tending to be the sole resource taking forward the council's climate and net zero activity:

'I'm the only officer working on it [sic. Climate Change]' [2021-11-09C].

'I'm pretty much the only person in the team except for the person I report to.'
[2021-11-09C].

'The reason that we're slow to make decisions and slow to do things where we are as an organisation is primarily down to the level of officer or resource that we've got to make things happen' [2021-10-05 (1)C].

The findings align with research published by the Local Government Association which found that half of local authority respondents responsible for RE investment were in short term contracts (LGA, 2022). The circumstances identified by the interview sample also accord with findings of published grey research (UK100, 2019; Beechener et al, 2021). The ability of smaller local authorities, as well as some of their larger counterparts, to employ dedicated net zero staff is likely to remain challenging (NAO, 2020). Despite their ambition, the plight of smaller local authorities is likely to be worse since they are more likely to lack the capacity, capability and unified political agency observed in the participants in, for example, the UK Core Cities Group (Core Cities, 2024). Given the limited staff resources available in smaller local authorities they may also be less able to apply the structural delivery solutions available to their larger city equivalents (Webb, Tingey and Hawkey, 2017) with only the county councils in the interview sample establishing dedicated teams or units (n=3).

Resource-sharing across local authorities was considered a worthwhile opportunity (2021-10-07C, 2021-11-09[1]C, 2021-10-15C, 2021-11-25[1]C), 2021-11-25C). As one interviewee commented:

'how many local authorities are there in England? I mean, you know 150 or whatever it is and we're all trying to do this individually' [2021-11-25C].

The lack of competent teams or resource-sharing between organisations leaves the ambition of councils in the interview sample under the responsibility of what other researchers term a single *'wilful individual'* (Tingey and Webb, 2020). Solutions were put forward to address the observed under-resourcing including establishing strategic partnerships between local authorities in common geographies or with common challenges to share resource and experience:

'it's just better to be working in partnership with others. I think this 'cause we can share the resource and you know experience and drive forward programs we might not be able to do on our own' [2021-10-15C].

5.3.3.2 *The role and contribution of local politicians*

Views were expressed that local politicians continue to be averse to investing in RE technologies, not wishing to see public expenditure spent on net zero [2021-11-08[1]C] or exposing the council to challenge:

'Members do not like to talk about anything that is going to cost the council money' [2021-11-29C].

'it's brave for an authority to stick their head above water if they're gonna get criticised for it' [2021-12-02C].

There were conflicting views concerning the value of councillors with subject knowledge. Interviewees considered that it is beneficial to have well-informed, directly involved councillors with a deeper understanding of climate change or energy-related issues while others felt that that this would either be unachievable or even counter-productive to the decision-making process:

'Members (councillors) have limited time to look at stuff and they've got lots of conflicting stuff to look at. So, you've got to make it as easy as possible for them' and *"Maybe they don't need to understand climate change, they just need to understand that this project will be good because of ABC"* [2021-12-02C].

'I think our politicians ... are trusting the experts and not seeking to become experts,' ... 'we've kept them away from a lot of that real detail ... by making sure that we're managing that within the project' [2021-11-25(1)C].

Interviewees commented upon the depth of knowledge and understanding of politicians:

'Do the politicians really understand what we need to do to get our carbon emissions to zero? No, no they don't' (2021-11-25C, 2021-11-09[1]C).

'...understanding energy related stuff. 'cause it's complex. There's a lot of jargon. There's a lot of difficulty for councillors' [2021-10-04C].

This was considered by some to have a direct impact on the level of engagement and the political approach to decision making:

'It's quite funny with energy. It still has a struggle to get people interested' [2021-11-25C].

'They (councillors) set that big goal without any clear understanding of how they're going to achieve it, how they're going to get to it then. That's worked out afterwards, so it's a little bit cart before the horse' [2021-10-04C].

Concern or frustration was expressed at how politicians came to decisions on RE investment and the duplication of work that was created by a decision-making process, whether real or perceived, that was not designed to manage this type of complex or novel project:

'We're basically going backwards and forwards between two different groups of people agreeing the same thing, and that just slows everything down' [2021-10-13C(2)].

'From an officer's perspective we do spend a lot of time even though we get third party verification and advice. Often that's completely ignored really, so you do wonder about the amount of time and public money that is ignored' [2021-10-27 (1)C].

Two respondents summarised succinctly the subjective nature of decision-taking that they had observed where councillors either follow political party lines and alliances or vetoed key decisions:

'You got think about which members do you actually need to influence' [2021-12-02C].

'Don't underestimate the influence of politics...Ultimately, you know when people have made up their mind, you're not gonna change their minds unfortunately' [2021-10-07C].

There was concern about the longer-term commitment of politicians given how events can change:

'If some projects take too long, councillors wobble on stuff sometimes ... Obviously in terms of councillors they're in for four years or five years. Things can change, and if it takes too long to deliver and then other priorities zoom up the charts' [2021-10-04C].

Another commented on a political reality that:

'some politicians where they have signed up to come to net zero under political pressure and perhaps don't really believe it' [2021-11-25[1]C].

Most telling were comments made by two senior officers on their experience of presenting proposals to politicians:

'I don't think some of them get the climate change thing' [2021-10-05[2]].

'We've made this, dare I say, bland pledge about what we're going to do, but the devil's in the detail' [2021-11-09[1]C].

One interviewee considered that their politicians and senior officers had missed the focus and were fixated on issues and solutions that were peripheral to the core needs, referring to this as "*climate bling*" (2021-11-09[1]C). This called for a cultural shift in both thinking and approach:

'We're trying to move a local authority public body into a new arena'.

'There's a cultural change that needs to happen, and there's an understanding that needs to grow and to develop of actually the opportunity we have and the challenge as well' [2021-11-25C].

Although not explored in detail during this research, the interview responses suggest that a significant gap remains between the ambition of local politicians established through the Climate Emergency declarations, the political understanding of what needs to be done, and the role that RE investment could play in achieving net zero (Howarth, Lane, & Fankhauser, 2021). The Local Government Association, as the national membership body for UK local authorities, has looked to address such concerns by developing a suite of resources for place-based climate leadership and communication. This includes a Councillor Climate workbook; climate literacy training for executives and senior officers to help them understand and communicate the issues to members and staff in a clearer way, and guidance for those involved in scrutinising climate-based activities and decisions (LGA, 2022).

5.3.3.3 The democratic decision-making process

In the context of investing in RE technologies, interviewees were consistent in their support for, and recognition of the value in the politically democratic decision-making process. Several interviewees referred to the need for transparency in policy and evidence-based decision-making despite the apparent burdens this creates:

'We shouldn't be doing anything that's not mandated politically and actually, if it doesn't fit under our corporate plan, then technically it's not mandated, so we shouldn't be doing it' [2021-10-07C].

'Decision making in a local authority is never going to be a pacey process, but ... I would argue that regardless whether it's pacey or not, it has to go through that full governance process to get buying in' [2021-11-09(1)C].

One interviewee saw the decision-making process as a necessary mechanism to gain exposure for the issues:

'There's a part of me that just wants that to go through a formal cabinet decision making process, not least because I think it builds confidence and the more they [councillors] get used to seeing those kind of projects then the more confidence [sic] and comfortable they'll feel' [2021-10-05(2)C].

Financial probity and value for money was argued as a strong driver:

'The test that I apply when I am thinking about committing money. I think about it in the context of paying my Council Tax right, and I think to myself would I be happy as a council taxpayer? Will I be happy my council committing money in this way [sic]. Is it right and proper use of public money?' [2021-10-07C].

'Because we are spending public purse, I fully appreciate that you have to follow up due diligence process for getting things going' [2021-10-05C].

There was reference from those with previous experience outside of the public sector both about the time taken and complexity of the investment decision-making process in their organisation. They specifically commented both about the time taken and complexity of the investment decision-making process, suggesting a desire for streamlined decision taking to match the problem (2021-10-05 [1], 2021-12-03C, 2021-10-05[2]C). Webb (2019) describes this conundrum as *'a multitude of decisions each of which could be made differently, including deciding to act with necessary urgency on climate change'* (p.297). However, there was acceptance that this was necessary:

'Speaking as someone that came out of the private sector, you'd make decisions relatively quickly to spend money... and to sometimes up to significant amounts with little more than a conversation with a senior manager that you could access almost immediately... that's took [sic] a bit of getting used to when I first came into the public sector, things do take very much longer' [2021-10-05 (1)C].

'I've always worked in the private sector until this point, and so you know, I certainly see things like, oh if it was the private sector I'd have just done this by now' [2021-12-03C].

The research showed that decisions are shaped by internal influences beyond the formal governance structures in local authorities, what Easton (1957) calls the *'withinput'*. Some of these are legitimate in the form of advisory, check or balance mechanisms. Several interviewees referred to non-decision taking groups or panels which are *'agile smaller... providing political advise [sic] and steer'* [2021-09-30]. Interviewees described the informal ways that decisions are influenced, with one commenting that:

'There's a lot more informal briefing that we have to do to land the idea and get the politicians are [sic] comfortable with it and understand why they need to do it before we go anywhere near that formal governance process' [2021-11-25C].

Some recognised that tough decisions must be taken for the wider benefit of society with one interviewee commenting:

'At the end of the day, it's the council that does make the decision in its local leadership role. We can't keep everybody happy all the time. If there's a greater benefit, you know we apply that public interest test' [2021-10-04C].

5.3.3.4 Local authority investment risk appetite

There was a view that smaller local authorities continue to be averse to investing in RE technologies:

'I think as a council we're still quite risk averse, and therefore when we start talking about things which might be a little bit off the wall, a little bit new and thinking of energy related projects, I think that these could quite easily fall into that category' [2021-11-08(1)C].

Two interviewees expressed the view that because of its smaller size, their council was able to make investment decisions more quickly which, in the context of local authorities which have more confidence and experience to invest in RE technologies, may be of benefit. One interviewee stated:

'We can be quite nimble and quite fast actually when we need to' with the benefit that '...we can have conversations with a group of senior managers at the same time' [2021-11-08(1)C].

5.3.3.5 Investment funding and finance

There was near unanimity amongst interviewees that the availability of funding and finance across the project development process was a key barrier to successful delivery. Lack of funding at feasibility and business case development stages meant that RE investment opportunities withered on the vine or led to local authorities missing funding opportunities:

'Budgets are so tight that because [sic] we are often reacting to funding opportunities.' [2021-10-06C].

“Getting revenue funding for feasibility stuff is very, very difficult.” and “The real killer is the lack of money for feasibility work and capital investment upfront” [2021-10-04C].

‘We have to beg and borrow feasibility money from wherever we can find it.’ [2021-10-05(2)C].

One interviewee summarised the situation:

“If we had more resources, there's so much more that we can do.” [2021-11-09C].

Several interviewees identified solutions to enable projects to progress more quickly. One referred to establishing an energy investment policy framework which then allowed them to:

“create a [financial investment/capital fund] facility whereby when we've got an investment case coming forward that will deliver on our corporate objectives at the council, we can draw down on that fund and it's a simplified governance decision making process,” because *“sometimes when opportunities come up you need to move at speed.”* [2021-11-25(1)C].

Establishing budgets for more novel and innovative project ideas was seen as one solution, acknowledging that this would need to be treated as *‘risk capital.’* Yet, new ways of raising capital, for example using climate bonds, faced internal resistance since they are considered higher risk than traditional public sector funding or borrowing (2021-11-25C). At the core, interviewees called for locally controlled budgets (2021-10-13C, 2021-11-25C) since local authorities are expected by national government *‘to carry the burden’* of net zero at local level (2021-10-27C).

For local authorities to attract the scale of capital required to invest in RE technologies or enable area-wide decarbonisation, there needs to be *‘a change in mindset away from grant funding towards returns-based investment and innovation in financial structures’* (Beechener et al., 2021). This would require councils recognising that RE projects in particular can be viewed on the basis of investment return with development finance either being treated as capital or repaid through the revenue or savings resulting from the project (ibid.) This is likely to need higher levels of understanding of the value and relevance of non-governmental investment products to support RE project development, be that within local authority finance teams, key stakeholders involved in the decision-making process or responsible officers appointed for the proper administration of a council’s affairs.

5.3.3.6 *The role of scrutiny*

There was a call by two interviewees for more effective scrutiny. They considered that exposure to independent challenge would both raise the level of democratic discourse on climate change and help to reduce the risk of politicians being exposed to negative public opinion ([2021-10-05[2]C], [2021-10-27[1]C]). Informal advisory panels were viewed as partially fulfilling a scrutiny check and balance mechanism in the absence of what was deemed an ineffective constitutionally defined overview and scrutiny process (2021-10-05[2]C), 2021-11-09[1]C).

Improving both the value of the role and the competence of those undertaking scrutiny in local authorities have been highlighted in government considerations as potentially powerful tools to raise standards. The UK Government's statutory guidance reinforces this point as well as providing ad hoc support where expertise does not exist in the organisation (MHCLG, 2019). It is not simply about budgets and staff provision but also about the ways in which wider local society engages with those who conduct the council's scrutiny function, '*where a committee is made up of members who have the necessary skills and commitment, it is far more likely to be taken seriously by the wider authority*' (ibid., para.24).

Concern for better scrutiny echoes comments made by Clive Betts MP (Hansard, 2018). Betts calls for wider participation of external stakeholders in this process, extending to specialist expertise and the involvement of the public (ibid.). In the context of RE, local authorities could use this external contribution as part of the evidence base to formulate more rounded business cases.

5.3.3.7 *Developing integrated policy and finance solutions*

A commonly expressed view was that Central Government needs to mandate the role of local government, with a key component being the capability to invest in net zero delivery (2021-11-25C, 2021-10-13C, 2021-10-27C), a consistent recommendation made in net zero research (Committee on Climate Change, 2020; UK100, 2021). However, in the absence of new powers and duties for local authorities, local solutions are needed which enable local authorities to act within their democratic frameworks such that RE projects can be delivered effectively and at pace to meet local and national policy ambitions.

One interviewee endorsed having a clear policy architecture aligned to the organisation's corporate priorities for growth, local investment and decarbonisation. This approach has enabled them to establish multi-year financial facilities alongside streamlined decision-making processes approved within their constitutional framework (2021-11-25[1]C). This, in their view,

has drastically reduced the time to make RE investment decisions. Except for one upper tier authority, this level of sophistication was not observed.

5.4 *Synthesizing the evidence to inform toolkit development*

The synthesised findings from this research stage are summarised in Tables 15 and 16.

These have been used to inform the design of the diagnostic toolkit discussed in chapter 6.

Table 15. Barriers affecting local authorities in securing renewable energy investment.

Themes	Barriers to progress
Staff roles and resourcing	Not having sufficient staff working in this area
	Staff on short term contracts
	Staff with limited influence or authority
	Lack of appropriate skills and competence
	Insufficient collaborative working across services
The role and contribution of politicians	Resistance to spending public money on Net Zero or Climate Change action
	Concerns over exposing the council to challenge or criticism
	Local party politics causing decisions to be blocked or delayed
	Lack of clear local leadership
	Lack of clear national leadership
Organisational structures and processes	Competing agendas and priorities
	Complex internal decision-making processes
	Issues of trust in the advice given by internal staff
	Burdensome procurement processes
	Ineffective scrutiny of decisions on Net Zero
Investment funding and finance	Lack of project development funding
	Concerns regarding the risk of investing in Net Zero solutions
	Fragmented and short-lived public funding programmes
	Uncertainty about who should pay for the solutions
	The upfront cost of solutions
	Lack of robust business cases
	Uncertainty of where the money should come from
	Financial regulations and taxation rules constraining investment
	Funding opportunities favouring better resourced local authorities
Integrated policy	Lack of a statutory mandate for local government
	Complex, confusing and conflicting policy landscape
Defining the problem	Confusing language of Net Zero/Climate Change

Themes	Barriers to progress
	Doubt regarding the science of Climate Change
	Doubt about what solutions to adopt
Delivery	Lack of good quality suppliers
	Lack of delivery plans
	Volatile energy costs
	Unrealistic timescales to deliver projects
	Other factors diverting attention and resources
The role of others	Doubts about the role of stakeholders in project delivery
	Uncertainty regarding local stakeholder support
	Conflicting needs of stakeholders
Technical complexity	Technical challenges (e.g. connecting to the power network)
	Lack of affordable, high quality, independent advice
	Complex licensing and permitting processes

Table 16. Potential solutions to help local authorities improve net zero delivery

Themes	Potential solutions
Embedding Net Zero	Making the impacts of net zero transparent across all council decisions
	Supporting more participation of stakeholders in net zero planning, delivery and progress monitoring
	More training and awareness to support leaders and decision-takers across sectors in the local area
	Leading area-wide energy planning to help focus net zero delivery
	Establishing a regional carbon budget to align with the UK statutory equivalent
Investment funding and finance	Establishing multi-year investment budgets for council net zero projects
	Establishing locally controlled Net Zero funds accessible across organisations in different sectors
	Using different sources of finance for Council projects
	Establishing early-stage funding for new project ideas
	Having local control of national Net Zero-related funding
	Establishing a regional energy infrastructure fund to stimulate commercial investment at scale
	Establish a finance mechanism for scaling-up retrofit across all types of housing
	Having the ability to control taxation locally to stimulate net zero investment
Improving the decision-making process	Focusing developer planning contributions on essential net zero infrastructure
	Improving democratic scrutiny of net zero decisions
	Integrating Net Zero into policies across functions within Councils and between local organisations
	Establishing advisory panels to inform, support and monitor net zero delivery plans
Staff roles and resourcing	Streamlining Council decision-making processes (e.g. through more targeted delegations)
	Increasing resource-sharing (i.e. people and finance) between local authorities
The role and contribution of politicians	Bringing in expertise from other sectors in the local area to support staff
	Providing councillors more opportunities to participate in net zero planning and delivery
	Offering more training to develop councillor knowledge and expertise in net zero
	Mandating Net Zero training for councillors as a way of developing knowledge and expertise
Organisational structures and processes	Lobbying National Government to introduce a Statutory power for Local Authorities to lead net zero
	Establishing a 'net zero Duty to Co-operate' between local authorities
Increasing local deliver capacity and capability	Establishing formal net zero delivery structures across sectors at local level
	Establishing a statutory role for local authorities to help shape changes in the energy network
	Increasing the level of collaboration with external parties to deliver projects
	Being able to relax local planning rules where evidence supports net zero
	Being able to establish innovation zones for net zero

Chapter 6: Using the Delphi Method to overcome net zero barriers

Preamble

The principal content of this chapter is based on a research paper titled '*Are local authorities on the road to Net Zero or the Road to Nowhere? A modified Delphi approach to assist smaller local authorities diagnose improvements to Net Zero governance and decision-making*'. The paper was presented at the International Sustainable Ecological Engineering Design for Society (SEEDS) Conference 2023 and is awaiting publication by Springer Nature in Conference Proceedings. The tool that is proposed in this chapter has been made available by the EU Interreg North Sea Region project, ACCESS.

6.1 Introduction

As outlined in previous chapters, many local authorities are constrained by lack of sufficient capability and resources. This prevents them from being able to take advantage of published research or procure third parties to undertake work on their behalf. The case has been made in previous chapters that cost-effective, simple tools are needed to help under-resourced councils improve net zero delivery in their areas. Therefore, a key design criterion of this research has been to find ways for councils to use available resources, including the sector's knowledge and expertise, to derived appropriate solutions to improve decision-making.

This stage of the research, therefore, aims to answer the following question:

'Can we develop tailored support for smaller local authorities to help them improve their decision-making and improve delivery as a result?'

To answer this question, based on the research and evidence presented in previous chapters a diagnostic tool is developed and tested with the aim of improving local authority decision-making to deliver net zero. To achieve this, the tool that is developed takes a wider scope than that used in the previous chapter to encompass the local government response to declaring a Climate Emergency.

6.2 Rationale for the selected technique

6.2.1 Techniques considered

Unstructured discussion amongst experts can rapidly reach consensus but risks introducing bias through the influence of dominant personalities and groupthink (Gronseth, Getchius and Hagen 2012). In Chapter 5, two techniques were employed which are commonly used in public sector discourse to gather opinion and insight: the structured survey and semi-structured interview. As a way of reaching unbiased group consensus to address the question that is posed in this chapter, two further approaches were considered which are used extensively in behavioural science but are less common in the public sector: the '*Delphi*' and the '*Q*' Methods.

The '*Delphi Method*' employs a panel of experts selected to consider a specific challenge (Paliwoda, 1983). The panellists are asked to consider the challenge posed in the form of a set of questions. The questions are repeatedly considered over several rounds without interaction between individuals. Results are aggregated after each round and fed back to each panellist in unattributed form along with any comments or explanations provided by each panellist to justify their scoring. After each round, the panellists are asked to reflect on the group feedback to the questions and revise their scoring in the light of the emerging information. This process continues until either consensus is reached or scores remain stable, at which point the process stops and the results are viewed as the position of the panel.

The '*Q Method*' uses a process of grading options to derive a statistically significant position of the group using a set of statements based on a theme, known as the '*Q-set*'. The Q-set is drawn from a fuller list of perspectives, termed the '*concourse*'. The concourse is derived from a body of authoritative literature on the topic (Webler et al., 2009). Participants undertake a '*Q-sort*' where they place the statements ordered according to what they consider is most meaningful and significant based on their personal response to each statement (Coogan and Herrington, 2011). The researcher then uses tests of correlation and factor analysis to identify patterns of association of the opinions being expressed.

Following consideration by the researcher, a pragmatic decision was taken to use the Delphi. On balance, it was considered a good complement to the research methods that had already been employed. It can be grounded both in research and experiential insight and utilises expertise drawn from the participating organisations who could then choose whether to utilise the results to develop a shared set of solutions to improve their arrangements.

6.2.2 *The Delphi research technique*

The Delphi research technique was developed by the Rand Corporation for the Defence Industry in the 1950s. It is a way of quickly establishing solutions to complex problems by deriving a stable set of opinions of experts through a series of structured questionnaires designed to minimise the biases observed in other problem-solving methods (Dalkey & Helmer, 1963). The method employs self-reflection based on anonymous controlled feedback to '*conceal the actual opinion of other respondents and merely to present the factor for consideration without introducing unnecessary bias*' (ibid., p.459). It is seen as an efficient solution to gathering expert opinion when the problem that is being addressed has no clear solution and where time and resources are limited (Linstone, 1978).

The Delphi has gained common use in academic research with over 20,000 published papers and articles citing the technique (ScienceDirect search title contains 'Delphi Technique': 7 May 2023). Some have seen it as '*a method for structuring a group communication process*' and

forecasting rather than '*a method aimed to produce consensus*' (Linstone and Turoff, 2011). Different types of Delphi have been described in the literature. De Loe (1995) makes the division between the *Conventional* Delphi, whereby expert opinion is gathered from a single or restricted range of disciplines to derive decisions, and *Policy* Delphi which uses respondents with a broader range of backgrounds and experiences to focus on complex, multi-issue problems to generate a spectrum of opinion and options. The *ranking-type* Delphi looks to develop consensus about the relative importance of issues, to '*surface a consensus opinion*' or to emphasize differences in opinion to develop '*a set of alternative future scenarios*' (Okoli and Pawlowski, 2004, p.16).

Evans (2003) called into question the standalone value of the Delphi, recommending that the Delphi has value alongside other forms of opinion and evidence gathering. De Loe (1995) recommended that, to overcome the challenge that the Delphi could generate too broad a set of viewpoints in the context of his research, it could be used as a precursor to more focussed workshops.

6.2.3 *The Delphi in climate research*

The use of the Delphi in climate change research is explored in a bibliometric analysis by Calleo and Pilla (2023) who found 5,027 papers discussing scenario planning, with 943 case studies over a time span of 25 years from 1997 to 2022. The majority employed the technique to identify climate projections and trends. Dodd et al. (2023) use a two-round survey process to investigate the opinion of local authority climate change and public health officers on the barriers and facilitators to creating and implementing policies to reduce the health risks arising from climate change. Delphi studies have been applied to the energy transition in specific contexts, for example: *Power-to-X* in electrical power conversion technologies (Sillman et al., 2023); to inform system transition by taking a broader policy and research perspective (Winskel and Kattirtzi, 2020); and in the context of climate change and the impact on water management (de Loe, 1995). No studies, however, have been found which use the Delphi method to explore climate action delivery from the perspective of local government.

6.3 **Methodology**

6.3.1 *Design of a modified Delphi*

A literature review of the Delphi technique informed the design of a process modified to suit this research. Table 17 shows where the adopted design compares with the typical Delphi methodology discussed by Hsu and Sandford (2007). Key design criteria and approach employed in this research are explained in more detail in Sections 6.3.2 to 6.3.8.

Table 17. Comparison between the standard Delphi Method as described by Hsu & Sandford (2007) and the modified Delphi Method used in this research

Delphi characteristic	Standard Delphi	Proposed criteria for the Modified Delphi
Subject selection	Given that the Delphi technique is designed to elicit responses on a topic and reach consensus over a brief period, the subject areas and the expertise available in the panel need to be matched.	The survey questions should be based on robust prior research.
Expert panel identification	No explicit criteria for selection are set. However, choosing panellists based on a general knowledge of the subject is not considered sufficient such that ' <i>Delphi subjects should be highly trained and competent within the specialized area of knowledge related to the target issue</i> ' (ibid., p.3).	Panel selection criteria should be drawn up aimed at recruiting suitable individuals to participate. Prospective panellists should be identified and recruited specifically for the Delphi according to the criteria.
Panel selection and size	No specific panel size is advocated in the literature. Paliwoda (1983) employs a panel of eighteen members while citing Johnson (1976) who advocates panel sizes between ten and fifteen. Setting too large a group runs the risk of delaying responses leading to participants dropping out, and imposing significant time demands on participants and the researcher to process feedback.	A target minimum panel size of ten participants should be achieved for each panel. Selection criteria should reflect the breadth of skills, competencies and experiences likely to be appropriate for the type of participant involved in the subject area. Surveys should include a way to assess each panellist's level of confidence in dealing with the subject matter presented to them.
Time requirements	No specific time requirements are discussed but there is a recognition that the process can be lengthy and delay in responses can occur between rounds. The use of electronic communication can speed the process up.	Communications should be undertaken using ways typically employed by the panellists. The use of host organisation's resources, including staff time and budget, should be kept to a minimum through good design and delivery routes.
Iteration and reflection	Multiple iterations designed to develop a consensus concerning a specific topic. Theoretically iterate until a consensus is considered to have been reached.	The number of survey rounds should be a balance between statistical rigour and stability of results versus panellist time and effort to participate in the process.
Group communication	No specific comment made.	A suite of communication materials should be developed and agreed with the host organisation prior to use. Communications should be informative, timely and kept to a minimum to achieve a balance between effective delivery of the process and positive feedback from panellist.
Controlled feedback	Provision of well-structured results from panellists in the form of a position statement for the whole panel alongside the specific panellist's position. This could be in the form of ' <i>a summation of comments made by each participant</i> '.	Feedback should be provided in the same format to each panellist. Participant anonymity should be ensured throughout the process.
Use of feedback from other panel members	Allowing each panellist given equal opportunity to provide additional insights at each iteration	Each comment made by panellists should be reviewed and collated prior to being fed back with the panel scoring. All

Delphi characteristic	Standard Delphi	Proposed criteria for the Modified Delphi
		statements should be fed back verbatim with any corrections made only to ensure clarity and to maintain panellist and organisational anonymity.
Panellist anonymity	Designed to avoid dominant opinions or biases created by direct interaction and group pressure	All generic communications should maintain the anonymity of panellists. Individual communications between the researcher and a panellist should be kept to a minimum. Data and information provided by panellists should be managed according to UK General Data Protection Regulations and an academic Ethics Committee-approved research protocol.
Suitability of statistical analysis	Mitigating noise and outliers and allow objective and impartial analysis.	Statistical techniques should be used that are commonly used and familiar with panellists.

6.3.2 Recruiting organisations to participate

Six local authorities were approached in the study area with three agreeing to participate in trialling the modified Delphi. The characteristics of each participating organisation are summarised in Table 18.

Table 18. Characteristics of the local authorities which participated in the Modified Delphi trial

	LA1	LA2	LA3
Administrative tier (i.e. County or District Council)	County	District	County
Organisational Climate Emergency declared	Yes	Yes	No
Area-wide Climate Emergency declared	Yes	Yes	No
Climate Emergency/Carbon Neutral target date	2030	2030	2030

6.3.3 Recruiting and engaging with panellists

Prior to recruitment, each organisation was asked to appoint a *panel convenor* as a way of facilitating the process. A target was set to establish panels of up to fifteen participants per organisation based on the reflections of previous researchers on the size of panels (Dalkey and Helmer, 1963, Dalkey, 1969; Johnson, 1976; Paliwoda, 1983). Panellists were selected based on the criteria presented in Table 19.

Table 19. Selection criteria for panellists

Selection criteria
Employed directly by the local authority
Worked on projects directly connected to the Local Authority's or the area wider Net Zero Plan/Climate Emergency declaration
Worked on projects which have required the participation of senior decision takers
Have experience of the local authority's decision-taking processes

Following recruitment, each panellist was sent an email explaining the context of the research, a research consent form and briefing materials (Appendix 7).

6.3.4 Designing and testing the surveys

Surveys (Appendices 5 and 6) were prepared covering barriers and solutions to net zero delivery based on the literature review and findings of the sectoral survey and practitioner interviews in chapter 5. The first draft of the surveys considered asking participants questions from two different contexts: in terms of achieving their council's own net zero ambition and achieving net zero across the council's administrative area. The draft surveys were tested with the panel convenors to check their understanding and provide confidence that the panellists would be able to contribute effectively.

Following discussion with the convenors it was felt on balance that this approach would hamper participation rates. The surveys were, therefore, simplified to grade questions according to the following statements. For the *barriers* survey:

'How much do you feel [each barrier or blocker] is holding up your organisation's delivery to progressing your organisation's net zero ambition?'

For the *solutions* survey,

'How much do you feel that [each potential solution] could help your organisation's delivery?'

Panel convenors were interviewed after the reporting stage of the process to gather their views on the process and the value of the findings in helping to improve their organisation's approach to net zero delivery.

6.3.5 Running the Delphi process

The Delphi process that was followed is outlined in Figure 11. The process commenced with panellists being presented with the *barriers* survey. Following completion and collation of the results for each panel, the feedback from the combined outcomes of this round of the barriers survey was emailed to each panellist, inviting them to review their own scoring. The *solutions* survey was sent to them alongside the final *barriers* survey feedback. The process was repeated for the *solution* survey. The results were collated, analysed and reported to the panel and convenor at which the time the process concluded.

The surveys invited panellists to score each of a set of statements using a 0-10 Likert ranking. Descriptive explanations of how to interpret the Likert range were provided (Table 20). Each panellist was given the choice to input a score of 0 if they could not rank the statement or considered it did not apply to their experience. Panellists were invited to provide their own comments in response to each statement and suggest any additional barriers or solutions not included in the surveys. They were also asked to rank their level of confidence in scoring the surveys. This allowed subsequent analysis of the panellists' understanding of the issues that were presented to them and provided a way to assess the success, or otherwise, of the panel selection process.

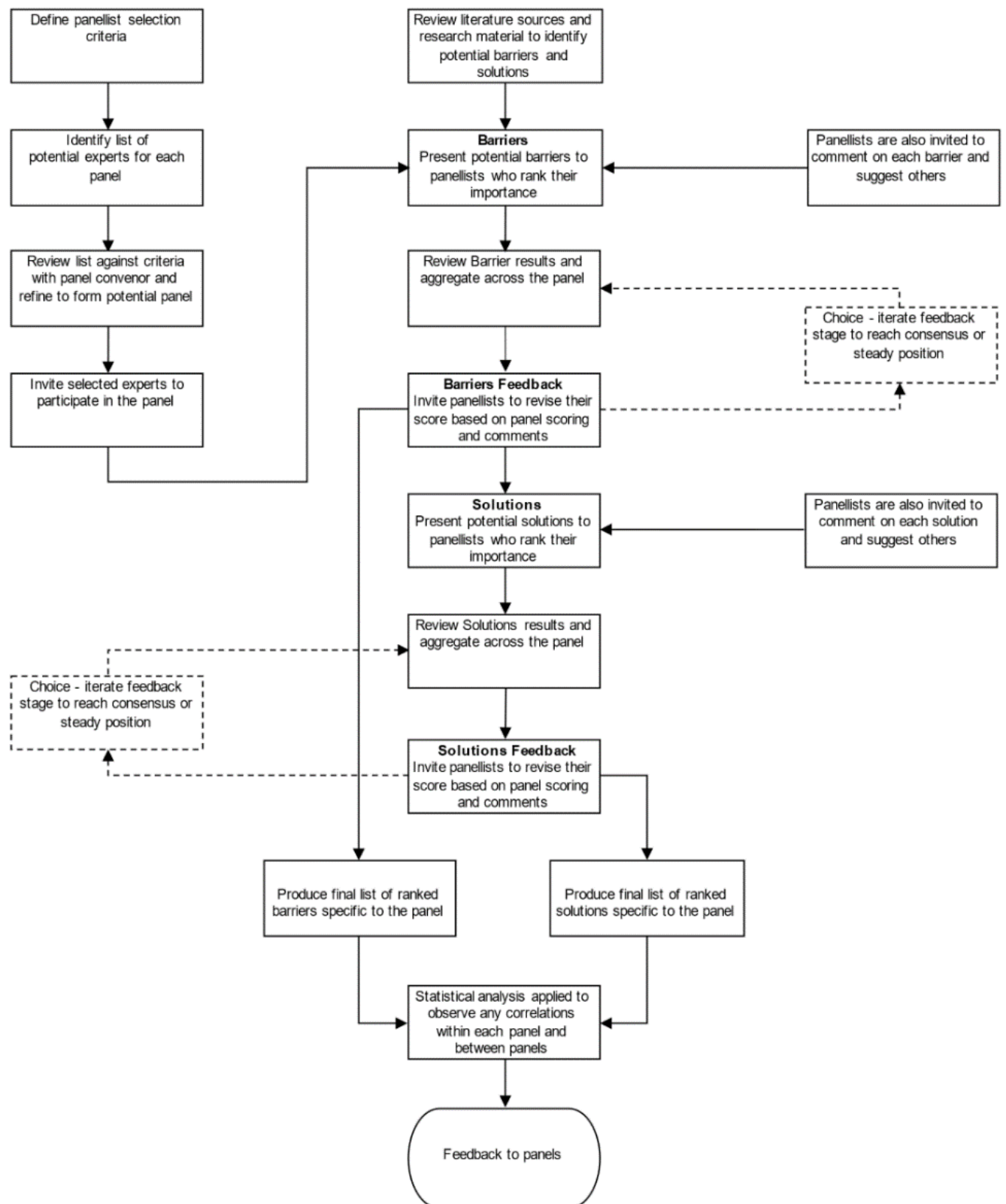


Figure 11. Research methodology. Outlining the Modified Delphi process

Table 20. Scoring and descriptions presented to panellists in the Delphi Surveys

Survey activity	Text descriptors presented to panellists to aid completion
Likert scale descriptors – Barriers Survey	1 (Not a blocker) 3 (Minor blocker) 5 (Moderate blocker) 8 (Significant blocker) 10 (Critical blocker)
Likert scale descriptors – Solutions Survey	1 (Not a solution for my organisation) 3 (Minor solution) 5 (Moderate solution) 8 (Significant solution) 10 (Critical solution)
Level of confidence	Very confident/sure Quite confident/okay Not very confident/unsure
Feedback on panellists' comments	<i>Italics</i> indicate a minor correction, but the meaning has been kept. [redacted text] indicate editing to avoid reference to a specific person, activity or organisation. Multiple repeated responses were amalgamated where observed.

At the end of the first round of each survey, the scores of each panellist and any comments or suggestions for wider consideration were collated. All free text comments were edited prior to collation to correct obvious typographical errors and remove specific references to avoid attribution to individuals, service functions, organisations or locations. Feedback was provided to each panellist comprising of their scores and the aggregated scoring for their panel. The scores were presented using spread and central tendency statistics, principally the minimum, maximum and mode for each barrier or solution, ignoring zero responses. Any changes to the comments were shown in italics while redactions were shown in [square brackets]. Each panellist was invited to review the feedback, reflect on their original scoring and keep or change any of their scores.

The surveys and resulting feedback were managed in MS Excel because of its ease of use, flexibility for data retrieval and common availability. All comments were collated and uploaded into the NVivo™ qualitative analysis software (Release 1.7.1) with key text coded against the thematic classifications.

6.3.6 Analysing the results

The statistical techniques and ways of presenting the data that were considered and subsequently employed are shown in Table 21. Both quantitative and qualitative data were presented in tabular format throughout the Delphi with graphical outputs, including pie, box and whisker and radar charts, used in final reports sent to each organisation on completion of the Delphi.

In addition to analysing the results, the performance of the modified Delphi was assessed. Metrics included ease of recruitment, conformance with the panel selection criteria, drop-out or *attrition* rate during the Delphi, participant confidence level when completing the surveys, feedback from both the convenors and panellists on the process, and the convergence or divergence of the results.

Table 21. Data presentation techniques along with the justification for their use in the Delphi process

Stage analysed	Techniques considered employed	Approaches selected and justification for use
Delphi data gathering and iteration	Central tendency (mean, mode, median), Range (minimum and maximum)	Mode, minimum and maximum - simple to digest the data when presented to the panellist.
Statistical feedback – Round 1	Central tendency -spread and dispersion - standard deviation, coefficient of variance Tests of Significance	Mean, mode, median Range - minimum and maximum
Commentary – Round 1	Qualitative data management software e.g. NVivo, manual review and classification	Manual assessment. The themes are already categorized in the surveys. It was decided to provide panellists with all commentary rather than a synthesis based on the amount of feedback that was received at the end of round 1. No comments were requested at the end of round 2.
Commentary – Final results	Qualitative data management software e.g. NVivo manual review and classification	Manual assessment. The themes are already categorized in the surveys. The amount of feedback that was received did not justify using qualitative data management software

6.3.7 Avoiding bias

There is a risk of self-selection bias since those volunteering for the Delphi process may be predisposed towards participation; for example, based on their wish to contribute to addressing the issues that were raised by the research, their availability at the time of the research process or their professional relationship with the convenor undertaking recruitment. It is also the case that smaller councils may not have sufficient suitably qualified staff with the capacity and capability to form a panel of the size proposed for this research. This may also lead to unwitting identification of individuals through chance discovery given the small number of people that may be working in this field.

A key feature of the Delphi process is avoiding bias caused by the undue influence of strong opinions or personal characters. Further effort was made to address these limitations throughout the process following the research protocol set out in Appendix 1. The principle of anonymity covered both the individuals and the organisations taking part. This was achieved using generic and blind copied email communications and adopting a coding system for each

participant. All data was stored, processed and re-transmitted so that only the researcher could trace provenance.

6.3.8 Trialling and evaluating the Delphi process

The Modified Delphi process was trialled with the three local authorities between October 2022 and April 2023. The timing of the research coincided with the aftermath of a global pandemic, geopolitical events leading to significant volatility in cost and availability of energy, and a highly fluid national policy landscape. The Delphi process had to also take account of organisational factors characteristic of the participating local authorities including staff numbers involved in net zero and public sector budgetary restraint. Performance was evaluated in terms of the findings generated by the process and secondly its alignment with the principles defined in Hsu & Sanford (2007).

6.4 Results and discussion

6.4.1 Performance against the principles of the Delphi Method

In judging success, the researcher must navigate between the need for a robust examination of the issue being evaluated and the practicalities of recruiting ‘*experts*’ with the appropriate level of knowledge and experience. In the trial, each of the three participating councils successfully recruited the minimum target number of panellists (N=10) that was set with one panel recruiting eleven panellists. All recruited panellists were considered to have met the selection criteria set out in Table 19. A diverse range of roles and levels of seniority was observed across the panels (Table 22).

Table 22. Roles recruited to the Delphi panels (N=31)

Job role	
Assistant director (2)	Green sector growth manager
Building services manager	Head of service (x4)
Councillor with/without net zero responsibilities (x2)	Housing development manager
Director (x2)	Policy officer (x2)
Environment/Energy officer (x8)	Project officer/manager (x4)
Fleet & transport manager	Senior communications officer
Green economy project officer	Senior finance specialist

It was decided not to conduct further rounds after Round 2 to avoid placing substantial demands on the organisation. This is considered justified based on the observed attrition rates. Two panellists dropped out at the *barriers* survey stage while twenty-six out of thirty-one panellists completed the full Delphi process (Table 23). The attrition rate observed across the entire process was 16.1% although the attrition rate varied between the three panels and

the two survey stages. When adjusted to account for the higher recruitment level in one panel the attrition rate was 13.3%.

Table 23. Panel recruitment and retention

Local Authority Identifier	ID1	ID2	ID3	Total	Attrition rate
Panellists recruited	10	10	11	31	-
Number of panellists completing the Barriers stage	10	9	10	29	6.5%
Number of panellists completing the Solutions stage	9	9	8	26	16.1%

Panellists were asked about their level of confidence when completing each survey (Fig. 12).

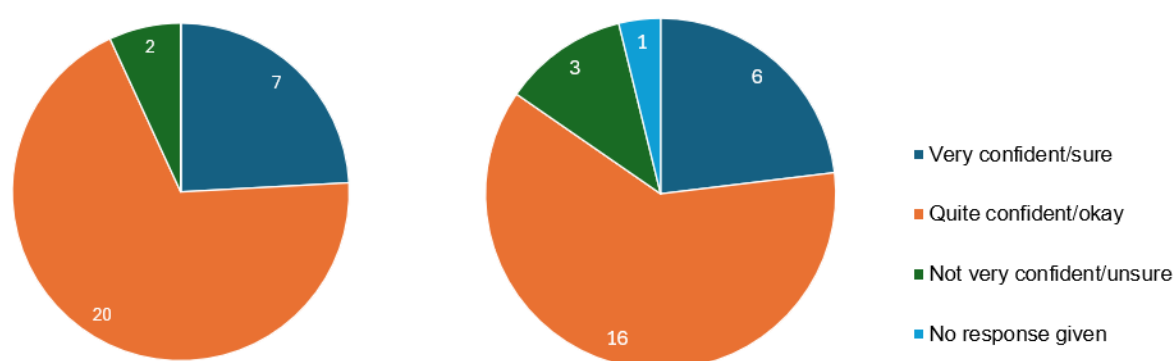


Figure 12. Panellist confidence levels - Barriers (Left, N=29) and Solutions (right, N=26)

Twenty seven (93%) panellists felt either quite or very confident about completing the *barriers* survey compared to twenty-two (88%) completing the *solutions* survey.

Each panellist could choose to not answer a question. The response count and percentage rate of nil responses for each of the surveys is shown in Table 24.

Each panellist was given one opportunity to reflect on their own scoring and make amendments in the light of the panel feedback. The amount of change in scoring exhibited for each survey is shown in Table 25.

Table 24. Count and percentage of panellists scoring 0 (Likert scale 0-10) where either they did not know how to answer or considered that the statement did not apply

Panels	Barriers Survey				Solutions Survey			
	ID1	ID2	ID3	All	ID1	ID2	ID3	All
Total responses possible	400	360	400	1160	270	270	240	780
Nil responses	31	31	24	86	2	19	7	28
Percentage of responses as Nil	7.75%	8.61%	6.00%	7.41%	0.74%	7.04%	2.92%	3.59%

Table 25. Count and percentage level of scores changed by panellists following reflection

Panels	Barriers Survey				Solutions Survey			
	ID1	ID2	ID3	All	ID1	ID2	ID3	All
Total responses possible	400	360	400	1160	270	270	240	780
Changed responses	27	18	25	70	16	9	18	43
Percentage of responses changed	6.75%	5.00%	6.94%	6.03%	5.93%	3.33%	7.50%	5.51%

Following analysis, the results were collated into a report for each council. Figures 13, 14 and 15 illustrate the style of graphical output that was used. Radar charts showing the *mean*, *mode* and *median* scores for the panels were used to demonstrate the issues of significance while *box and whisker* charts were used to show the spread, median and interquartile range to indicate the level of agreement or divergence on a particular barrier or solution within a panel. The research process and findings were also summarised in a dashboard to assist wider communication of the findings. An example of the dashboard for council ID1 is presented in Figure 16.

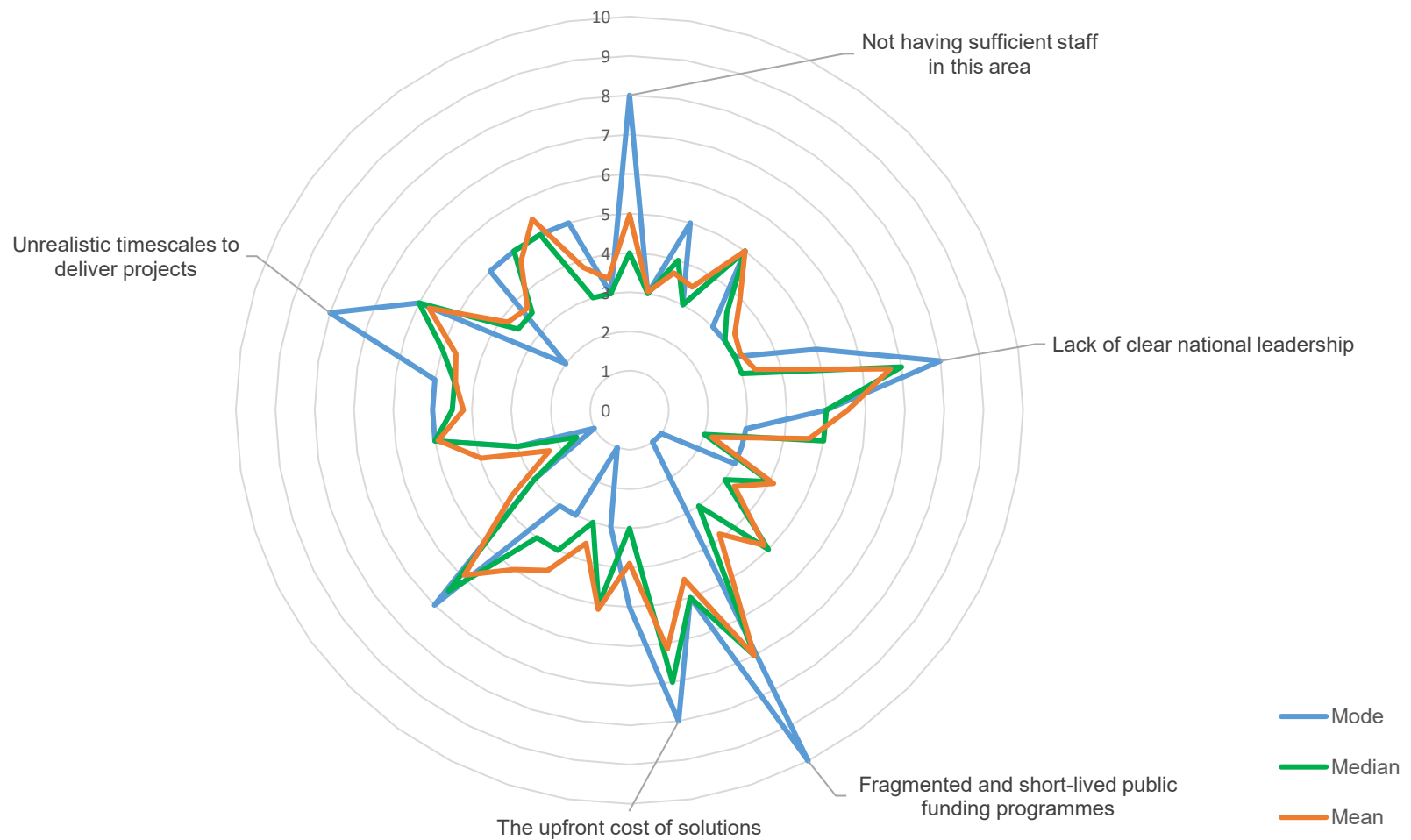


Figure 13. Radar plot illustrating the final central tendency scoring (Lickert ranking) for all panellists in response to the Barriers survey (n=29)

Note: Panellists were provided with a classification system to help them apply the Likert ranking. A Likert score of 8 or above was classified as **significant**, with ten classified as **critical**.

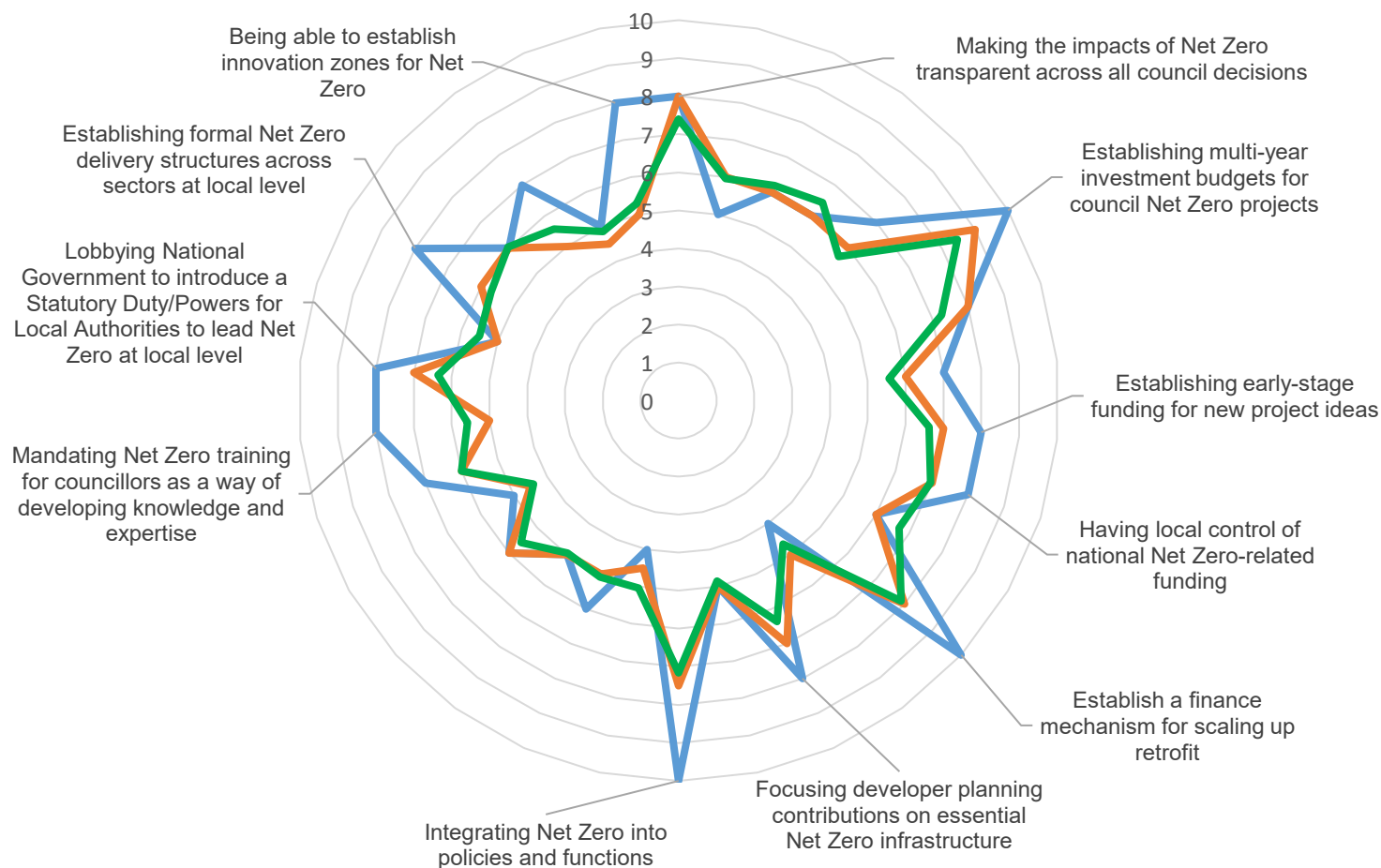


Figure 14. Radar plot illustrating the final central tendency scoring (Lickert ranking) for all panellists in response to the Solutions survey (n=29)

Note: Panellists were provided with a classification system to help them apply the Likert ranking. A Likert score of 8 or above was classified as **significant**, with ten classified as **critical**.

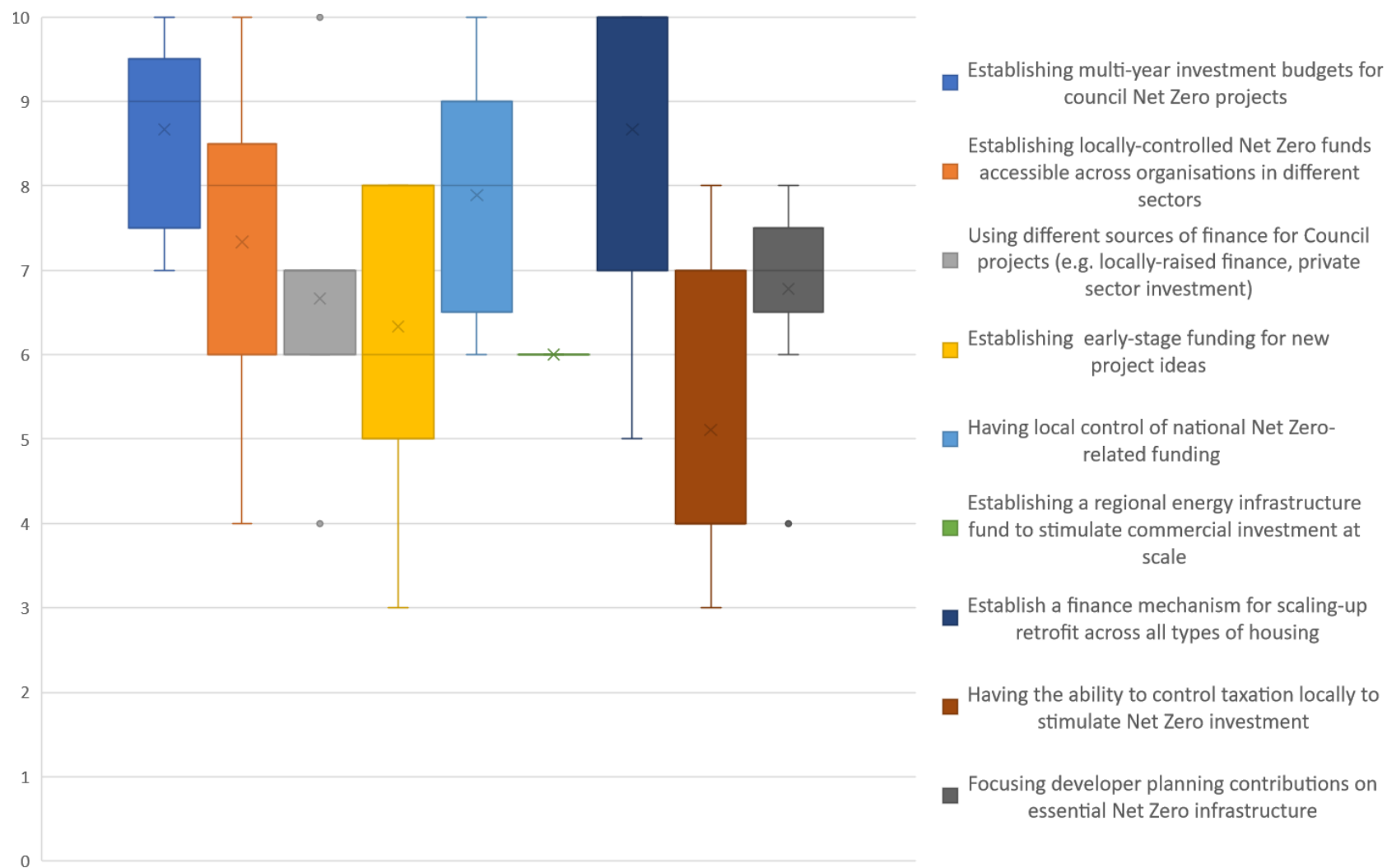


Figure 15. Example of box and whisker output for Organisation 1 Solutions, Theme - Investment and Funding

Barriers and solutions to delivering Net Zero - Report for ██████████ Council

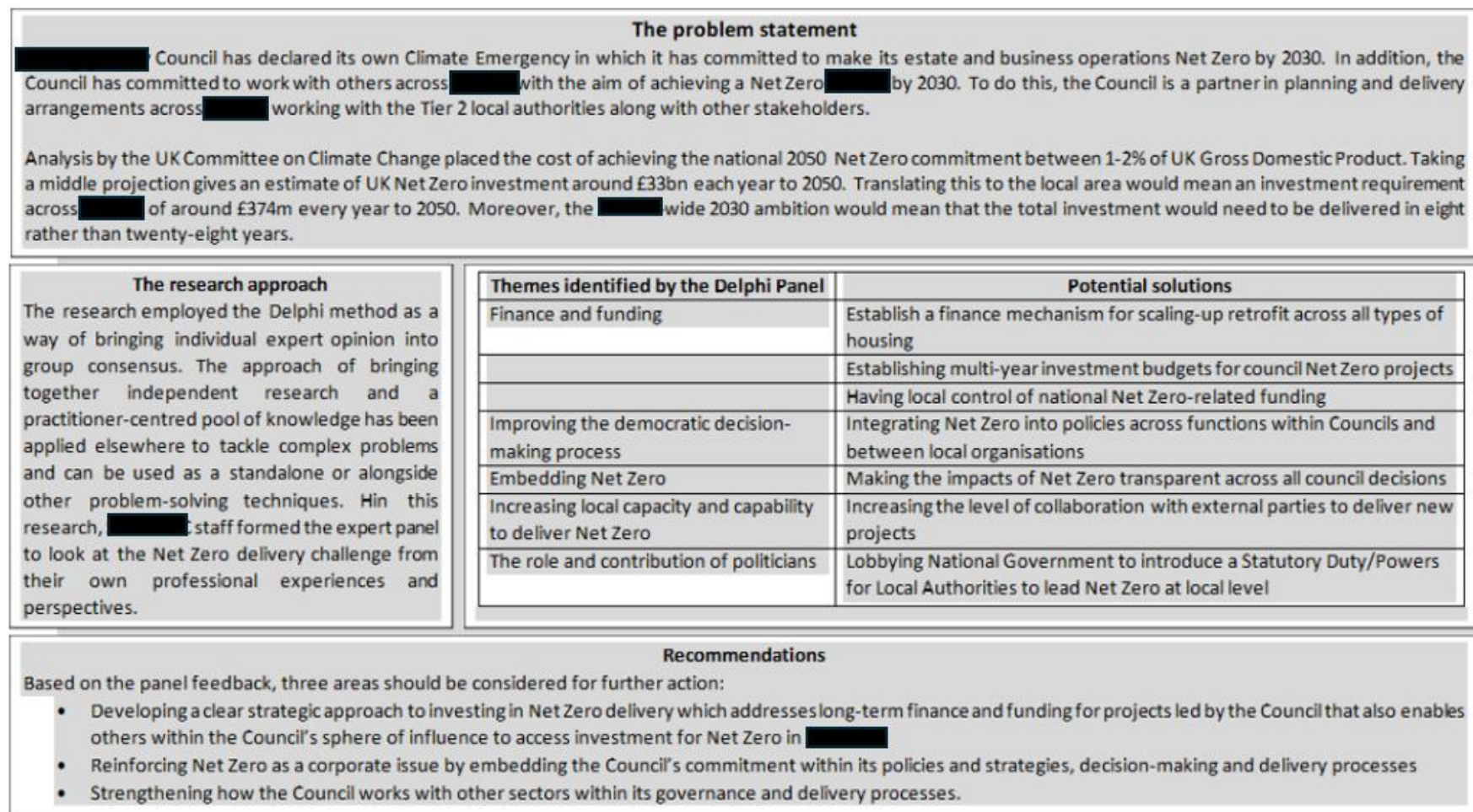


Figure 16. Screenshot of dashboard taken from the report submitted to council ID.1

Anecdotal feedback was received from panellists during the process, for example to seek clarification on the background to the research programme and process timetable. Only two panellists did not communicate or participate throughout the process with one being unavailable throughout. No reason was established for the reason for their withdrawal from the process.

Each convenor was interviewed after the reporting stage to gather their experiences on the process, their role as convenor and how the findings would be treated by the organisation (Table 26).

Table 26. Feedback from convenors (direct quotes are shown in italics)

Theme	Response
The process - Positives	<i>'I quite liked the scoring system and the ability to add my own comments.'</i> (ID1.10) <i>'The reflection stimulated thinking. One more iteration could have been possible.'</i> (ID3.02) <i>'Completing as a participant was quite easy.'</i> (ID2.09) <i>'Email was the best way to handle this'</i> although some had lost the email due to volume of communication generally. (ID2.09)
The process - Negatives	<i>'Time consuming and quite technical which could have put some off.'</i> (ID1.10) <i>'Could have made [sic] some of the language plainer.'</i> (ID1.10)
The ability to reflect	<i>'Commentary helped but few changed their scores.'</i> (ID1.10) It did allow <i>'a bit more detailed reflection.'</i> (ID1.10)
The role of convenor - Positives	<i>'Getting in touch with panellists was relatively easy.'</i> (ID3.02) It helped <i>'to understand how the organisation operates and the relationships between different people.'</i> (ID3.02) External support took some of the pressure off (ID3.02) <i>'The role of the researcher meant that there was less resource demand with mix of support to achieve the final participation'</i> (ID3.09) The support provided by the researchers assisted and simplified the role. <i>'Getting a steer on panel selection,' it was 'clear who were needed for recruitment.'</i> (ID1.10) The use of proforma emails and documentation saved time producing their own communication material (ID1.10) The researchers built in flexibility into response dates (ID1.10) It was a straightforward role as the convenor already undertaking this task for the organisation. It needed no technical knowledge, <i>'more about being well connected.'</i> (ID2.09)
The role of convenor - Negatives	<i>'I needed a mandate from my organisation'</i> to run the process (ID1.10) It was <i>'quite hard to recruit'</i> from a small organisation and <i>'started with 14 possibles so achieving a panel of ten.'</i> (ID3.09) <i>'The starting process of identifying panellists. Chaining helped to identify people.'</i> (ID3.02) The convenor considered that they could have run the process but may have needed some assistance on the statistics (ID3.02) One convenor felt it was quite demanding chasing panellists for a response but recognized that <i>'it came with the territory'</i> (ID1.10). One convenor had to book a meeting with one panellist to assist completion (ID1.10) <i>'Nothing specific.'</i> (ID2.09)
Comments received from the panellists relating to the process	It was thought that time constraints could have coloured the responses although having time to reflect. Let panellist choose or otherwise to amend their scores (ID1.10) No feedback received but the convenor had not been chasing (ID2.09)

Theme	Response
Reporting	<i>'The report was a starting point to consider the barriers and solutions.'</i> (ID3.02) <i>'I plan to circulate the results to all participants and ask for any insights to be gained[sic]. What can we learn from this?'</i> (ID1.10) <i>'The range of scores was interesting with some clear differences of opinion across the council.'</i> (ID2.09)
Next steps	I plan to <i>'circulate to participants and ask for any insights to be gained. What can we learn from this?'</i> (ID1.10) The report will be going to the lead of Net Zero Portfolio management and the Head of Environment (ID3.02)
Use of the process by others	<i>'It could be run by a junior member of staff with a package of resources.'</i> (ID1.10) <i>'It would need to be explained more of the questions and background.'</i> (ID2.09)

6.4.2 Results generated by the Delphi process

Each organisation identified a suite of solutions to improve net zero delivery based on their panellist's responses (Table 27).

Table 27. Highest ranking solutions identified by each of the three panels

ID1	ID2	ID3
Establish a finance mechanism for scaling-up retrofit across all types of housing	Establishing locally controlled net zero funds accessible across organisations in different sectors	Establish multi-year investment budgets for council net zero projects
Establishing multi-year investment budgets for council net zero projects	Establishing early-stage funding for new project ideas	Establish locally controlled net zero funds accessible across organisations in different sectors
Having local control of national net zero-related funding	Establishing a regional energy infrastructure fund to stimulate commercial investment at scale	Establish a finance mechanism for scaling-up retrofit across all types of housing
Integrating net zero into policies across functions within Councils and between local organisations	Integrating net zero into policies across functions within Councils and between local organisations	Focus developer planning contributions on essential net zero infrastructure
Making the impacts of net zero transparent across all council decisions	Offering more training to develop councillor knowledge and expertise in Net Zero	Make the impacts of net zero (i.e. the financial and non-financial) transparent across all council decisions
Increasing the level of collaboration with external parties to deliver new projects	Leading area-wide energy planning to help focus net zero delivery	Establishing a regional carbon budget to align with the UK statutory equivalent
Lobbying National Government to introduce Statutory Duty/Powers for Local Authorities to lead net zero at local level		Lobby National Government to introduce a Statutory Duty/Powers for Local Authorities to lead net zero at local level

All three panels placed a priority on solutions to address *investment funding and finance*, *embedding net zero* and *improving the role and contribution of politicians*. Two panels identified *improving the democratic decision-making process* as a key solution (ID1, ID2) while only ID1 selected solutions to *increasing local capacity and capability to deliver net zero*. The three solutions which ranked highest by mean score within each panel are shown in Table 28.

Table 28. The three highest mean scores for solutions to address net zero by panel

Solution	ID1		ID2		ID3	
	Mean	SD	Mean	SD	Mean	SD
Establishing multi-year investment budgets for council net zero projects	8.7	1.05	8.3	2.16	8.4	2.55
Establish a finance mechanism for scaling-up retrofit across all types of housing	8.7	1.76	7.4	3.50		
Making the impacts of net zero financial and non-financial) transparent across all council decisions	8.3	0.94			8.3	2.31
Establishing early-stage funding for new project ideas			7.1	2.42		
Establishing locally controlled net zero funds accessible across organisations in different sectors					8.5	1.0

When the results for the three panels were aggregated, the highest priority solutions were financial; in particular, *establishing multi-year investment budgets for council net zero projects* (Mean=8.5) and *establishing a finance mechanism for scaling-up retrofit across all types of housing* (Mean=7.9). Embedding net zero by *making the impacts of net zero, both financial and non-financial, transparent across all council decisions* (Mean=7.4) was also highlighted. The solutions where the aggregated scores showed the lowest deviation from the mean, suggesting most consensus, are shown in Table 29.

Table 29. Solutions with the lowest Standard Deviation when the three panels scoring is aggregated

Solution	Mean	SD	Variance
Establishing early-stage funding for new project ideas	6.6	1.95	3.8
Establishing a regional energy infrastructure fund to stimulate commercial investment at scale	6.7	1.83	3.3
Bringing in expertise from other sectors in the local area to support staff	6.0	1.52	2.3
Providing councillors more opportunities to participate in net zero planning, delivery and monitoring progress	4.4	1.94	3.8
Offering more training to develop councillor knowledge and expertise in net zero	6	1.96	3.8

6.5 Discussion

Calleo and Pilla (2023) discovered a significant body of research which has used the Delphi method to explore climate change scenario planning. However, they found no research which gathered expert opinion from public administration to understand net zero delivery. This research aimed to test the method in this context and demonstrated that it can be used albeit with certain limitations. Comparison with Hsu and Sandford (2007) suggests that the Modified Delphi that was developed aligned well with the general Delphi characteristics (Table 30).

Table 30. Performance of the Modified Delphi against characteristics identified by Hsu and Sandford (2007)

Delphi characteristic	Standard to Modified Delphi comparison
Subject selection	Considered to match – The survey material was considered robust since they were based on both published literature and recent practitioner insight. Research questions were considered to have been well defined.
Expert panel identification	Considered to partially match - Panellists were selected based on pre-defined criteria and considered to meet the definition of being ' <i>highly trained and competent within the specialized area of knowledge related to the target issue</i> ' (ibid. p.3). The issue of breadth of individual panellist knowledge and experience was an area of concern given the relative small size of the pool available in each organisation. This is seen as a challenge for smaller local authorities where staffing of net zero is likely to be limited.
Panel selection and size	Considered to match - The target panel size of ten participants, including the convenor, was met. It was evident, however, that the organisations would have struggled to recruit more participants.
Time requirements	Considered to match – Engaging a convenor in each organisation reduce recruitment time and maintained momentum. The process benefitted by having prepared communications delivered through electronic mail, setting realistic timescales and being flexible when setting key panellist response dates.
Iteration and reflection	Considered not to match – The convenors were clear at the outset that more than one iteration would be challenging given the existing time pressures on participants. The results, however, suggest that little may have been gained from a second iteration with only 6.03% of barriers and 5.51% of solution responses being changed at the first iteration. Panellist anonymity was maintained throughout except for communications with the convenor. All individual results were kept anonymous.
Group communication	No characteristic identified - Both group and individual communications were used with a suite of pre-prepared materials used to ensure commonality. All documents and communications were standardised across the three panels to reduce time and ensure consistency.
Controlled feedback	Considered to match – All results were fed back to allow panellists the opportunity to reflect and review their scores.
Use of feedback from other panel members	Considered to match – Each panellist had equal opportunity without external influence. Each panellist was given equal opportunity to provide additional insights during the process.
Panellist anonymity	Considered to match – All research was undertaken according to an Ethics-approved research protocol. Generic communications were used and anonymity was ensured. Prior consent was sought and gained from each participant.
Suitability of statistical analysis	Considered to match – Central tendency and spread statistical methods were used. However, significance testing was not applied since it was considered that the results could be represented at a sufficient level of clarity and robustness with the simpler statistical techniques.

The size of the panels was a compromise between the optimum observed in the literature and what could realistically be achieved, although this can depend on the field of study, and its purpose with ranges seen between 10 and 75 (Linstone and Turoff, 1975). Panellist expertise partially matched Hsu and Sandford's definition with a high level of competency and expertise demonstrated across the range of roles of the participants. The selection process was recognised as being another area of compromise with the risk of self-selection introducing bias. Although criteria were set, convenors were given responsibility for recruitment without adopting a screening process like that proposed by Paliwoda (1983). Attrition rates across all three panels, when aggregated, were within the tolerance range of 15-25% put forward by Friis-Holm Egjford and Sund (2020).

The role of convenor introduced in this research is not seen in the literature, although this may be a feature of the way that researchers have described their methodologies. Convenor feedback throughout the design and delivery was of significant benefit. It is considered that their active role helped to maintain momentum, reduce attrition rates and aided the process of gathering feedback. Furthermore, the Delphi was well received by convenors and panellists alike.

In their analysis of climate and health-related problems, Gronseth et al. (2012) describe a semi-automated survey process using pre-specified rules to define when consensus is reached across the panel along with voting distribution graphics and feedback. For a tool to be adopted by local authorities, survey materials and processes should be compatible with commonly used software to provide flexibility and accommodate a range of technical abilities. The Modified Delphi process described here used commonly available software which allowed ease of production and revision with little enhancement, although manual data handling was required. One convenor commented that the process, with these improvements in place, could be delivered by staff with minimal technical knowledge of the subject matter or process.

Enhancements could be made to semi-automate the data management, subsequent analysis and reporting stages. It is questionable, however, that significant benefit will be gained in the context of smaller organisations by using real-time surveying software discussed by Aengenheyster et al (2017). This is for three reasons: firstly, recruitment of participants with the appropriate knowledge and insight to create expert panels is problematic given the small number of people working on climate change in the target audience. Secondly, there is an argument that participants need time to reflect on the feedback that is presented to them. However, a counterargument is that the interval between surveying and feedback being kept

short is critical to avoid participants dropping out. It is also questionable whether smaller organisations have the resources to afford bespoke software to justify its use. Finally, by providing the modified Delphi in software that is used by the target sector and by keeping the design open source and simple so that it can be manipulated to suit the specific organisation without additional technical competence, the Modified Delphi process can be easily replicated. The value of real-time analysis and reporting could be realised when the Delphi is applied to problem-solving at scale, for example across local authority tiers in specific geographies, across similar types of institutions, or as a policy-type Delphi to build beyond potential solutions to problems.

The modified Delphi described here is a compromise between rigorous application of the Delphi iterative process to achieve stable results compared to limiting the time needed to undertake the process and level of demand placed on participants. Although researchers advocate multiple rounds up to six (Turoff, 1975), others have reduced the number of iterations as a pragmatic solution (de Loe, 1995). The use of a single iteration could suggest that the proposed approach limits the likelihood of achieving consensus compared to other uses of the Delphi technique discussed in the literature (Hallowell and Gambatese, 2010; Friis-Holm Egffjord and Sund, 2020). The results presented in Table 25 suggest that further iterations are unlikely to lead either to a higher degree of consensus or stability of results. Such stability after a single iteration can only be surmised since this issue was not explicitly explored during the research. The stability could be due to the challenge statements reflecting the views of the cohort participating in the panels. Alternatively, panellists may have been time-constrained when it came to reflect on the feedback to such an extent that they were not prepared to change in their scores. However, feedback from the convenors suggest that a further iteration may, in fact, have been counter-productive since it may have been seen as a step too far by panellists who are already time-constrained. One way to address the loss of potential rigour by collapsing rounds could be to introduce a complementary research process, for example targeted interviews (Middendorf, 1973) or retaining the option to run further rounds based on evidence of instability. This would also be an appropriate way of exploring outliers in the responses observed in this trial.

6.6 Conclusions

The Modified Delphi process has already seen the local authorities who participated in the trial take the results back into their respective organisations for further consideration. Further analysis and engagement will be needed to establish how valuable the results are shaping their delivery approach. The method is easily replicated and can be applied elsewhere. Further utilisation generating more results could be shared between and across the tiers of local

government, whether within a geographical area or wider, allowing pooling of common solutions and identification of new ideas that can be introduced into future surveys.

Although there are limitations to the Modified Delphi presented here, it has strength in its mixed methods approach combining robust background evidence and practitioner insight. It endeavours to manage the inherent biases that other approaches introduce. It requires minimal internal resource and external support to implement and can be used in conjunction with other problem-solving techniques to enable resource-constrained local authorities to quickly diagnose problems with their current approach and prioritise solutions.

Chapter 7: Developing a net zero governance framework

Preamble

The principal content of this chapter is based on a research paper titled '*The role of UK local government in delivering on net zero carbon commitments: You've declared a Climate Emergency, so what's the plan?*' published in Energy Policy in June 2021 (<https://doi.org/10.1016/j.enpol.2021.112245>).

The research period was between autumn 2019 and summer 2020. The evaluation of the initial response by local authorities to declaring a Climate Emergency outlined in section 7.3 forms the basis of a proposed local area governance framework set out in section 7.4 and subsequently development of the suite of tools to improve governance and decision-making outlined in other thesis chapters.

This is a highly dynamic area influenced by major domestic events including recent changes in local and national political administrations as well as the impact of the COVID pandemic, conflict in Ukraine and other events in and beyond the UK. Therefore, a refresh of key data was undertaken in 2024 and the updated findings included where they materially affect the earlier research findings.

7.1 Introduction

The extent to which local authority Climate Emergency declarations are successful is of profound importance to achieving national climate and net zero targets, given that the ability to harness local delivery mechanisms will depend on the individual council's response to their own political commitments. It has already been recognised in chapter 3 that public administration in England does not operate according to a single statutory or policy framework to tackle climate change. Furthermore, each council is an autonomous, self-determining body with its own decision-taking and governance arrangements. It is legitimate, therefore, to explore whether councils can work towards a single goal, in this case securing action to meet the UK's statutory target to net zero in line with or ahead of 2050 depending on their own rather than UK Government's commitment. The issue of coherence centres on the generally-held expectation outlined in chapter 2 that each council in England should play some part in achieving that one goal, when each approaches the issue from different political, institutional and financial standpoints whilst trying to serve their own administrative areas.

This stage of the research aims to answer the following questions:

How coherent is the local government response to tackling climate change where the scope of each organisation's Climate Emergency declaration is a function of different factors, constraints and political wills?

Given that the declarations constitute political statements of intent, how has this translated into action? and

Can we develop a net zero governance framework to establish coherence of response in the absence of a specific duty to act?

7.2 Methodology

The research methodology is outlined in Figure 17. The research used publicly available original and secondary data sources and, as part of the analysis, makes specific reference to research undertaken by the UK Energy Research Council (Kuzemko & Britton, 2020; Tingey and Webb, 2020) and ASPE Energy (2019). The first stage was an evaluation of all Climate Emergency declarations posted on the Climate Emergency UK website (CEUK, 2024). combined with a review of every declaration and evidence presented in support of these in local authority committee papers published online. The second stage was an assessment of a sample of local authorities regarding their approach to delivery planning, financing and engagement of net zero activities following declaring a Climate Emergency.

7.2.1 Stage 1: Data capture and analysis of Climate Emergency Declarations

The Green Web Foundation (2020) hosts the Climate Emergency (CEUK) UK website, a database referencing local authorities which have declared Climate Emergencies. The database allows local authorities, as well as other organisations, to upload details of their declaration. Gap filling and validation is undertaken by the CEUK team using council websites as the primary source. Data recorded on the CEUK website is categorised according to a range of features (Table 31).

CEUK invites local authorities to challenge and update the database using a '*a right of reply*' as part of the validation process. The researcher has yet to find a similar database which achieves this level of completeness or sophistication. However, it has limitations. Firstly, it cannot be guaranteed that all information is up to date since it relies either on local authorities entering

changes to the website or being captured in the periodic updates by the CEUK researchers. Secondly, a review of the data contained on the website revealed a small number of inaccuracies, either resulting from incorrect keying-in when uploaded, incorrect information being used or incorrect interpretation during categorisation. Given these limitations, the research process included data quality control and verification processes which are explained later in this chapter.

The review of the CEUK database for this stage of the research was undertaken between February and November 2020, at which time there were 408 local authorities in the UK with 308 (75%) affirming that a declaration had been made.

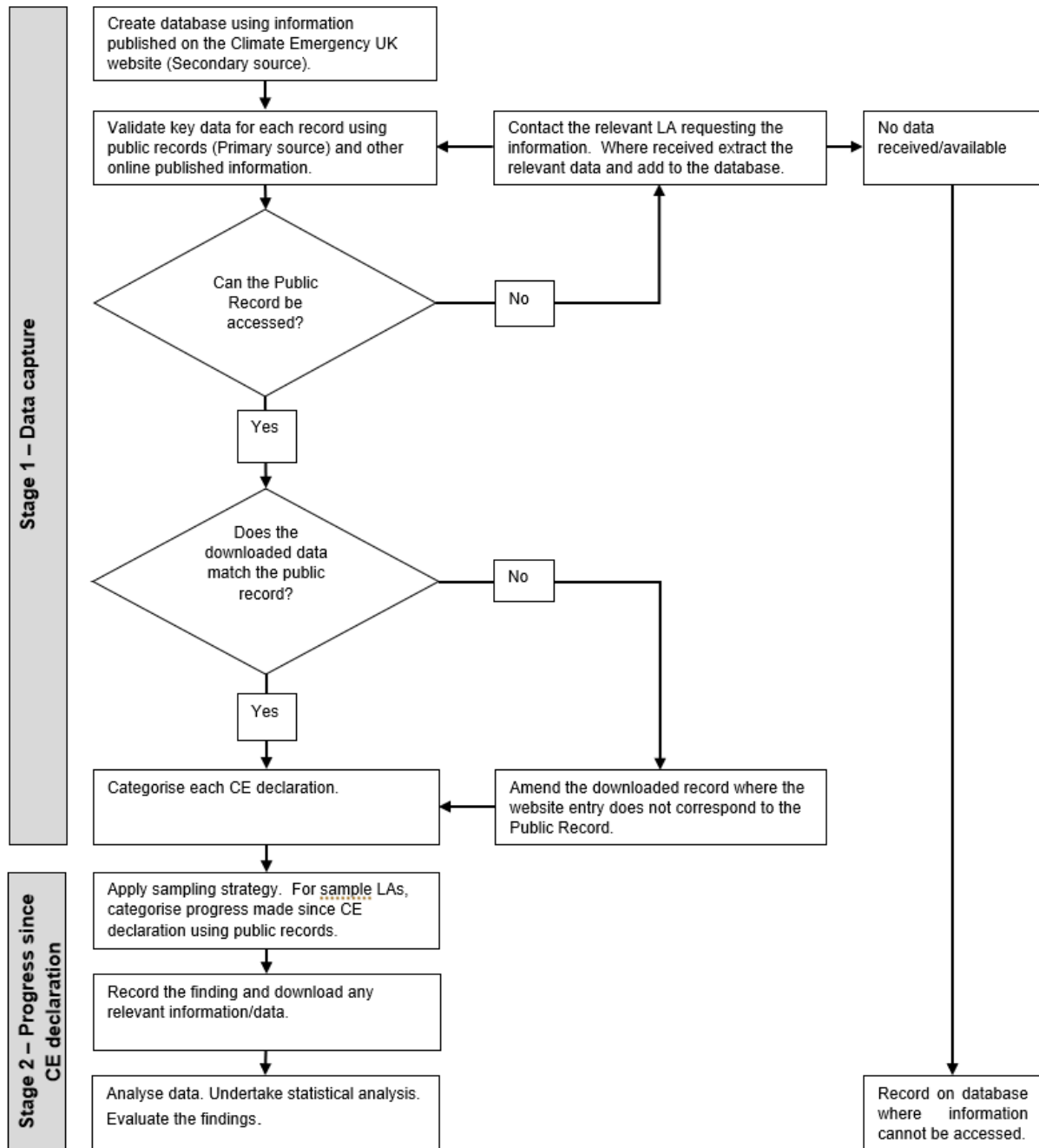


Figure 17. Research methodology

Table 31. Information recorded on the Climate Emergency UK website

Category	Details
Type of local authority	English county councils, English district and borough councils, English unitary authorities (including Isles of Scilly), English metropolitan councils, London boroughs councils, London City corporation, Scottish councils, Welsh councils, Northern Irish councils
Region	South East, North East, Scotland, Northern Ireland, East, Yorkshire, North West, South West, West Midlands, London
Political control	Conservative, Labour, Liberal Democrat, Green, Plaid Cymru, No Overall Control, Independent
Proposer of declaration by political affiliation	As above
Date declaration passed	The date that a council committee, usually the Full Council or Cabinet, met and approved a motion to declare a Climate Emergency
Target date	The date set to meet the scope of the Climate Emergency declaration

Primary data sources were also reviewed to validate the CEUK database and extend the research data. This comprised of a complete search of local authority websites in the UK who had declared a Climate Emergency declaration recorded on the CEUK database (n=308). Published minutes of the committee meeting at which the local authority resolved to make their declaration were downloaded. These were reviewed and information extracted relating to the scope of declaration, arrangements for local societal engagement, and planning and financing delivery. Where council minutes could not be accessed or traced, effort was made to contact these organisations directly. Three records could not be accessed at the time of the research.

7.2.2 Stage 2: Post-declaration activity

Stage 2 of the research comprised of an analysis of how local authority activity was progressing since declaration. A semi-random sampling strategy was used to select local authorities from which information was collected and analysed. Firstly, local authorities recorded on the CEUK website were categorised by local authority type (e.g. unitary authority, district or borough council). Using the Excel random number generation function, local authorities were then selected by category. A minimum 10% sample size was set, both for the total sample size and the sample for each local authority type. Sampling summary data are shown in Table 32.

The sampling strategy was applied to the dataset on the 7 April 2020 with forty-two organisations selected from the database observed at the time of analysis (N=278). In addition to the approved declaration, the supporting committee minutes of each selected council were reviewed again to identify any specific commitments to action planning, engagement and delivery. A search was

then undertaken of each committee database to find any follow-up reports, minutes or action plans setting out how the original commitment to act was being delivered.

A separate search of each council website was conducted using the syntax terms [Climate], [Climate Emergency] and [Climate Emergency Declaration*]. The purpose of this search was to identify any further material which had been made available to the public. Key documents were extracted and reviewed to assess what action had been taken, any planned work, what resources (i.e. financial and people) were being committed, how progress was being monitored and reported, and to what level citizens had been engaged.

The researcher undertook a follow-up review in July 2024 using the CEUK Climate Action Plan Explorer (CAPE) scorecard derived from the CEUK database. This uses an independently applied suite of ninety-one questions (Appendix 8) created in partnership with Friends of the Earth, Centre for Alternative Technology, Ashden and APSE Energy, to compile scorecards for each local authority in the UK (Climate Emergency UK, 2024). The results are based on a review of all local authorities between January and August 2023 with each council scored across seven themes considered by the researchers as contributing towards net zero. The thematic scores make up the council's overall score. As with the original CEUK database, CEUK invited '*right to reply*' before publishing the results.

Where no score for a council is shown on the CAPE scorecard, the council's website was searched using syntax including [climate], [net zero], [carbon] and [greenhouse gas] to identify if activity had been undertaken but not captured in the scorecard. Changes to administrative arrangements between 2020 and 2024 resulted in three of the local authorities in the sample being subsumed into other structures. To address any data gaps, the new council name was used as the best fit and data extracted from the corresponding scorecard. Although the scorecards reflect the individual council, CEUK recognises that cross-administrative working and collaboration is occurring which may be captured in the Collaboration and Engagement theme on the 2023 CAPE scorecard but not in the 2021 scorecard for climate action planning.

Analysis was undertaken using either all or a selection of scorecard questions as representations of the following themes; overall delivery using all scorecard questions (n=91); governance, development and funding (n=17); and collaboration and engagement (n=13). The decision to use all scorecard questions, which includes the two derived thematic sections, to represent the overall

performance of each local authority provides a rounded view of how council is tackling climate change. The two sub-sets of questions are considered to provide a generally robust basis for assessing a local authorities response both in respect of its internal governance and decision-making processes and organisational performance as well as how it addresses issues of place. It is worth noting, however, that all councils are scored using the same suite of questions irrespective of the scope of their Climate Emergency Declaration. Also, the scorecard approach does not allow for nuanced responses since the questions seek a yes/no answer in order to generate the score. This is mitigated in this research by using other research techniques including interviews.

A summary of the statistical methods and graphical data representation used in this research is presented in Appendix 9.

Table 32. Stage 2 sampling strategy

Local Authority (LA) type								
		City regions	Combined Authorities	County Councils	District Councils	London Boroughs	Metropolitan Boroughs	Unitary Authorities
Population	278	3	6	19	124	24	31	71
Sampling approach		All selected	All selected	RANDBETWEEN Function used to select Excel row number within the data sub-set				
Sample size	42	3	6	4	12	4	6	7
Sample size (%)	15%	100%	100%	21%	10%	17%	19%	10%

7.3 Results and discussion

7.3.1 Stage 1 – Climate Emergency declarations

At the time of the research in 2020, two hundred and seventy-eight (70%) of UK local authorities had declared a Climate Emergency. Irrespective of whether or not they declared, two hundred and sixty-five had published plans to tackle either their own organisational or their area's Greenhouse Gas (GHG) emissions. The number of declarations rose to three hundred and eight by November 2020 and three hundred and nine by July 2024. With boundary changes, this represents 81% of councils in the United Kingdom (Climate Emergency UK, 2024).

Even though local authorities have access to the same authoritative technical evidence in SR15 (IPC, 2018), they interchange and interpret the data and terminology differently in the justifications for declaring their Climate Emergencies. For example, the Greater London Assembly refers to ambitions for a '*zero-carbon city*', the Greater Manchester Combined Authority wishes Manchester to be a '*carbon-neutral city*', the West Midlands Combined Authority (2020) is aiming at '*net zero carbon emissions*', while Gwynedd wishes to become '*carbon-free*'. Some local authorities are explicitly interpreting the target with reference to the Greenhouse Gas Protocol (WRI, 2020), for example the Isle of Wight Council and York City Council.

The bulk of declarations were made between December 2018 and March 2020 (n=304), peaking in activity in July 2019 (n=106). This can be put into a contextual timeline with external events, including the United Nations Conference of Parties (COP21), the emergence of climate activism by public popular figures and activist organisations and UK Government passing into law its net zero target (Figure 3). The slowdown in new declarations since 2020 may have been influenced by external events, in particular the first COVID-19 pandemic lockdown when council committee activity practically ceased. It may also reflect the subsequent impact on global energy markets causing upward pressure on the cost of living and public sector budgets, and a resultant retrenching from climate policy both at national level and globally (The Economist, 2023; BBC, 2023).

There was some evidence in 2020 to show that declaring a Climate Emergency was influenced by political affiliation. All ninety-seven authorities led by Labour, twenty-three led by the Liberal Democrats or the one council led by Plaid Cymru declared a Climate Emergency. This contrasts with only eighty out of one hundred and forty-two (56%) Conservative-controlled authorities, one hundred of one hundred and thirty-two (75%) authorities under *No overall control* and seven of

thirteen (54%) independently controlled authorities having declarations. This reflected the position of main political parties in each of their 2019 General Election manifestos (Conservative and Unionist Party, 2019; Labour Party, 2019; Liberal Democratic Party, 2019; Plaid Cymru, 2019; Scottish Nationalist Party, 2019). It is also a feature that, compared to central government, local government political leadership tends to be more diverse and parochial in nature with one hundred and forty-five (47%) Councils being under no overall political control or under independent political leadership.

One hundred and five (34%) local authorities declared a Climate Emergency relating solely to their own operations while one hundred and seventy-nine (58%) included the wider community (Fig. 18). Twenty-one (7%) declarations were unclear about their geographical scope or provided no information. Although no inference can be drawn, some may have deliberately chosen to remain vague. A similar study of their members by APSE Energy⁷ in 2019 provides useful comparison with the research. APSE found that a large minority of local authorities (48%, n=36) adopted a locality-wide approach. As APSE Energy state in their report, this will mean that *‘these authorities will need to focus on the leadership role...to encouraging the whole locality to engage with the net zero carbon agenda’* (APSE, 2019).

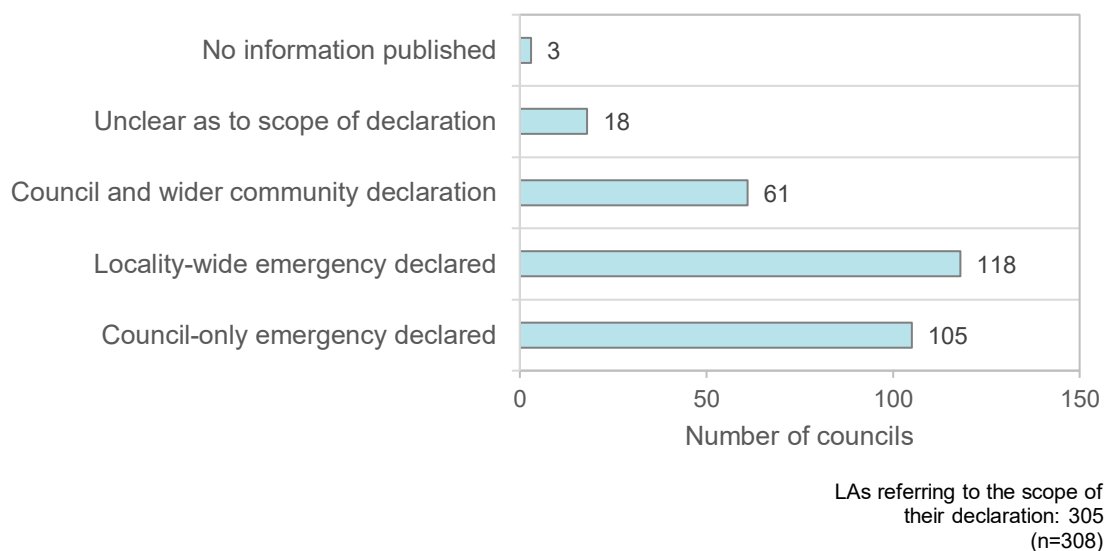


Figure18. Scope of Climate Emergency declarations made by UK local authorities observed in 2020

Two hundred and thirty-seven councils have set a target date for achieving their declaration commitments with 179 (75%) selecting 2030 (Fig. 19).

⁷ APSE Energy is a specialist membership group of the Association of Public Service Excellence (APSE). APSE is a not-for-profit unincorporated association working with over three hundred councils throughout the UK promoting excellence in public services.

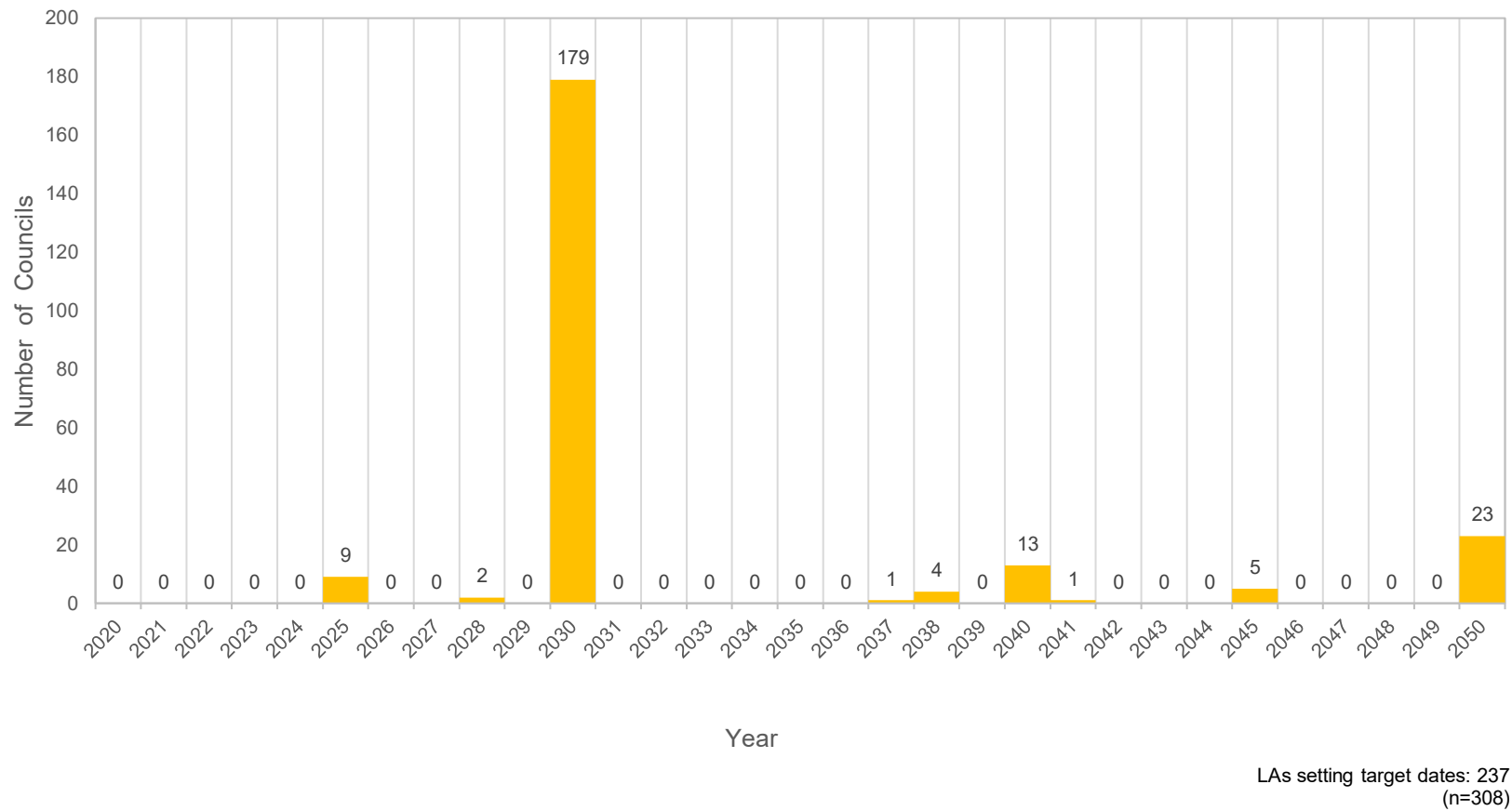


Figure19. Target dates set by local authorities declaring Climate Emergencies (Source data: CEUK website extracted July 2024)

The next most favoured target dates were 2040 (n=13) and 2050 (n=23). There are at least three reasons that could explain why some councils did not set a target date. For example, they may be intending to gather further evidence to set a target date, looking to default to the national 2050 target, or may have felt it inappropriate to set a local target. This proportion of target-setting accords with APSE Energy's research, which revealed that forty-two local authorities responding to their survey (64%) had set a 2030 target. It is notable, therefore, that the response to the scientific evidence presented in SR15 is being interpreted and responded to in different ways.

Given the pressure on local authorities which have declared a net zero target, it is noteworthy that 18% (n=55) had not incorporated any statement about delivery planning while 80% gave some commitment to either developing a new or revisiting an existing plan or reporting back on their approach (Fig. 20). Only seven local authorities (2%) stated that they had a published delivery plan which directly addressed their net zero commitment.

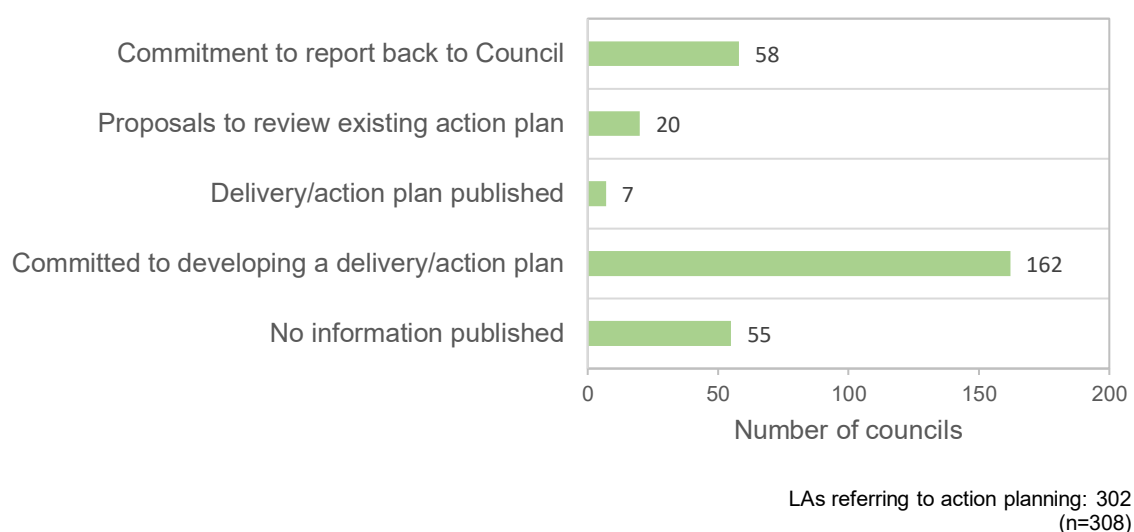


Figure 20. UK local authority delivery planning commitments observed in 2020

Where local authorities had set timescales in their declarations to deliver an action plan, the development process was stated as typically taking between six months to a year. The consequence is that for most local authorities, this leaves less than a decade to achieve net zero in sectors of society over which they have little direct influence. The results accord with APSE Energy's research which found that, of the eighty-one local authorities responding, only 4% (n=3) stated that they had an action plan (APSE, 2019).

Two hundred and thirty-six local authorities (77%) made no public statement about how they would fund action, with only seventeen (6%) publishing any financing activities (Fig. 21). Of those that did refer to allocating funds, this primarily related to initial allocations to assist in action planning. Mendip Council committed to an £80,000 allocation to fund a 'sustainability'

Officer not dedicated to their Climate Emergency declaration, while others like Adur & Worthing Councils and Canterbury Council had allocated over £700,000 and £500,000 respectively (Adur & Worthing Councils, 2019; Canterbury City Council, 2019). However, it is evident that some local authorities are either making or planning significant multi-billion-pound investment over the next 20 years. West Midlands Combined Authority (2020) set out its commitment to spend £15 billion in *local energy projects* across the locality. Others have acknowledged that additional resources will be needed and state their intention to factor these into future business planning (West Yorkshire Combined Authority, 2019; Woking Council 2020). Several local authorities committed funds at the time of their declaration for short term use (Ipswich Borough Council, 2019; London Borough of Richmond-Upon-Thames, 2020; Malvern District Council, 2020; Wiltshire County Council, 2020).

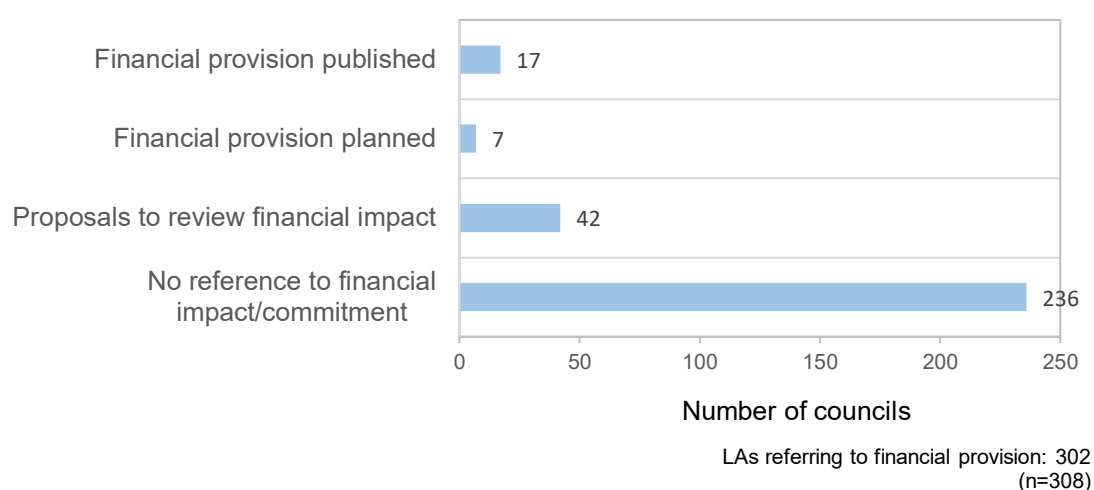


Figure 212. Financing Climate Emergency delivery observed in 2020

One hundred and forty-nine councils (48%) referred to building closer working relationships between themselves, partner agencies and the wider community (Fig. 22). Sixty-four local authorities (21%) chose to either utilise existing internal or multi-agency groupings or proposed to establish *Task and Finish* groups. However, ninety-one councils (30%) made no reference to or published any information about public engagement. The APSE study also showed the low uptake by their members to bring the public into the action planning process with only seven out of ninety-seven local authorities stating that they had set up either a *Citizens' Panel* or *Climate Assembly*.

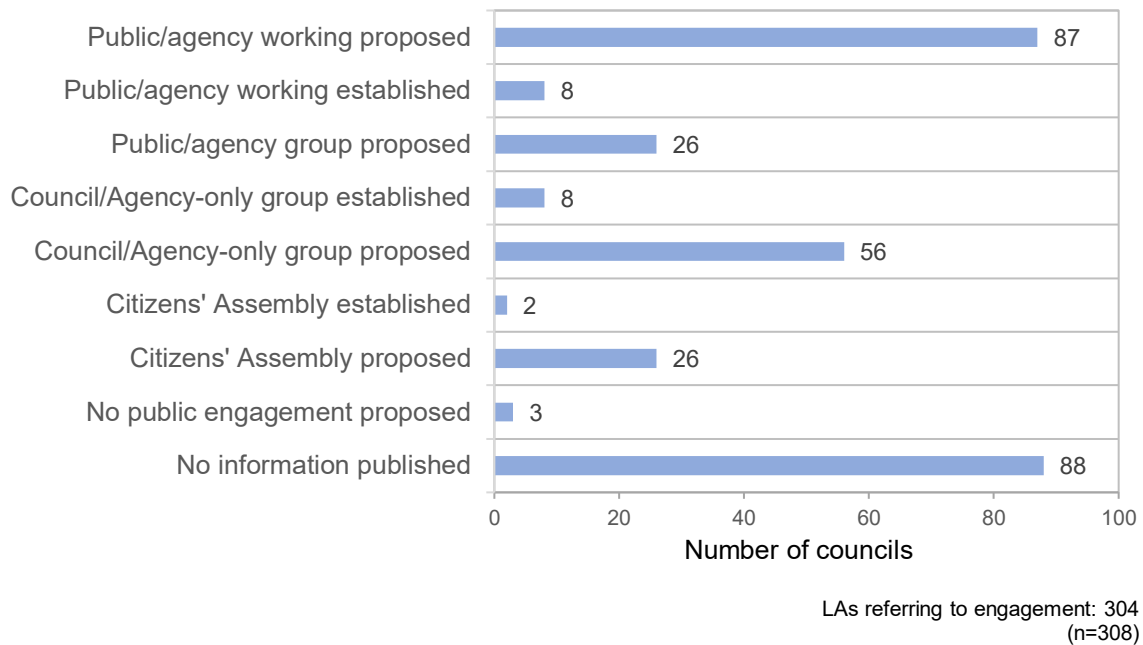


Figure 22. Approaches to stakeholder engagement observed in 2020

The role of popular activism has been a key factor in the rise of climate declarations in local government. This is exemplified in council meeting minutes with motions raised by either a member of the public or a councillor supported by a popular petition (e.g. St Albans) or the influence of Extinction Rebellion (e.g. Enfield). Five of the nine large city regions or combined authorities stated that they have undertaken major public engagement events or established open routes to citizen dialogue as part of the declaration process. At district, county and unitary authority level, examples of public participation included establishing dedicated websites, undertaking collaborative discussions within the boroughs and districts and across the country *'to ensure that all communities, be they commerce, industry, agricultural, village, town or educational, are engaged with the process'* (Derbyshire Dales District Council, 2020), running formal public consultations on draft action plans (North Ayrshire Council, 2019), using existing engagement programmes (London Borough of Hammersmith & Fulham, 2020) and establishing a Climate and Ecological Emergency Commission (ibid, 2020).

7.3.2 Stage 2: Post-declaration activity

The second-stage research undertaken in Autumn 2020 revealed mixed progress in delivery planning. Of forty-two local authorities sampled, twenty-nine (69%) had published plans or expected to publish plans during 2020 (Fig. 23). This left a significant minority (30%) where no evidence was found that a plan would be in place during the same period. Of these, four local authorities are committed to a locality-wide 2030 target.

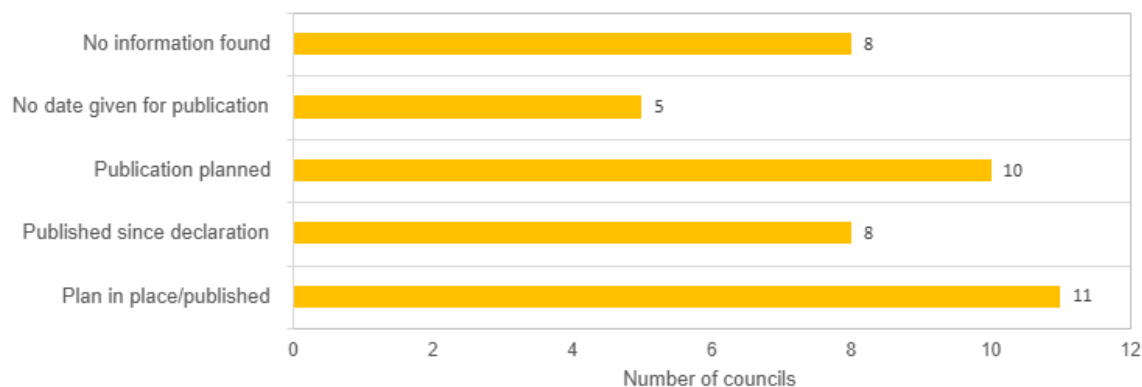


Figure 23. Post-declaration action planning observed in 2020

One of the key demands of Extinction Rebellion (Extinction Rebellion, 2020) was the establishment of Citizen's Climate Assemblies following the model developed by UK Parliament (Climate Assembly UK, 2020). However, no consistent approach to public engagement was observed in 2020. Exceptions included Camden, the first council to convene an assembly, North of Tyne and Devon. Other forms of post-declaration engagement included commissions (e.g. Hammersmith & Fulham, Doncaster), citizens' juries (e.g. Lancaster, Leeds), convening climate summits (e.g. Derbyshire Dales), public consultations and surveys (e.g. Eden, Tonbridge & Malling, Edinburgh and North Ayrshire), and inviting citizens to participate in internal or agency working groups (e.g. St Albans).

Analysis of the 2024 CAPE scorecard data reveals that the pattern of performance demonstrated in the sample reflects the national picture with variability shown across local authority types and themes (Table 33). Although no comparison can be made between the national and local dataset, London boroughs consistently outperformed all other types of local authorities in *delivery* and *governance, development and funding*. Furthermore, the London boroughs and county councils closely matched with respect to *collaboration and engagement*. In both the local and national datasets, city regions and combined authorities scored highest for their *delivery* (Fig. 24). The performance range was smallest in the areas of *governance, development and funding* (Fig. 25). This could reflect the national gap in available investment funding and finance across public sector net zero programmes highlighted by other previously mentioned researchers.

District councils consistently under-performed when compared to the other local authority types, both within the Stage 2 sample and in the national dataset, with one exception. The Stage 2 sample for metropolitan borough councils, which excludes London boroughs, scored only 17% for *governance, development and funding* compared to district councils which score second worst (26%). County councils scored highest albeit only 40%. City regions and

combined authorities scored highest for their *delivery* (48%) as did county councils (72%) for *collaboration and engagement* (Fig. 26).

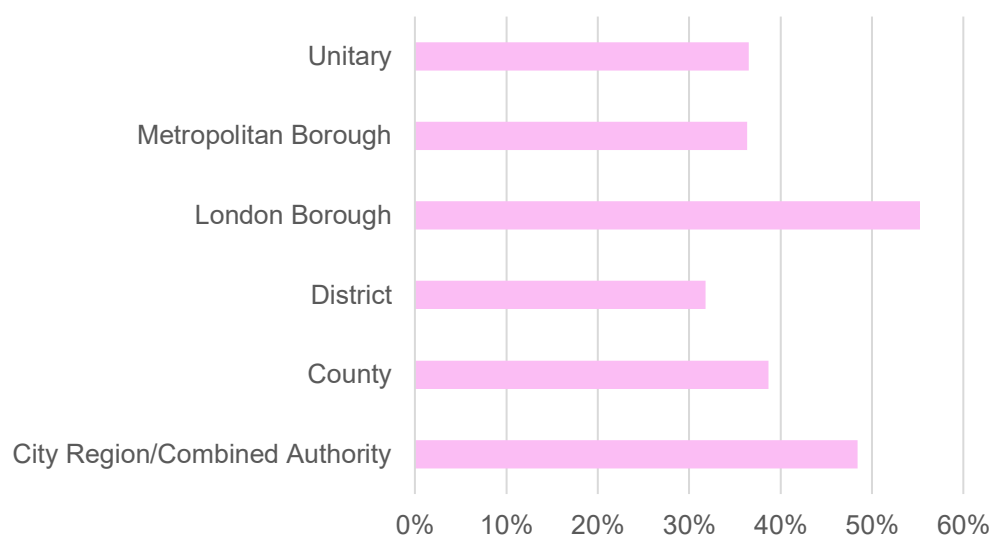


Figure 24. Performance in Delivery ($\bar{x}$) using CEUK scorecard for the Stage 2 sample categorised by local authority type (n=40)

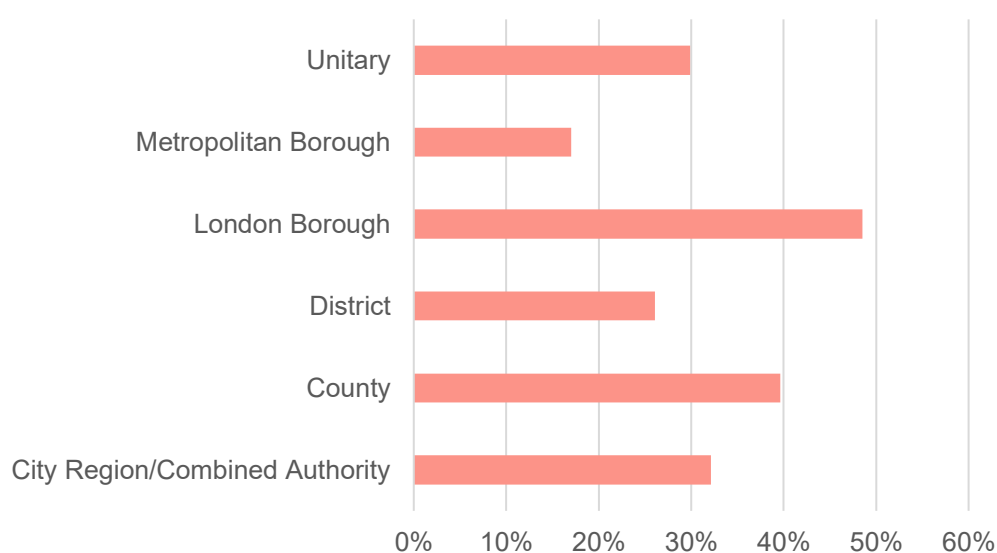


Figure 25. Performance in governance, development and funding ($\bar{x}$) using CEUK scorecard for the Stage 2 sample categorised by local authority type (n=40)

When considering *delivery*, within the Stage 2 sample the average scores had a range of 23% with London boroughs scored highest (55%, n=4) and district councils lowest (32%, n=10). London boroughs similarly scored highest in *governance, development and funding* (49%), whereas metropolitan boroughs scored lowest (17%, n=6).

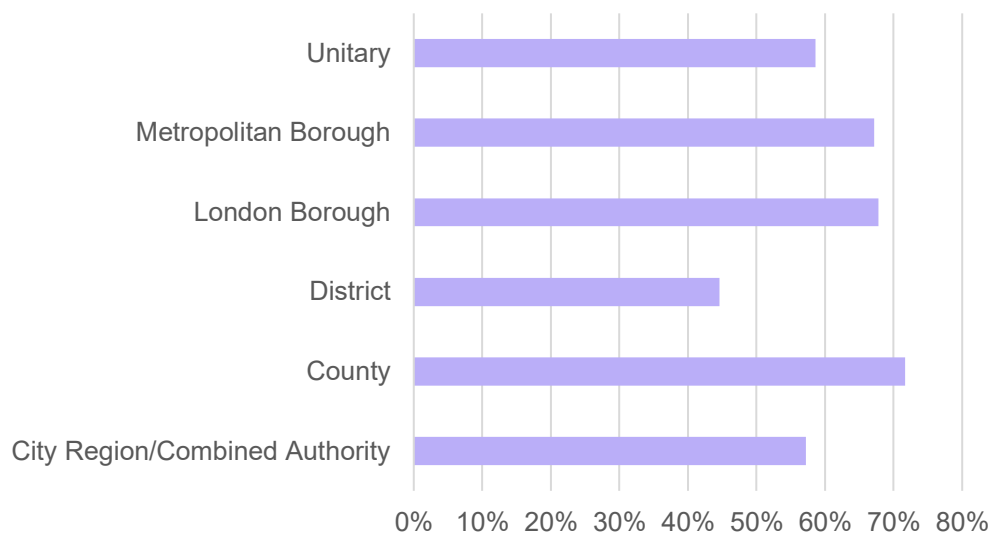


Figure 26. Collaboration and engagement ($\bar{x}$) using CEUK scorecard for the Stage 2 sample categorised by local authority type (n=40)

Average *engagement* scoring across local authority types ranged from 45% (district councils, n=10) to 72% (county councils, n=3). District councils scored lower than all the other local authority types (n=6) with the city regions and combined authorities (n=9) averaging 57% (Table 33).

Table 33. Thematic net zero performance of local authorities by type using the 2024 CEUK CAPE scorecards (CEUK, 2024)

	Stage 2 sample size (n)	UK total recorded on CEUK website (N)	Delivery		Governance, development and funding		Collaboration and engagement	
Type of council			Stage 2 sample (x̄)	National Average	Stage 2 sample (x̄)	National Average	Stage 2 sample (x̄)	National average
City Region/Combined Authority	9	12	48%	46%	32%	29%	57%	55%
County	3	21	39%	35%	40%	34%	72%	60%
District	10	164	32%	29%	26%	24%	45%	43%
London Borough**	4	186	55%	35%	49%	27%	68%	53%
Metropolitan Borough**	6		36%		17%		67%	
Unitary**	8		37%		30%		59%	
Total*	40	383						

* Since the analysis in 2020, changes to council boundaries and administrative arrangements have resulted in changes to the total number.

**The 2024 database does not distinguish between the three listed local authority types.

Significant but variable progress has been made since the 2020 research was undertaken. Progress is more evident in larger, metropolitan authorities which may be the result of their geographical size, scale of challenge, regional leadership through the directly elected mayor model, and delivery mechanisms backed up by significant resources.

The findings also reflect research identifying the shortfalls that exist in the ability for local government to fulfil its role in delivering net zero (Kuzemko & Britton, 2020; Tingey & Webb, 2020); the role of local government in a complex policy landscape; fragmented and short-lived national funding programmes; challenging financial and knowledge capacity; the materiality of the energy system amid a time of significant transition to address the *Energy Trilemma* (Royal Academy of Engineering (2015); and significant additional pressures on services caused by external shocks (e.g. BREXIT, COVID-19). Although local government has a long track record of trying to tackle climate change the problem remains that *'despite political commitment, local authority action remains mostly small scale and piecemeal, with high transaction costs and reliance on 'wilful individuals'* (Tingey and Webb, 2020, p.8).

Central government and the devolved administrations have not created a coherent overarching policy message, delivery framework or clear timelines for net zero. In the absence of a local-authority specific duty to tackle climate change along with well-designed and financed delivery models, local authorities are having to choose their own routes and finishing lines shaped by a complex ecosystem of organisational, societal, economic and environmental factors.

The scale of investment required to deliver net zero is a matter of concern when compared to the targets some councils have set themselves demonstrated by the low percentage of local authorities committing funds either at the time or post-declaration. This is exacerbated by the need for each council to take their community with them. Further, it is unclear how local government will manage the competing calls to fund public services alongside Climate Emergency activity, with the long-term challenge posed by the Climate Emergency (Skidmore, 2022).

The role of the citizen in the uptake of climate declarations has been significant and reflected in council public records. The impact of a small popular lobby has achieved a shift in local political ambition. The risk is that while there is a lot of popular support that climate change must be addressed (European Union (EU), 2019; BEIS, 2019b, UNDP, 2021), it is argued that the wider population will not buy into the necessary action, much of it intrusive to personal

lifestyle, if local authorities cannot engage effectively to show the relevance of tackling climate change to the individual citizen's well-being and personal circumstances.

7.4 *Developing a new local area governance framework*

In contrast to the European Union which, through Directive 2018/2001 (European Union, 2018), has emphasised the value of public administration collaborating in energy systems and legitimised local energy communities, UK local authorities have no formal role in the energy system (Bulkeley and Kern, 2006; Skidmore, 2022). However, the political appetite to play their part is clear as evidenced in this chapter. To address this lack of national mandate for local authorities, the researcher proposed in 2021 a governance framework which sets out a suite of relationships between national government and the local area, with the local authority as the responsible local counterparty managing the delivery arrangements through two-way agreements or contracts (Fig.27).

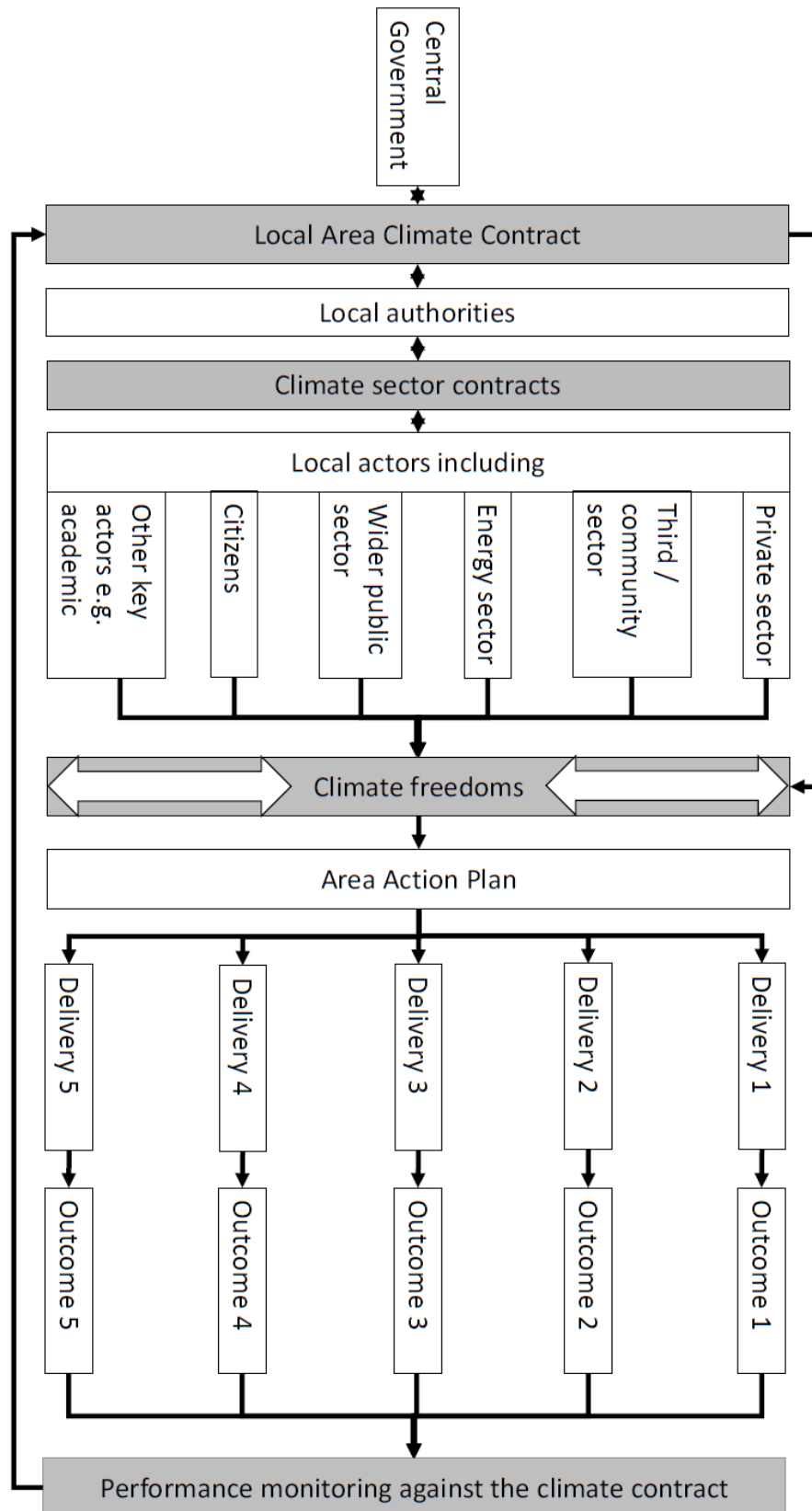


Figure 27. A proposed governance framework incorporating a 'Climate Contract' between central government and the local Climate Emergency area (After Gudde et al., 2021)

Note: Arrows represent flexibility around the climate freedoms that may be agreed based on local context and performance. Grey boxes denote proposed components.

As part of the arrangements within the framework, it is proposed that central government would allow local authorities certain flexibilities, for example: how initiatives are financed or funded; how governance structures are created and managed with other stakeholders; how supply chains are fostered to deliver infrastructure, goods or services which reduce carbon emissions as well as generate co-benefits to the locality; or in the way that any financial value is retained, through changes to national or local taxation or levy mechanisms. The researcher uses the term *climate freedoms* to define a set of specific relaxations based on pre-agreed conditions and demonstration of progress to net zero at local level. The framework has some of the characteristics of the devolution deals that are currently under negotiation between central government and some of the fore-runner metropolitan regions and counties and the Freeport and Investment Zone programmes of the government administration prior to the July 2024 election. It gives both central and local government policymakers a flexible way to redefine their long-term relationship and interactions with citizens and stakeholder groups alike to help shape communities in line with national climate obligations and related local political ambitions.

Central government would allow the *climate freedoms* based on a set of pre-agreed conditions, such as demonstration of long term cross-party local political commitment to deliver net zero, well-defined action planning based on sound evidence, a statement showing commitment to resource delivery of planned actions and an effective stakeholder engagement process to ensure support and participation of the citizen. These *freedoms* would be underpinned by the equivalent of a duty to co-operate, as suggested by Evans (2020), but taking this further to span the whole public sector in the geographical area including, for example, transport planning, wider public infrastructure, education and health and social care. There would also be a mechanism to ensure that the private and third sectors actively participate and co-operate, as necessary. The *freedoms* would need to engender the concepts of fairness and justice as well as being tailored to the local situation. They would be agreed and continue to be applied based on the performance of the locality to deliver net zero, with the local authority acting as the co-signatory with central government to the climate contract. Where the contract is not being fulfilled, one or more of the *freedoms* would be either redefined or withdrawn.

This framework fits well within the concept of *Local Area Energy Planning*, which is seen as a local component aligning with *Regional Energy Strategic Planning* (Ofgem, 2024). The framework also creates a space for citizens to engage and participate with both the State and other parts of society, with the opportunity to reinvigorate the social contract between the individual and the local authority (Willis, 2020). Although again not a solution in its own right, putting the social contract component within this wider framework could help to bring the

citizen closer to other local area actors, given that '*addressing the threat of dangerous climate change requires new thinking, in terms of ecology, human organization, and governance, including a fundamental rethinking of how states and citizens interact with each other*' (O'Brien, Hayward & Berkes, 2009, para.41).

Such a framework could reduce the burden on central government since it could release additional unlocked capacity at local level. In turn, local authorities would be able to act with more dynamism, leadership and flexibility. It could give confidence to those wishing to invest in decarbonisation and the growth of supply chains in the locality. It could also strengthen the relationship between the existing actors in climate and energy and those with which they interact at local level.

The proposed governance framework is used in this research as a way of contextualising the models of governance and criteria-based assessment process to evaluate local area governance discussed in chapters 8 and 9 respectively.

Chapter 8: Developing net zero governance models

Preamble

The principal content of this chapter is based on a research paper titled '*Developing a toolkit to help smaller local authorities establish strong net zero governance in the UK*' published in *Frontiers in Sustainable Energy Policy*, June 2024 (doi.org/10.3389/fsuep.2024.1390570). This chapter considers net zero governance from a local authority perspective to derive a suite of model arrangements.

8.1 Introduction

This stage of the research aims to answer the following question:

Can we develop tailored guidance for smaller local authorities to help them improve their net zero governance?

This chapter therefore describes both the method used and results of abstracting a suite of governance models using real-world examples. The models provide the basis on which to test a governance evaluation tool set out in chapter 9.

8.2 Methodology

A mixed methods approach was used to identify real-world examples of governance from which a suite of models were abstracted. The first stage of the research comprised of a search of the academic and grey literature and a web-based search of organisations participating either in net zero activity or other areas of complex public policy. The researcher observed a lack of authoritative published sources which quantify and classify types of governance arrangements observed across these domains in the UK. Therefore, a non-probability, purposive sampling strategy was used (Taherdoost, 2016).

Given that some of the institutions that were identified are still forming and could be classed as *proto-institutions* according to the definition used by Lawrence et al. (2018), the research did not focus specifically on their performance. Rather, it assessed the characteristics of each arrangement. This process ran alongside and was informed by the development of the governance evaluation tool described in chapter 9.

As evidence was identified, a *saturation point* was reached when the same types of institutions and governance arrangements were being observed. The gathered evidence included institutions from across the study area of the East of England that have been established by public administration for the purpose of coordinating climate and sustainability-related activity

(N=8), delivery structures and support organisations across the UK (N=45) and institutional arrangements established under UK legislation or public policy (N=5).

The literature search was augmented by semi-structured interviews with individuals from both within and outside the public sector and net zero. Individuals were identified through open discussion with other researchers, practitioners and support organisations like the Greater South Eats Net Zero Hub. Nine practitioners interviewed between 2021 and 2023 following the approach set out in section 5.2.3 with their insights incorporated within the analysis.

The research was initiated before the Innovate UK Pathfinder Programme, one of the key public research arenas exploring barriers to net zero delivery in the UK. The researcher was part of the research team in the first phase of the IUK Programme, the *Leicestershire CAN* project. This project focussed on the challenge of building a climate change partnership across the county of Leicestershire. This gave a degree of third-party peer review and scrutiny of the methodology and derived models presented in this chapter. The limitations identified both through interaction with the IUK Programme and observed separately by the researcher are considered and proposals for their mitigation are outlined later in the chapter.

8.3 Results

8.3.1 Categorising net zero delivery organisations

The initial search identified over forty examples of organisations and structures that appeared to match the types of arrangements relevant to this research, from which further selection was made for closer attention (n=19). These were categorised according to their sector and attributes. Eight models were abstracted (Table 34) and are described in more detail in sections 8.3.2 to 8.3.9.

Table 34. Models of governance derived from real-world examples

Model	Examples	Key features
Integrated Care Systems	North-East and North Cumbria Integrated Care Partnership	Multiple stakeholders, commissioning of local services, strategic board and plan
Informal LA led	Multiple examples across the UK with eight different examples in the East of England (Sustainability West Midlands, 2022)	Non-legally binding LA agreements, each LA answerable to their own democratically elected members, sharing of resource
Formal LA led	South- & East Lincolnshire Councils Partnership	Legal joint decision-making and working arrangement
Public-Private Partnership	Cambridgeshire-Bouygues, Bristol City LEAP-Vattenfall/Ameresco	Contract based on successful tendering for services
Multi-Sector	Energy Capital (West Midlands), Manchester Climate Change Partnership	Non-legally binding cross-sectoral agreement, high level leadership
Project Delivery	Low Carbon Oxford	Single purpose, funding-led, time-limited

Community-led	Low Carbon Hub, Brighton and Hove Energy Services Company	Locally led, community interest, infrequent although variable public sector involvement
Free Trade	Freeports, Investment Zones	Single purpose, commercially driven, possible cross-sector involvement

8.3.2 *The Integrated Care Systems model*

Reform brought in under the Health and Care Act 2022 has led to restructuring of health provision and social care in the UK. A key governance change is the establishment of the Integrated Care Systems (ICS). These are partnerships that bring together NHS organisations, local authorities and others to take collective responsibility for planning services, improving health and reducing inequalities across geographical areas (Kings Fund, 2023). They replaced a top-down approach to health care provision structured around Strategic Health Authorities where care provision was considered by central government and health sector practitioners. Under the previous arrangements, different services focused on treating single conditions or illnesses, and were organised around a purchaser or commissioner and a service provider. Independent commentators alike viewed these as compartmentalized, lacking focus on prevention and stifling local collaboration (Buck & Murray, 2021; Burki, 2021; Lloyd et al., 2023).

There is no single national framework for health system governance. ICSs have therefore created their own structures. As a minimum, there are two components: the Integrated Care Board (ICB), the statutory body responsible for planning and funding most NHS services in an area replacing clinical commission groups; and the Integrated Care Partnership (ICP), a statutory committee bringing together a broad set of system partners to develop the local health and care strategy (Fig. 28). There may be a range of different partnership and delivery structures below the ICB at local and neighbourhood level.

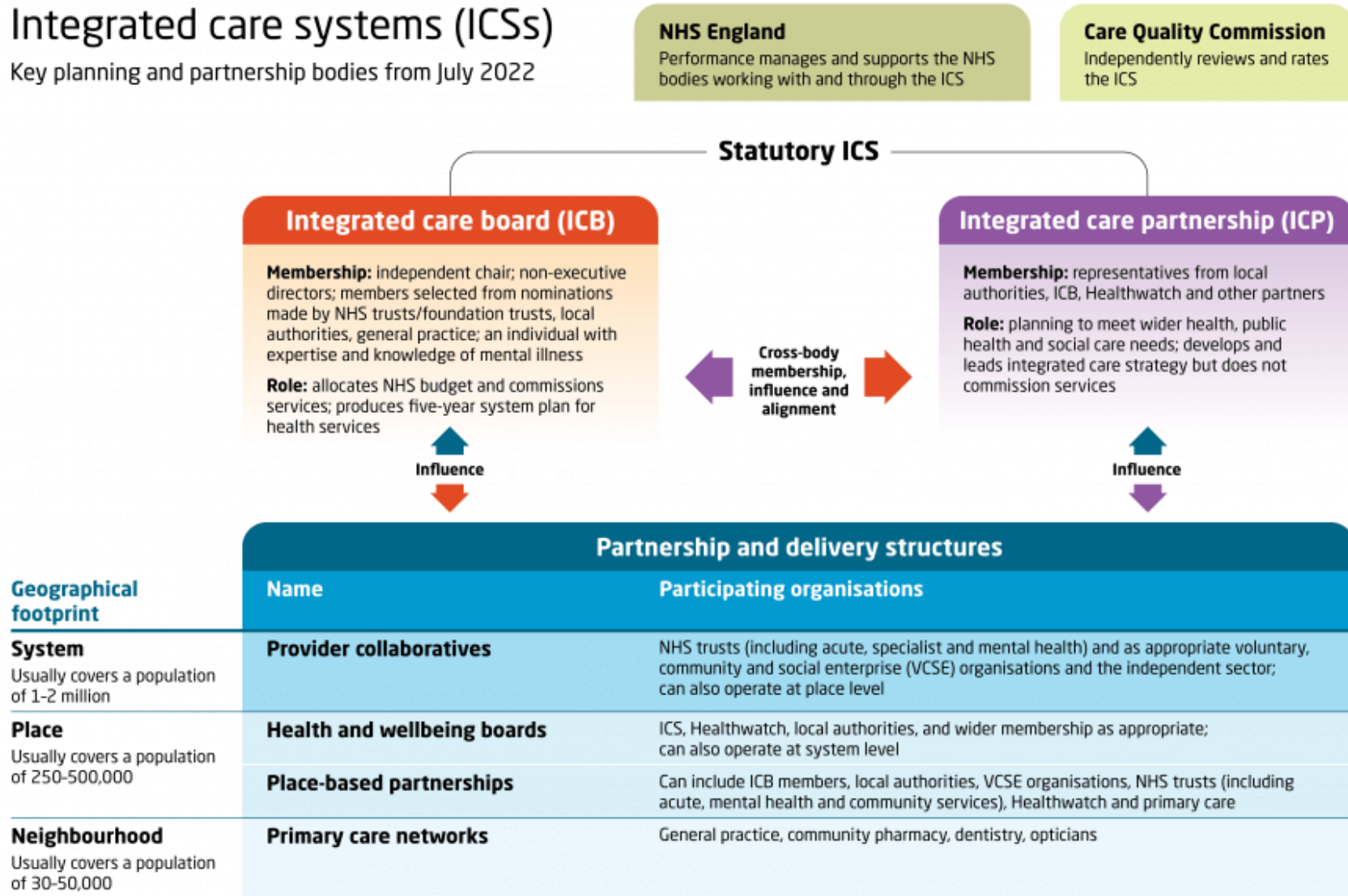
The ICB operates as a unitary board with membership drawn from NHS and foundation trusts, general practice and local authorities in the area. The overall leadership of the ICS comes from different organisations, including representatives from local authorities, acute health care providers, commissioners and clinicians. ICBs may choose to delegate their functions to the place-based committees although they remain formally accountable. Each board must take account of the views of patients and communities in the planning and commissioning of services. The most successful ICBs are working in a '*collegiate way*' (Charles et al., 2018).

The ICP brings together representation of the ICB, local authorities and others who are determined locally. This could include representatives from social care, voluntary services, housing and education (Fig. 29). However, there is wide flexibility about how they are composed and operate to meet local needs. Their responsibility is to develop the local

integrated care strategy, based on a needs assessment, to which the ICB must have regard when allocating the budget for services. Below the ICB sits a range of local partnerships and delivery structures including individual providers and provider-collectives, health and wellbeing boards, place-based partnerships and primary care networks.

Integrated care systems (ICSs)

Key planning and partnership bodies from July 2022



TheKingsFund>

Figure 28. Structure of Integrated Care Systems in the UK (Extract taken from Walsh, 2023)



Figure 29. Example of the possible composition of Integrated Care Partnerships (Extract taken from North-East and North Cumbria Integrated Care Partnership, 2023)

8.3.3 The Informal Local Authority-led model

The model exhibits a hierarchical structure reporting upwards for approval to a strategic leadership board comprised of democratically elected representatives and senior public sector executives. The purpose may be defined by a strategy supported by an action plan, either formally adopted or endorsed by the political decision-takers representing the participant local authorities. Research commissioned by the East of England Local Government Association (EELGA) in 2022 identified and characterised the climate change partnerships across the study area which fall within this model (Table 35).

A group comprised of public officials and key institutional stakeholders undertakes day-to-day coordination and monitoring of activities aligned to the action plan. Operational delivery for specific thematic activities may be led by a central partnership function or more commonly delegated to a lead organisation, depending on how the relationships are defined between the constituent organisations. Resources may be pooled although it is typical that constituent organisations maintain managerial control of their own staff and financial resources (Fig. 30).

Table 35. Climate change partnerships in the East of England (Adapted from Sustainability West Midlands, 2022)

Area	Name of partnership/approach	Type of partnership	Governance context
Bedford	Climate change committee	Cross-party internal representation. Members of the public can attend and raise questions	Unitary authority
Cambridgeshire & Peterborough	Independent commission on climate	Independent commission providing advice and challenge. Combined authority led with council membership	Three tier authority area
Central Bedfordshire	No mention of partnership, only Central Bedfordshire's goals	Internal only	Unitary authority
Essex	Essex Climate Commission	Independent commission providing advice and challenge	Two tier authority area with two unitary authorities
Hertfordshire	Hertfordshire Climate Change and Sustainability Partnership	Council led with external membership	Two tier authority area
Luton	Climate Change Executive Advisory Board	Cross-party internal representation	Unitary authority
Norfolk	Norfolk Climate Change Partnership	Council led with external representation	Two tier authority area
Suffolk	Suffolk Climate Change Environment & Energy Board	Council led with external representation	Two tier authority area

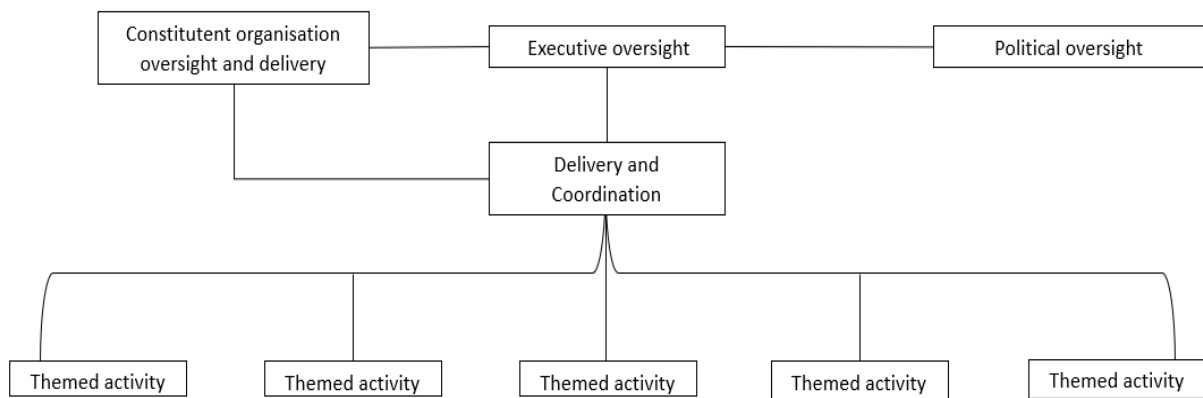


Figure 30. Indicative model structure of Local Authority-led model

Three county climate change structures drawn from the study area are presented below to exemplify this model.

8.3.3.1 Example - Suffolk Climate Change, Environment and Energy structures

Suffolk County Council declared a county-wide Climate Emergency in 2019. The governance structure in Suffolk's response is shown in Fig.31. A cross-county group comprised of senior officers, called the *Suffolk Climate Change, Environment and Energy Board* (SCCEEB), oversees initiatives to deliver the *Suffolk Climate Emergency Plan* (SCEP) which was adopted by Suffolk County Council and endorsed by the Tier 2 local authorities in 2021. SCCEEB is supported by thematic reference groups identified in the plan. Each reference group has representation drawn from organisations and local authority staff with an interest in the theme. The Board links to other non-climate related thematic groups in the county including Suffolk Growth Group.

SCCEEB reports to the *Suffolk Chief Officers Leadership Team* (SCOLT), who in turn support and advise the *Suffolk Public Sector Leaders Group* (SPSL). SPSL has a mixed political leader and chief executive membership covering local government, health and police. The group has oversight of strategic matters across Suffolk although decisions taken by SPSL require constituent political approval for delivery unless under collective agreement.

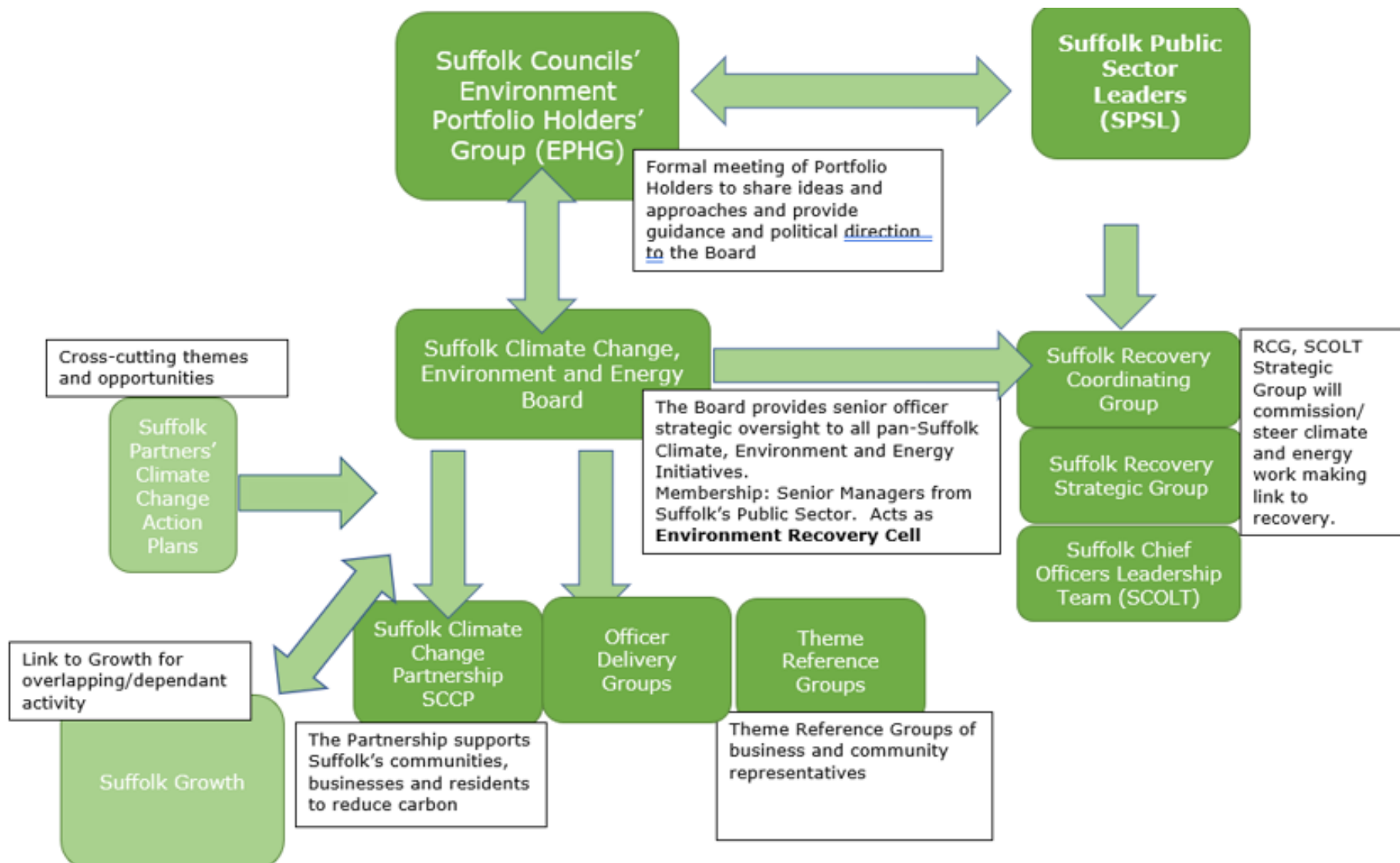


Figure 31. Suffolk Climate Change Environment and Energy governance model (Extract taken from Suffolk County Council, January 2022)

The Suffolk Climate Change Partnership is the principal coordination and delivery entity operating as a non-constituted membership group under a memorandum of understanding. Membership comprises of the district councils and the county council at the core who contribute financially to its administration and delivery services. Other members are drawn from institutional organisations including the University of Suffolk, the Environment Agency and its business and community services delivery partner, the environmental charity Groundwork in the East. The Suffolk Climate Change Partnership coordinates cross-local authority delivery of net zero services to businesses, communities and householders while each local authority runs their own complementary programmes of activity depending on their capacity and commitments under their own strategies and plans.

8.3.3.2 Example - The Norfolk Climate Change Partnership

The Norfolk Climate Change Partnership was formed in 2022 with terms of reference and governance structure established in 2023. The partnership comprises of the constituent district councils and the county council, with non-public administration bodies including the local Integrated Care Board, the University of East Anglia and the Norfolk Broads Authority. The remit of the partnership is primarily sharing of knowledge and practice across the public bodies with one delivery activity funded by the Innovate UK Fast Followers Programme. The partnership reports to the Norfolk Chief Executives Group and Norfolk Public Sector Leaders Board. The adopted governance structure is shown in Figure 32.

8.3.3.3 Example - The Hertfordshire Climate Change and Sustainability Partnership

The Hertfordshire Climate Change and Sustainability Partnership was formed in 2020 with terms of reference and governance arrangements adopted in 2022 (Fig. 33). The partnership comprises of district councils and the county council in Hertfordshire. Although not undertaking delivery activities, the partnership supports delivery by its constituent members by sharing knowledge and practice and working with other local institutions including the University of Hertfordshire and other partnership organisations.

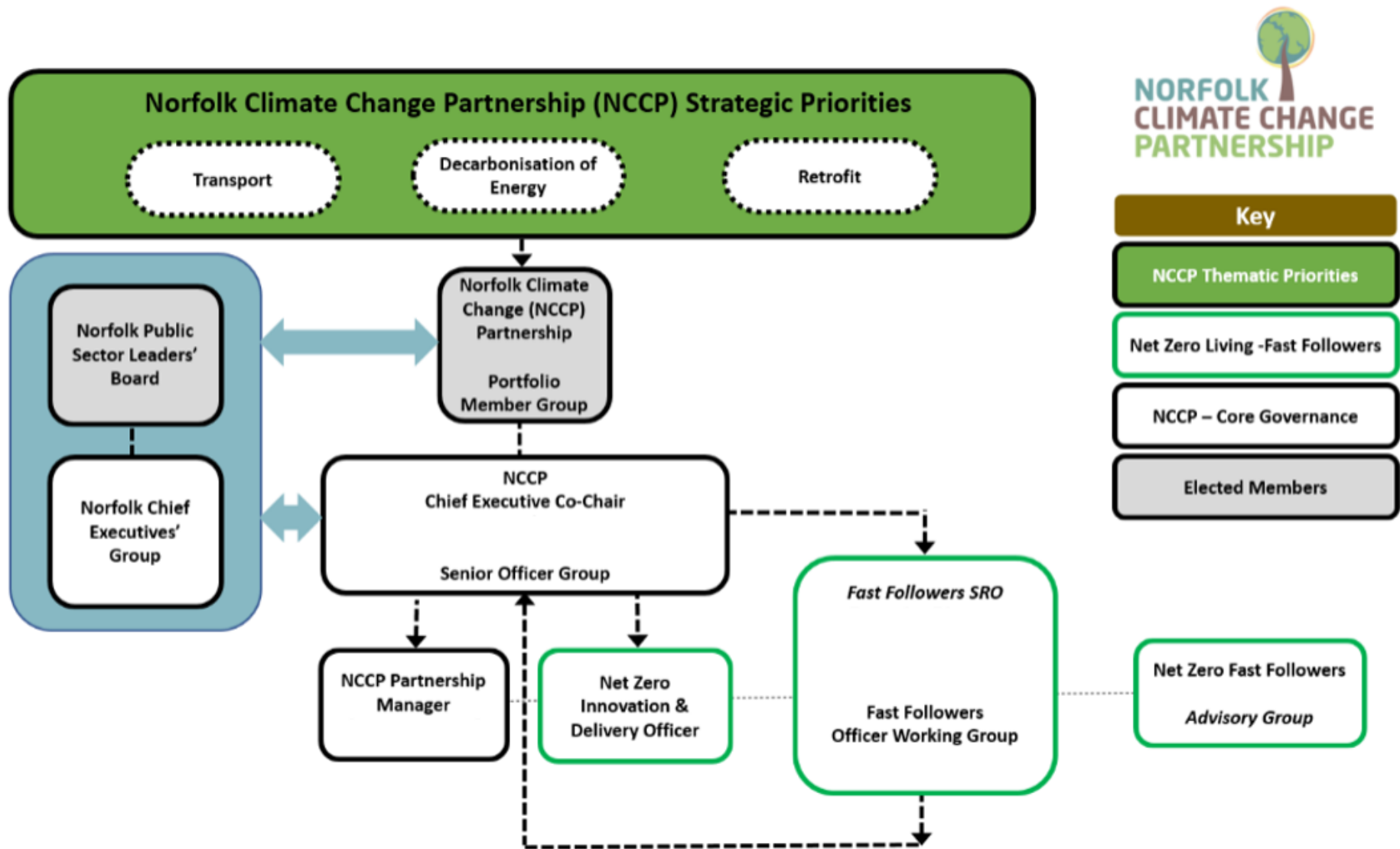


Figure 32. Norfolk Climate Change Partnership governance structure (Extract taken from Norfolk Climate Change Partnership, 2023)

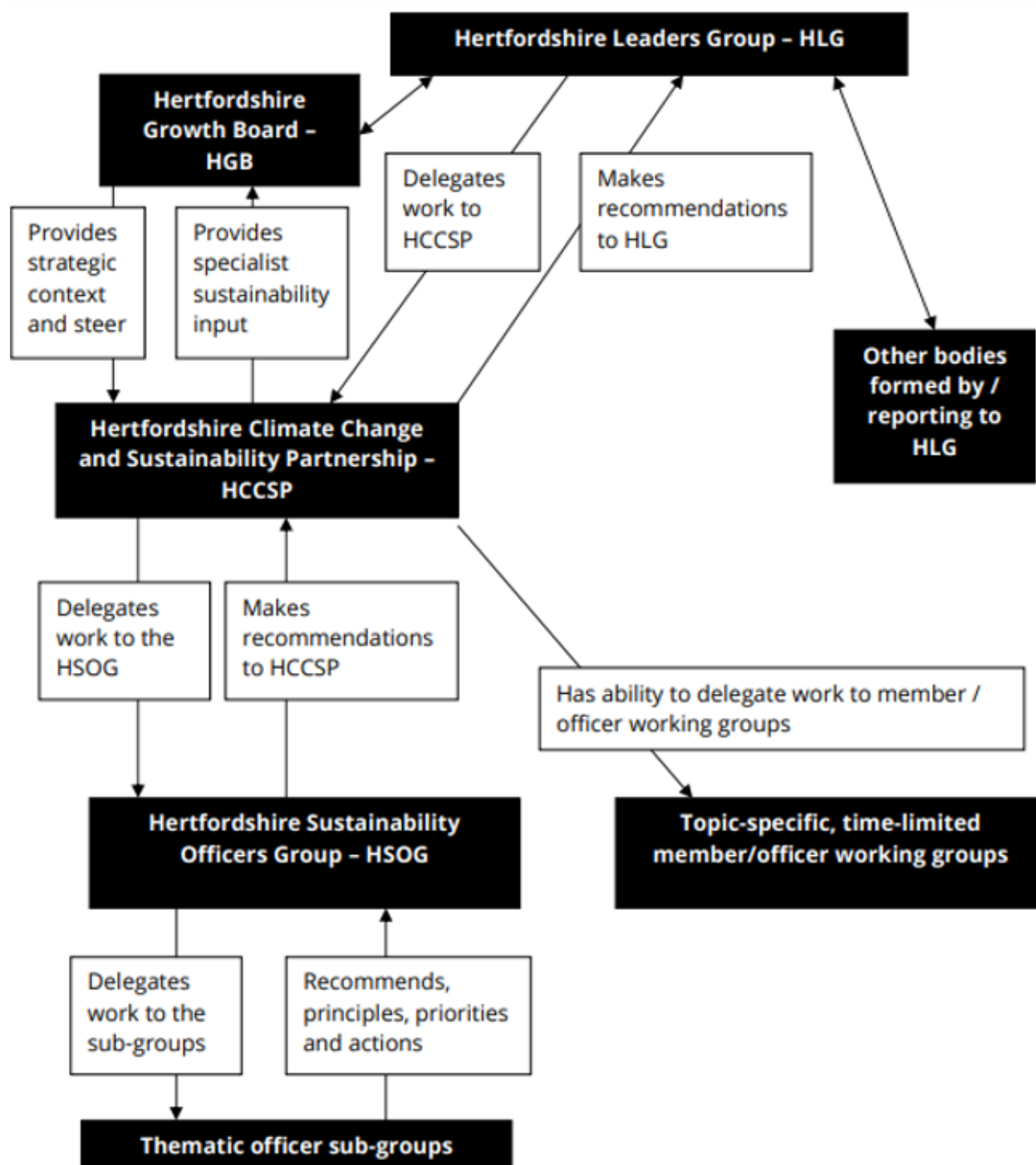


Figure 33. Hertfordshire Climate Change and Sustainability Partnership governance structure (Extract taken from Hertfordshire County Council, 2023)

8.3.4 The Formal LA led model

This formal Local Authority led model differs from the informal model since the participating local authorities have a governance relationship established under statute. Section 113 of the Local Government Act 1972 allows a formal agreement between local authorities to deliver functions jointly. This arrangement may cover an individual service, for example for the purpose of producing joint planning policy documents, multiple functions as in the case of the South and East Lincolnshire Councils Partnership formed in 2021 (SELCP, 2021).

8.3.5 The Public-Private Partnership Model

This model is typically based on a joint venture arrangement between the local area leadership organisation, usually the local authority, and a procured delivery partner who, given the scale of investment and delivery capability needed, are highly likely to be a private sector corporation.

8.3.5.1 Example - Bristol City LEAP

Bristol City Council undertook a procurement process to select a strategic partner who would be contractually engaged to deliver net zero investment and delivery across the city based on a prospectus. The programme of delivery is set at strategic level in the partnership's business plan published in December 2022. The resulting *Bristol City Leap* is a joint venture partnership between Bristol City Council, and a private sector consortium of Ameresco, an American energy services company, and the Swedish utility company Vattenfall who function as delivery body of the energy infrastructure. Ownership is shared between Bristol City Council and Ameresco with Vattenfall providing investment into developing the city's heat network. The partnership sets out in its business plan how it will deliver social value to the local area, with the majority proposed through growing the local supply chain and collaborating with communities to tackle fuel poverty and improve energy efficiency.

8.3.5.2 Example - Cambridgeshire County Council and Bouygues

Cambridgeshire County Council and its local authority partners share a commitment to decarbonising the county by 2050. The County Council entered a long-term framework contract in 2021 with Bouygues Energies & Services and SSE Enterprise. The two companies formed a joint venture which contracts with the County Council to undertake the design, construction and delivery of a range of energy-related projects to help the county reach its goal of 100 percent clean energy and net zero carbon emissions by 2050.

8.3.6 The Multi-Sector model

This model brings together actors from across sectors into a collaborative arrangement which, depending on local consideration, can be formally constituted as a single representative entity. Four examples are presented which demonstrate the range of structures and arrangements that can be adopted.

8.3.6.1 Example - Greater Manchester Climate Change Partnership

Manchester Climate Change Partnership was established in 2018 and brings together organisations from across the city's public, private, community, faith, health, culture, and academic sectors. The partnership's chair is independently selected and is the chair of the board which serves the partnership and its members. The board, in turn, is part of the forum taking forward '*Our Manchester*,' an overarching strategy for the city. The board chair is the representative of the partnership on the forum.

The partnership works with a range of delivery organisations to achieve the City's climate strategy and implementation plan. It functions by working through others to engage, influence and support them to take action to deliver the City's climate plan. One of the key organisations is the Manchester Climate Change Agency, a community interest company responsible for overseeing and championing climate change action in the city. The agency, along with others, is responsible for driving actions outside of the work of the local councils.

Alongside the partnership, the Greater Manchester Combined Authority and its associated local authorities across Manchester are now bound into the same devolution arrangements for net zero as the West Midlands Combined Authority (HM Government/GMCA, 2023).

8.3.6.2 Example - Local Area Energy Planning

The Energy Systems Catapult has published a model governance framework for coordinating Local Area Energy Planning (Fig.34). As an example of how this is interpreted at local level, the local authorities in Cambridgeshire, under the leadership of Cambridgeshire County Council, have established a governance structure designed to deliver their Local Area Energy Plan (Fig. 35).

8.3.6.3 Example - Energy Capital West Midlands

Energy Capital describes itself as the '*smart energy partnership*' for the West Midlands (Energy Capital West Midlands, 2023). The Energy Capital Partnership is a representative body established by the Mayor of the West Midlands Combined Authority and composed of the key organisations responsible for strategic regional energy infrastructure planning and delivery (Fig.36). Its supervisory board oversees the implementation of the regional delivery plan. The Energy Capital Board oversees a programme of delivery including the '*Smart Hub*' for domestic retrofit, social housing decarbonisation programmes, the emergent '*Net Zero Neighbourhoods Demonstrator*' programme and five '*Energy Innovation Zones*'.

The board links upwards through the tiers of government initially to the Combined Authority via thematic environment and growth boards which are political structures within the Combined Authority's own governance structure. This route from delivery upwards to central government formalizes and legitimises the Energy Capital Partnership within the local and national democratic process via the devolution deal agreed in 2017 and subsequently revised in March 2023. West Midlands Combined Authority will become the lead organisation as part of the region's *trailblazer* devolution deal with central government (HM Government/WMCA, 2023). As part of the revised deal, central government states that it will pilot the devolving of net zero funding through allocation rather than competition in the period from 2025 onwards to the Combined Authority (ibid.). This will be subject to the Combined Authority meeting certain conditions including agreeing outcomes and accountability frameworks and taking account of work done by a new local net zero forum comprised of Central Government, representative

local government organisations and the Combined Authority. Given these changes this framework is becoming more democratically led as well as politically accountable through the scrutiny processes within the Combined Authority's constitution and with HM Government.

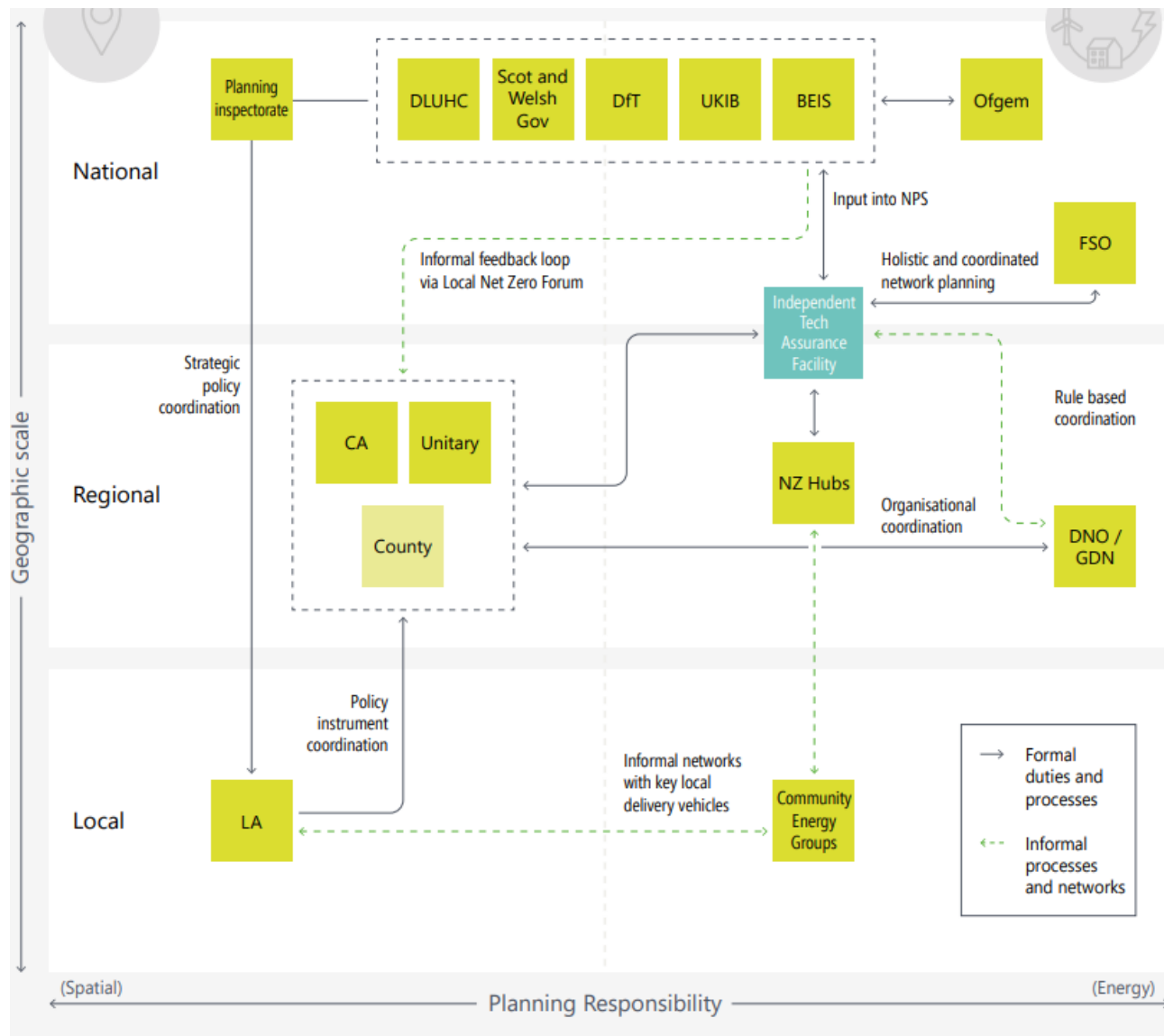


Figure 343. Illustration of governance framework between spatial and energy planning (Extract taken from Energy Systems Catapult, 2022; p.7)

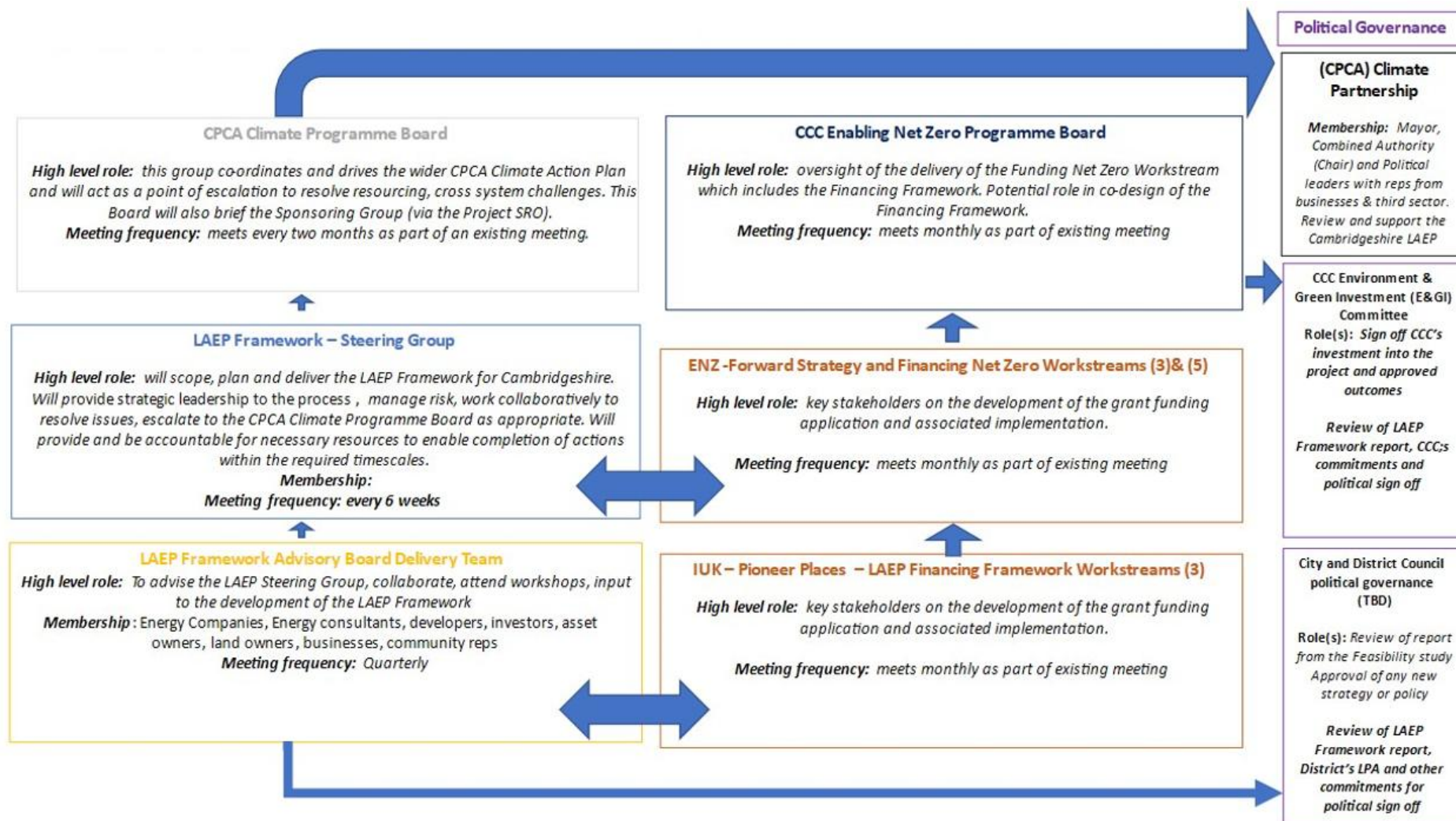


Figure 35. Local Area Energy Planning governance structure for Cambridgeshire (Courtesy of Rob Reynolds, 2023)

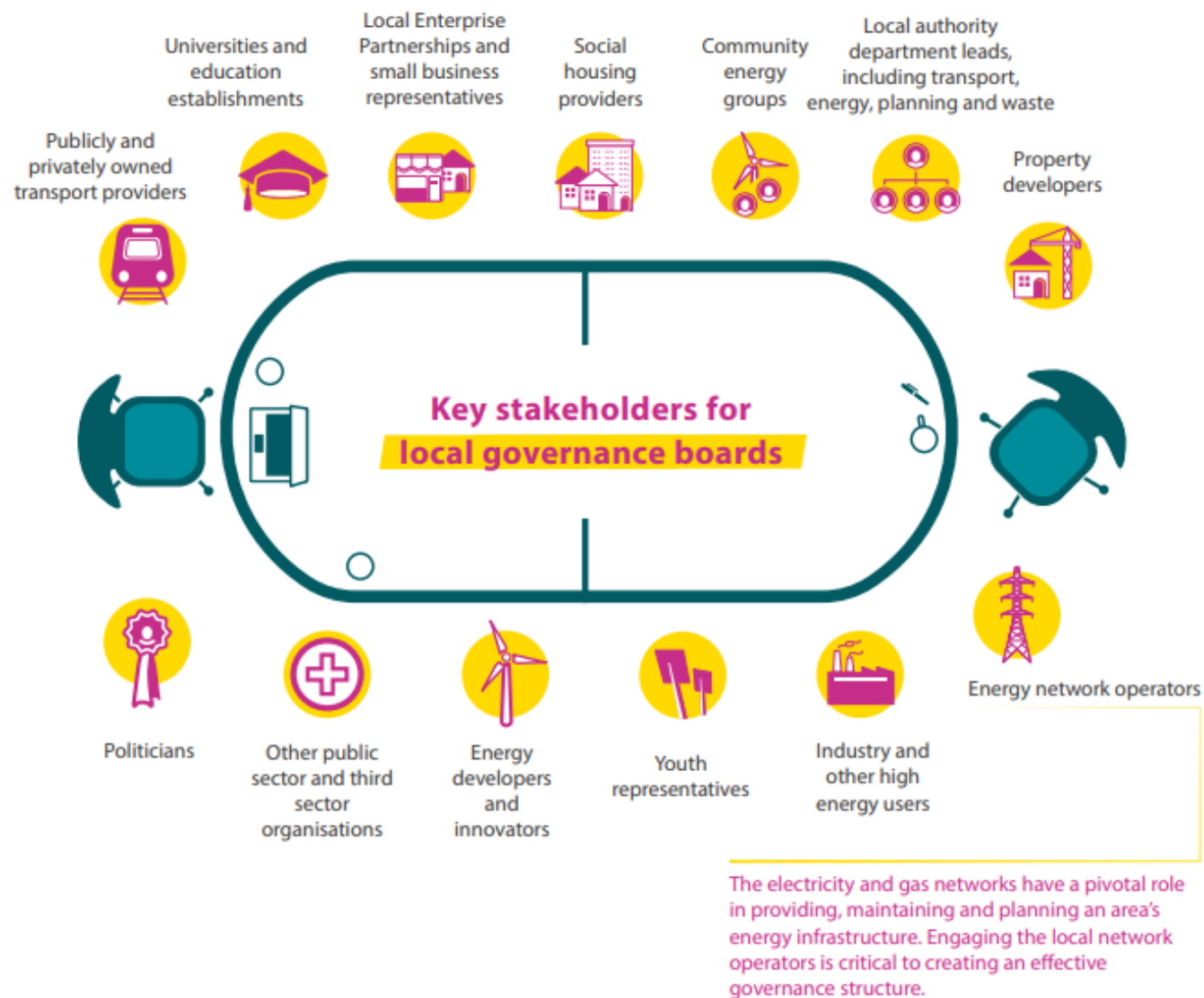


Figure 36. Energy Capital Board structure (Extract taken from Regen/Scottish and Southern Electricity Networks, 2020 p.20)

8.3.7 *The Project Delivery model*

This model is derived from examples which demonstrate specific task-based delivery within a defined project scope and delivery timetable.

8.3.7.1 *Example - Zero Carbon Oxford/Low Energy Oxfordshire*

Zero Carbon Oxford is a partnership that brings together universities, hospitals, councils, large businesses, and communities to support the city in its journey to net zero carbon emissions. Members of the partnership are the collaborating project partners which delivered Low Energy Oxfordshire (Project LEO) funded via UKRI's *Prospering from the Energy Revolution* programme. Project LEO was an innovation trial seeking to accelerate the UK's transition to a zero-carbon energy system. The governance of Low Energy Oxfordshire was structured around a project delivery model with partners drawn from the public, private, academic and community energy sectors.

8.3.7.2 *Example - Repowering the Black Country*

The Black Country Consortium was awarded funding from UK Research and Innovation (UKRI) Industrial Decarbonisation Challenge (IDC) in 2021 to support clean industrial growth through the '*Repowering the Black Country*' Project. The focus was to help the local metals, chemical and vehicle manufacturing industries to decarbonise through energy efficiency and fuel substitution. The project partners were led by the consortium and included local businesses, the Black Country Local Enterprise Partnership, and the Universities of Birmingham, Warwick and Loughborough as academic partners (UKRI, 2022). The UKRI-funded stage of project concluded in March 2023.

8.3.8 *The Community model*

This model is derived from examples originating from a community response to address an issue of common concern amongst local people. Entities and structures may initially be loosely defined with no formal legal structure although this may change with time as the local stakeholders make progress towards defining their vision and means of delivery.

8.3.8.1 *Example - Brighton & Hove Energy Services Company*

The two localities in Sussex have a record for well-functioning community energy delivery bodies constituted as not-for-profit organisations. Activity is focused on renewable energy generation built up during the period of the Feed-In Tariff⁸ in the UK between 2010 and 2019. This has subsequently expanded to cover other forms of community-based activity including domestic energy efficiency and fuel poverty. Brighton and Hove Energy Services Company (BHESCO) provides project consultancy, management, finance and energy advice services as well as '*pay as you save*' financing to householders and businesses at local scale. It is

⁸ The Feed in Tariff was set up to stimulate the uptake of solar photovoltaics, as well as other renewable power generating technologies.

structured as a Community Benefit Society and operates under the governance rules set for Co-operative Societies under the Co-operative and Community Benefit Societies Act 2014.

8.3.8.2 Example - Low Carbon Hub, Oxford

The Low Carbon Hub comprises two organisations working in cooperation: the Low Carbon Hub Industrial and Provident Society (Low Carbon Hub IPS) and the Low Carbon Hub Community Interest Company (Low Carbon Hub CIC). The Low Carbon Hub IPS's profits are used for the benefit of the community. The purpose of the Low Carbon Hub IPS is to develop a decentralised, locally owned renewable energy infrastructure for Oxfordshire to '*put local power in the hands of local people*' (Low Carbon Hub, 2023). The Hub does this by developing its own portfolio of renewable energy projects with businesses, schools and public sector partners. The purpose of the Low Carbon Hub CIC is to deliver community benefit and provide practical support to communities to develop their own renewable energy projects on community assets.

8.3.9 The Free trade model

This model is derived from public policy to stimulate economic growth. The constituent entities may form legal structures to achieve their aims.

8.3.9.1 Example - Freeports

Freeports were established following enactment of the Finance Act 2021. They operate under different economic regulations to the rest of the UK. The arrangements include a package of measures comprised of tax reliefs, customs, business rates retention, planning, regeneration, innovation and trade and investment support. Delivery is locally led by a coalition of key stakeholders. Following being awarded Freeport status, each coalition has formed a *Freeport Governing Body* responsible for delivering all aspects of the Freeport. East Midlands Freeport, for example, is being delivered across three designated locations: at Midlands Airport and Gateway Industrial Cluster (EMAGIC) in North-West Leicestershire, the Ratcliffe-on-Soar Power Station site in Rushcliffe in Nottinghamshire and the East Midlands Intermodal Park (EMIP) in South Derbyshire East Midlands Freeport. This Freeport partnership comprises of twenty-one organisations drawn from the public, private and university sectors constituted into a company limited by guarantee. Leicestershire County Council is the lead authority and accountable body for the incorporated Freeport Company (Leicestershire County Council, 2022).

8.3.9.2 Example - Investment Zones

UK Government confirmed the setting up of *Innovation Zones* in March 2023, with their purpose to '*drive growth and unlock housing across the UK by lowering taxes and liberalising planning frameworks to encourage rapid development and business investment*' (HM Treasury, 2022). In England, although subject to review by the new administration, the intention

is that the Central Government will deliver Investment Zones in partnership with upper tier local authorities and mayoral combined authorities. Each zone will be offered a single five-year tax arrangement matching that given to freeports. Central Government intends that each investment zone be a collaboration and co-ordination across research institutions, the public and private sector (ibid., 2023). Given the diversity across geographical areas in the UK, each zone is likely to have different governance arrangements and composition. However, Central Government has set out criteria for their success; *‘sustained private and public investment, strong local leadership and governance, innovative and porous research institutions, partnerships and networks to foster collaboration and share ideas; and strong supply chains and deep pools of human capita’* (ibid). As an illustrative example of a decentralized zone model, Central Government suggests using pre-existing working relationships between the universities, local government and the private sector in established governance structures, yet undefined.

8.4 Comparison of the real-world and governance theory

It was a feature of the literature review that no single successful governance arrangement was identified which could be transposed into the net zero domain. The forms that the eight abstracted models take reflect many of the theoretical dimensions identified in the literature (Table 36): decentralised governance where the local area is responding independently of national government (Driessen et al., 2012); the hierarchies created by convention when local authorities collaborate across a multi-tier administrative area (Hamman, 2020); and forms of co-governance in situations of single issue, for example through the coalescence of participants around a specific project or funding stream (Kooiman, 2003). Four of the models share some characteristics with those proposed by Bunning (2014) for managing renewable energy and district heating projects as part of decarbonising cities. All models exhibit various degrees of poly-centrism (Christie and Russell, 2021). The *Integrated Care Systems*, *Multi-Sector* and *Project Delivery* models embrace cross-sector participation while none appear to contain the attributes of mesh network governance described by Mulgan (2020) where structural and functional hierarchy is absent.

Table 36. Comparison between the eight models and nomenclature identified in the literature

Models developed in the research	Kooiman, 2003	Bunning, 2014	Driessen et al., 2012	Heidingsfelder & Beckmann, 2020
Integrated Care Systems	Co-governance	No model identified	Interactive	Public
Formal LA led	Hierarchical	Municipally-owned model	Decentralised	Public
Public-Private Partnership	Co-governance	JV partnership/ Public private partnership	Interactive	Hybrid

Informal LA led	Hierarchical	No equivalent identified	Decentralised	Public
Multi-Sector	Co-governance	No equivalent identified	Interactive	Hybrid
Project Delivery	Co-governance	No model identified	Interactive	Hybrid
Community-led	Self-governance	Co-operative/ Community-owned models	Self-governance	Private
Free Trade	Self-governance	Independent power producer	Self-governance	Private

8.5 Insights drawn from third parties

Participation in the Leicestershire CAN research allowed evaluation of four of the abstracted models: the *Integrated Care Systems* model, *Informal* and *formal Local Authority-led partnerships*, respectively referred to in the IUK Pathfinder research as *Local Authority Energy & Net Zero Boards* and *Strategic Decision-Making partnerships*; and *Public-Private partnerships*, referred to in the IUK project as *Public-Third Party partnerships* (Table 37).

Table 37. Mapping four of the abstracted models to the IUK Pathfinder research programme (Energy Systems Catapult, unpublished)

Models developed in the research	IUK models
Integrated Care Systems	Same
Informal Local Authority-led partnerships	Local Authority Energy & Net Zero Boards
Formal Local Authority-led partnerships	Strategic Decision-Making partnerships
Public-Private partnerships	Public-Third Party partnerships

Observations made by the Leicestershire CAN project team along with the insights of the practitioners that were interviewed by the researcher highlighted several key features of the models. In the case of the *Public-Private Partnerships* model, different sub-models exist depending, for example, on how the contractual arrangements are determined and where decision-taking sits in the relationship. Further, issues of system complexity and commercial sensitivity can make the relationships complex both between the two parties and wider stakeholders. This complexity could hamper engagement if a contractual arrangement is established without appropriate mechanisms to ensure inclusivity. The formal *Strategic Decision-Making partnership* between local authorities is likely to ensure democratic accountability although the process of establishing the legal authority may require approval by the Secretary of State, which could incur significant preparatory effort. This compares with the *Informal Local Authority-led* approach which could be simpler to initiate although there may be dependency on the public administrations fully agreeing on the purpose and actions.

8.6 Limitations of the methodology and mitigations

The subjective, purposive approach that has been adopted by the researcher could be considered a potential source of bias. Furthermore, the subsequent analysis outlined in this

chapter and expanded in chapter 9 does not specifically consider the track records of each example on which the models are based or provide a critical evaluation of the comparative strengths and weakness of each model. Rather, it is concerned with the characteristics that they exhibit.

Additional validation and testing will, therefore, be needed beyond this thesis to validate or generate new results and overcome the identified limitations. Possible approaches for the validation stage are explored in chapter 9.

Chapter 9: Evaluating net zero governance

Preamble

The principal content of this chapter is based on the research paper titled '*Developing a toolkit to help smaller local authorities establish strong net zero governance in the UK*' published in Frontiers in Sustainable Energy Policy in May 2024 (<https://doi:10.3389/fsuep.2024.1390570>).

9.1 Introduction

This research presented in this chapter aims to answer the following questions:

What does Climate Emergency governance look like for smaller local authorities?

What are the key components of the governance models that currently exist?

This chapter builds on the models presented in chapter 8 and the literature review in chapter 3 to explore the attributes that may determine good governance. A governance evaluation tool is proposed based on a synthesis of these attributes which is then applied to real-world examples to illustrate its application. The tool is designed for use by local authorities to help them identify potential opportunities to improve current arrangements.

9.2 Research Method

9.2.1 Gathering background material

A mixed methods approach was used to derive criteria with which to evaluate the performance of governance arrangements. This comprised of a review of the published academic and grey research literature and published records of institutions involved in net zero delivery, alongside interviews with practitioners from public administration and non-governmental institutions. The criteria were then incorporated within a scoring process to create a tool which allows comparison of strengths and weaknesses within and between different governance arrangements. The governance models developed in chapter 8 provide a way to identify and benchmark real-world arrangements to postulate areas where improvement can be made. Finally, consideration was given to the development of a maturity pathway using governance theory explored in chapter 4.

9.2.2 Identifying governance assessment criteria

The literature review provided a set of theoretical and empirical standpoints from different sectors according to which governance arrangements could be assessed. Rather than set a minimum number of approaches that needed to be considered, pragmatic judgement was

used to reach a saturation point when no new characteristics for assessing governance were observed. The characteristics, referred to henceforth as criteria when scored, were collated and grouped into *principles* which in turn were mapped back to the three *themes* of *investment*, *engagement* and *delivery* discussed in chapter 7.

9.2.3 *Developing a scoring process to evaluate governance*

The assessment criteria were converted into challenge questions, taking the following form, ‘*How well does the model deliver on [the characteristic under consideration]?*’ A Likert scale was used to score each question, with 0 representing ‘*not at all*’ and 10 ‘*ideal*’. The researcher then scored each question for each governance model described in chapter 8. The resulting scores were aggregated and normalised to a percentage to create an overall score for each governance model. The Likert scores for each criterion were also plotted on radar charts to reveal the relative strengths and weaknesses of each governance model. The highest scores of each criterion across the eight models was selected as a benchmark of *good governance* against which other governance arrangements could be compared.

9.2.4 *Testing the tool using real-world examples of net zero governance*

To illustrate the evaluation process and use of the governance models, a trial was undertaken using three county-wide partnerships drawn from the study area whose administrative characteristics and net zero ambitions were considered to typify other multi-tier public administrations in England (Table 38).

9.2.5 *Comparing the method*

Participation in the Leicestershire CAN project introduced in chapter 8 allowed a comparison of the approach. Leicestershire operates a two-tier administrative structure comparable with the three selected counties. The project derived its own suite of criteria from a stakeholder workshop held in spring 2023 from which a synthesis established seven principles. The assessment criteria and models developed in this research were compared to those subsequently developed in the project to identify areas of compatibility and divergence. This comparative process helped to shape a range of models and examples of governance assessment methods in the Leicestershire CAN research, albeit the output was restricted due to time constraints and feedback from that project’s stakeholders. Although not independently tested, an illustrative strengths and weaknesses comparative assessment was carried out by the researcher for each governance model (Appendix 10).

Table 38. Characteristics of three selected Counties in the East of England used in the trial

Features	County A	County B	County C
Iteration of Climate Emergency/net zero Action Plan	1st	1st	4th
Evidence-based	No	No	Yes
Partnership established	2020	2020	2008
Membership	Council led - limited external membership	Council led - limited external membership	Council led - a range of sectors represented
Net zero target agreed ¹	No	No	Across all local authorities
Devolution status	Not progressing	Agreed	Agreed
Number of staff interviewed from County Council tier	1	2	1
Number of staff interviewed from District Council tier	2	4	5

¹Source: Institute for Government, 2023. Status as at January 2024.

9.3 Results & discussion

9.3.1 Assessment criteria

Based on the search, nine methodologies for assessing governance were identified drawn from across the disciplines of climate change, energy, health, finance, and culture (Table 39). After removing duplication, forty-three different *characteristics* were derived which were grouped into seven *principles* based on their thematic commonality (Fig. 37). The characteristics formed the assessment criteria which were framed as challenge questions forming the evaluation.

Sector	Source	Summary	Features
Energy	Energy Systems Catapult, 2023	The study explores how coordinated local area energy planning could deliver significant financial benefits on the road to net zero. It also set out areas for future policy, regulatory and governance reform.	The study sets out both the elements needed for a governance framework along with the blockers and enablers.
Energy	UK Office of Gas and Electricity Markets, 2023	In its 2023 consultation on the future of local energy institutions and governance, Ofgem set out criteria that it considers necessary for effective arrangements at sub-national level.	Ofgem defined four criteria by which it assessed whether existing and any potential future arrangements are fit for purpose.
Energy	Innovate UK, 2022	Innovate UK undertook a detailed analysis of the existing constraints and challenges in the delivery environment and stakeholder readiness in six city-regions.	One of the study outcomes was a set of design principles to enable the different tiers of government to take a whole-system approach.
Local authority	Climate Emergency UK, 2023	Climate Emergency UK is an online database referencing the UK local authorities that have declared climate emergencies, their action plans along with an independent analysis of how each local authority is responding to net zero using a scorecard approach.	The methodology used nine sections with topic areas and questions drawn up through ' <i>research and consultation with council staff, councillors, campaigners and other organisations</i> ' (ibid.). Explanatory narrative describes the criteria that need to be met to achieve a top score for the specific topic.
Public services - Culture	Department of Digital, Culture Media and Sport, 2017	DCMS developed a methodology to help councils and library services make an informed and evidence-based decision on how to deliver library services.	The options appraisal used a gateway process to select a short-list of ' <i>propositions</i> ' which are further evaluated to select a preferred option of set of options (ibid.). Each options appraisal stage uses three generic criteria allowing different delivery model options.
Finance	Financial Reporting Council, 2018	The Financial Conduct Council is the competent authority for auditing and ethical standards in UK. The Council sets out in its Good Governance code the standards and framework for business in the UK, emphasizing the value of good corporate governance to long-term sustainable success.	Four areas of corporate governance are covered with defined principles.
Health	Health Quality Improvement Partnership, 2021	The Health Quality Improvement Partnership published a handbook of good governance for NHS organisations.	The handbook sets out ten key elements of good governance.
Health	The King's Fund - Charles et al., 2018; 2021	The King's Fund assessed the state of Integrated Care Systems (ICS) to understand how local partnerships are forming and to provide local health and care leaders with guidance.	The assessment sets out principles to support ICS partnerships' working practice. These form the basis to recommend improvements amplified in its subsequent progress review of the sector (The Kings Fund, 2021).
Health	Improvement Analytics Unit - Lloyd T. et al., 2023	The Improvement Analytics Unit (IAU) is a partnership between NHS England and the Health Foundation. Its analysis aimed at informing NHS efforts to develop more integrated care in England.	The study identified key factors along with examples of enablers that support working arrangements.

Table 39 Governance assessment methods considered in the research

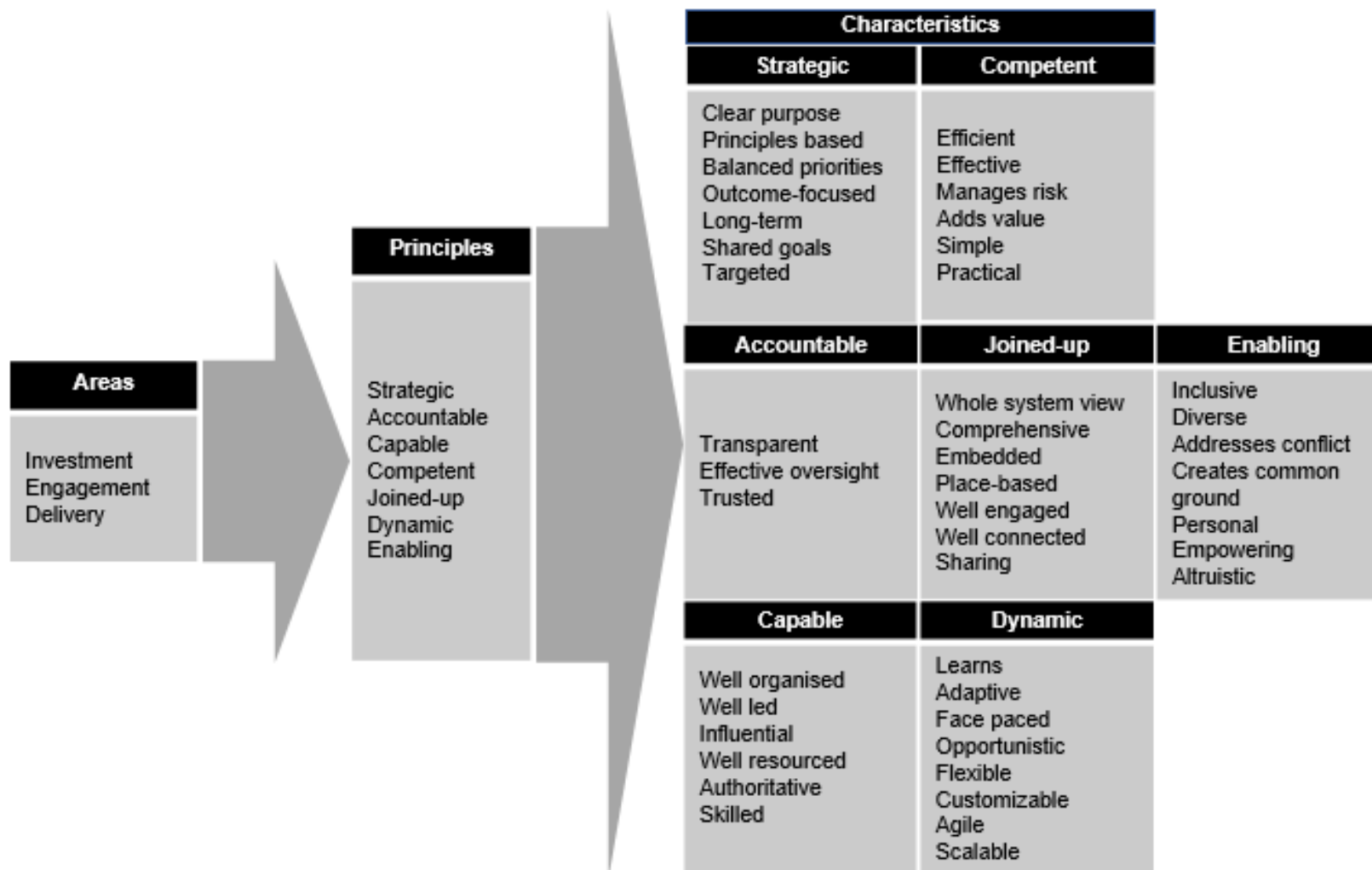


Figure 37. Areas, principles and characteristics derived from the governance frameworks listed in Table 39

9.3.2 Evaluating the governance models

Figure 38 shows the Likert scoring of the eight governance models proposed in chapter 8. Figure 39 shows filtered highest scores of each criterion across the eight models.

Certain models performed well against certain *principles* (i.e. common groups of governance characteristic). The *Multi-Sector* and *Integrated Care Systems* models each scored high across the principles dealing with being *strategic* ($n=7$, $\bar{x}=7.86$) while the *Community-led* model scored high across the *enabling* principle ($n=7$, $\bar{x}=8.14$). Comparing specific characteristics, the *Integrated Care Systems* model scored highest for *flexibility*, *addressing conflict* and *creating common ground*. The *Community-led* model out-scored all other models for being *value-added*, *placed-based*, *sharing*, *inclusive* and *altruistic*. The *Multi-Sector* model out-scored others in the criteria of *balanced priorities*, *authoritative*, *skilled*, *efficient*, *adaptive*, *fast-paced* and *scalable*. The *Formal LA-led* model scored highest for *clarity of purpose* while the *Informal LA-led* model ranked highest for *whole system view*.

Each model demonstrates characteristics which, although not outscoring the other models, could provide useful insight. For example, the *Free Trade* model is based on central government's post-Brexit programmes for designating Freeports and Investment Zones. These are aimed at driving economic growth and sectoral innovation through a mix of locally applied policy, regulatory and fiscal interventions and levers (HM Treasury, 2022). The highest scoring characteristics suggest that parts of this model could be applied in complementary ways by local areas and local authorities. As a blueprint in an area wishing to prioritise green economic growth, the model could be used to create new structures and relationships focussed on key outcomes. For example, these could drive job creation within the low carbon sector, reconfiguring the education and training pathways for those looking to enter the sector, or stimulating innovation, a key objective of the Freeport programme on which this model is based. Secondly, the more local interventions and relaxations in the areas of tax and targeting investment support could be aligned with net zero delivery programmes. Thirdly, a local area which already hosts one of the designated economic zones could explore ways to utilise and extend, where appropriate and achievable, the zone's established governance structure and processes as a way of pivoting towards a local net zero economy.

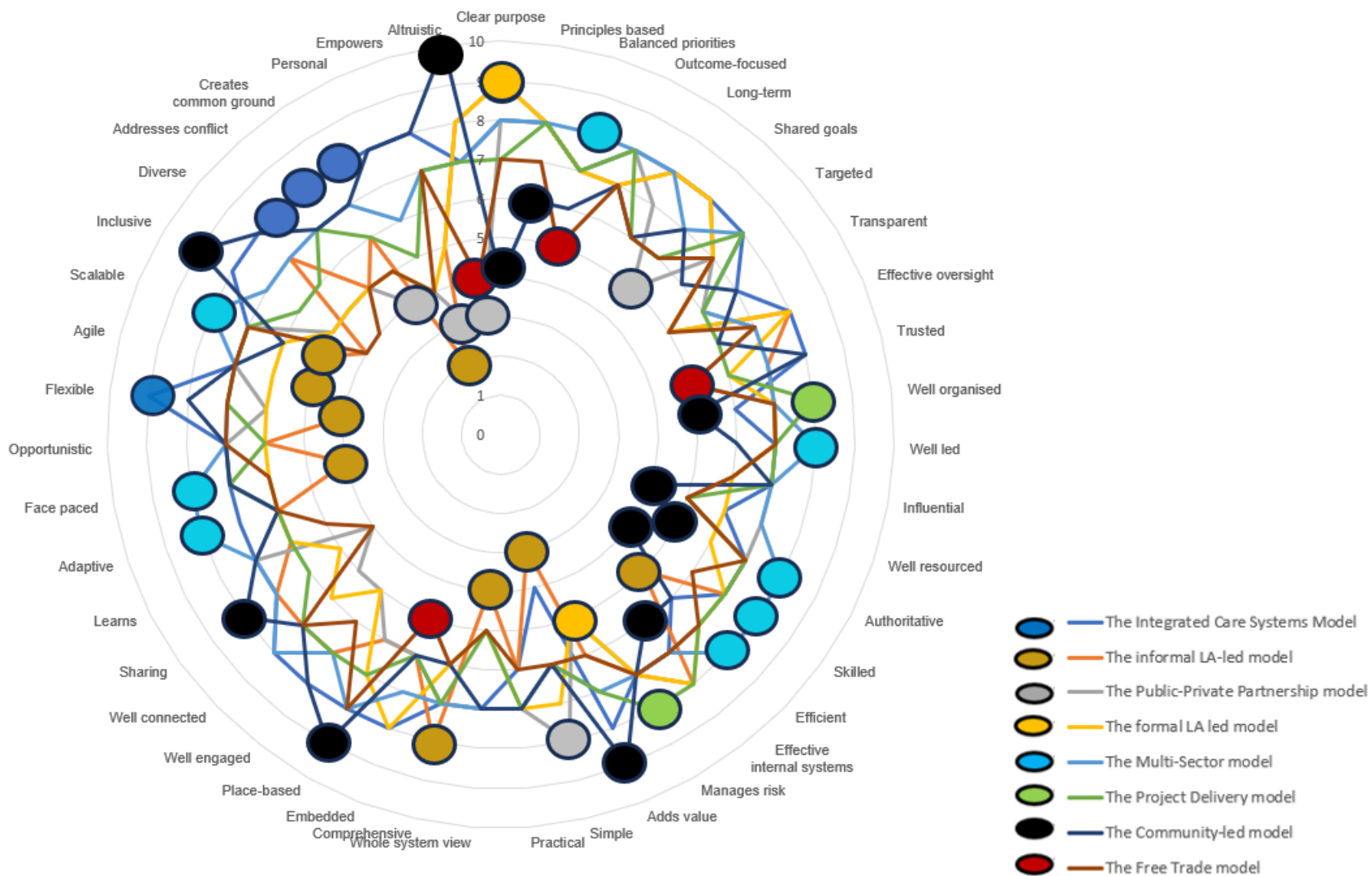


Figure 384. Radar plots showing scoring for the eight models of governance. (Colour coded circles denote where a specific model scores highest or lowest for a specific criterion)

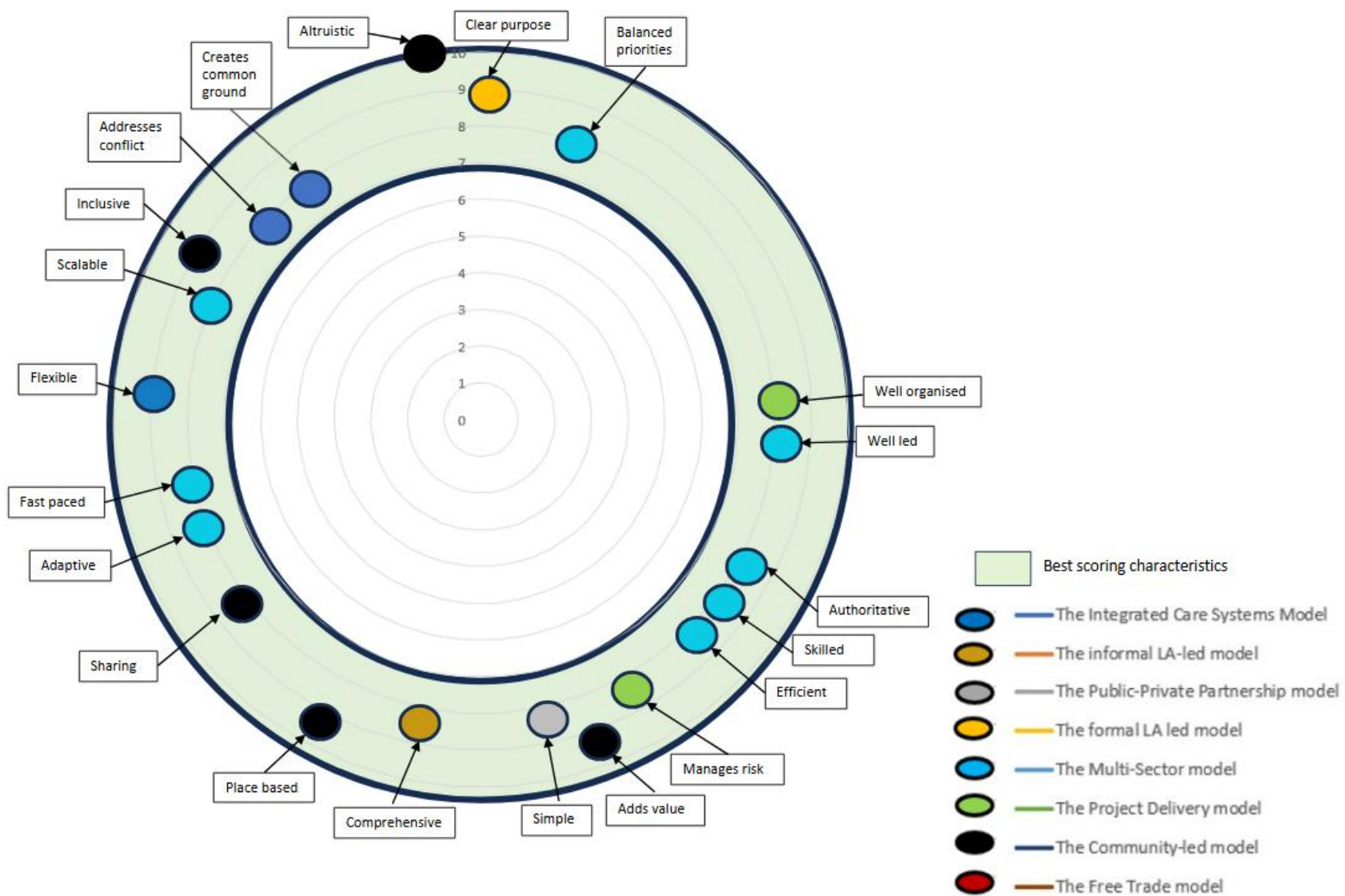


Figure 39. Filtered radar plot showing the highest scoring criteria by governance model

The scoring process also helps to identify where a model performs poorly compared to the other models. The *Free Trade* model, for example, under-performed in the context of *trust, inclusivity, diversity* and *personal* (the Enabling principles) compared to the *Community-led* or *Integrated Care Systems* models and scored lowest for *balanced priorities, comprehensive* and *diverse*. The *Informal LA-led* model underperformed with respect to *simplicity, being opportunistic, flexible, agile* and *empowering*. The *Community-led* model was considered weakest in terms of *clarity of purpose, being Authoritative, influential, well-resourced* and *skilled*.

The assessment, therefore, builds a picture of strongest and weakest characteristics according to the model under consideration which, when taken across all eight models, provides a set of benchmarks and areas for potential improvement when the process is applied to real-world governance (Table 40).

Table 40. Strongest characteristics based on the Likert scoring of the eight governance models

Model	The model demonstrates characteristics likely to...
Community Model	Add more value, more place-based, sharing, inclusive and altruistic
Multi-Sector model	Be more skilled, adaptive and fast paced
Public-Private sector partnerships	Be simpler to operate and navigate
Integrated Care Systems	Be more flexible, diverse, better at addressing conflict and able to create more common ground

9.3.3 Evaluating the three County-wide partnership case studies

The scoring process was applied to the three selected County-wide partnerships referred to previously with the strongest results from the eight models overlaid to identify opportunities for the local areas to learn from them (Fig. 40). The results show that each County partnership is considered to have under-performed compared to the highest scoring characteristics demonstrated by the models. It also reveals the relative strength of County C when compared to the other two areas. The assessment also shows levels of divergence between scoring for the local area plots and the strongest scoring model.

Taking the assessment for County C, local authorities in informal governance arrangements could learn most from the *Community-led* model with respect to *adding value, being place-based, sharing* and *inclusivity*. With some qualifications, when compared to the *Formal Local Authority-led* model, informal Local Authority-led partnerships appear to perform less well in terms of *purpose, operating for the long-term, having shared goals* and demonstrating *effective oversight, being well-skilled, simple* to understand, *well-embedded* and *engaged* (Fig. 41).

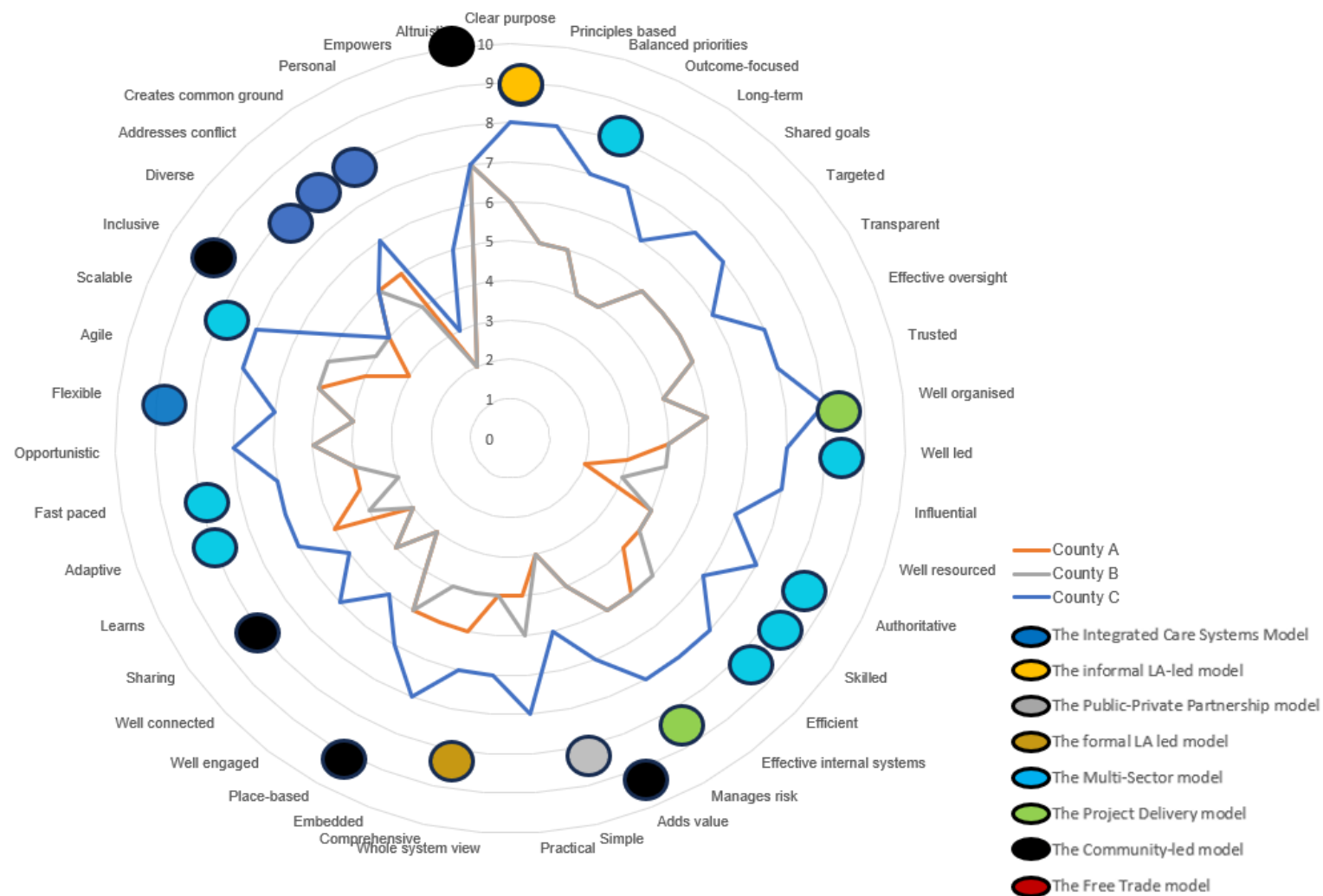


Figure 40. Radar plots showing scoring for the three Area Partnerships compared the strongest scoring characteristics from the eight governance models

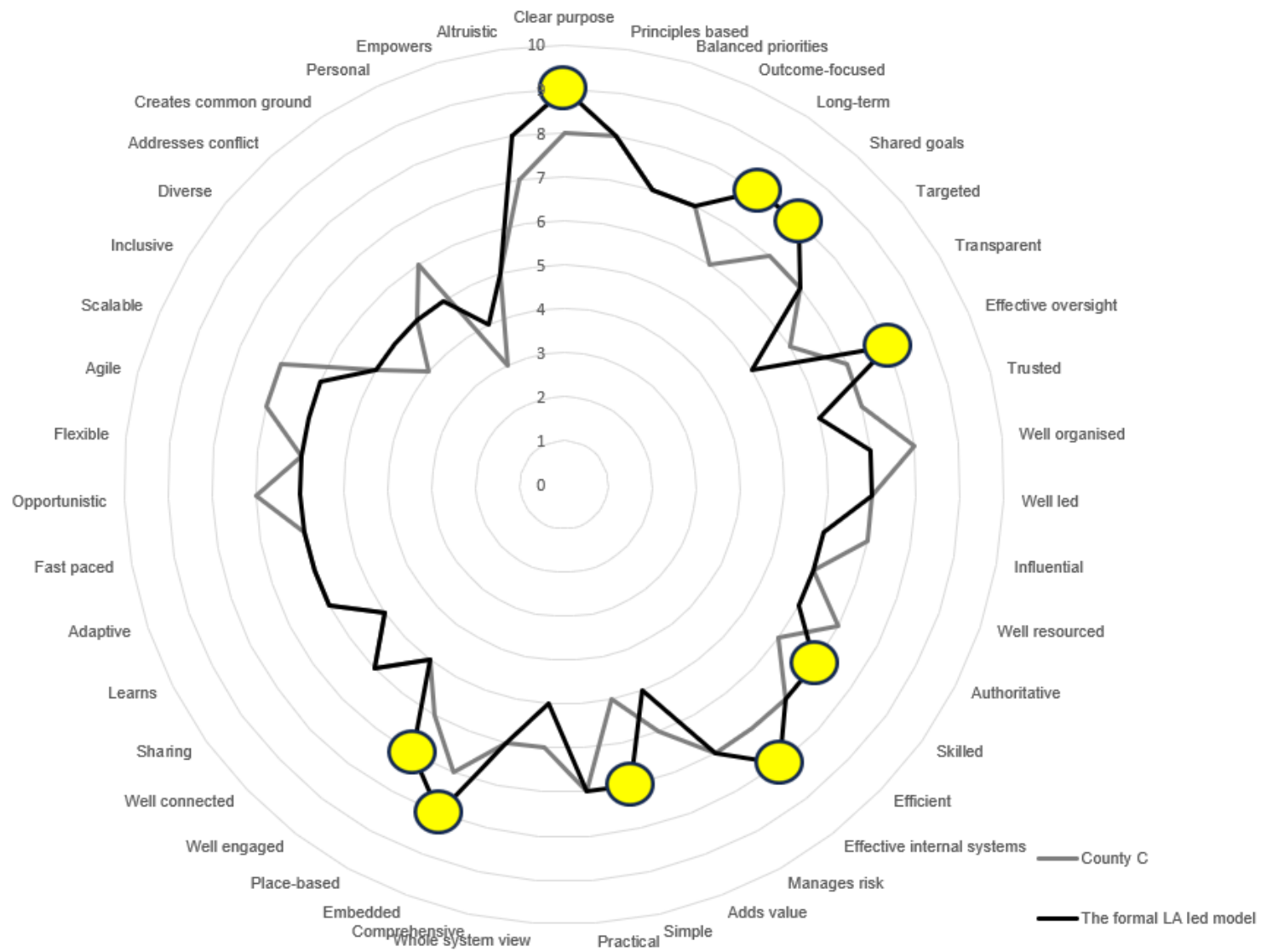


Figure 41. Radar plots comparing County Area C versus the Formal LA model with the yellow dots highlighting where the Model outperforms

Many of these characteristics are likely to be more strongly demonstrated when arrangements between the local authorities in an area are established by statute. The rationale for joint working through a '*shared services*' provision established under the Local Government Act 1972 has often been financial, although the parties entering into an agreement may also be seeking to improve service delivery and internal effectiveness (Sandford, 2019). This type of arrangement is more common in England than the devolved administrations of Scotland, Wales and Northern Ireland with 626 shared service arrangements recorded in 2018 (Local Government Association, 2023). Although the Local Government Association observed variable evidence that sharing services in public administration delivers improvement (LGA, 2016a), it could be argued that strong, long-term council-to-council arrangements in a locality are likely to be a pre-requisite to achieving effective net zero decision-making and delivery arrangements in a locality. Relevant success factors identified by the LGA included a locally tailored approach, engagement between councillors and staff from participating councils within the sharing arrangement, as well as having '*...comfort with ambiguity, multiple relationships and flexibility in structure, skills and behaviours,*' which helps to develop '*partnering*' rather than '*partnership*' (LGA, 2016b, p4).

Beyond fostering the council-to-council relationship, a locality could benefit from observing the characteristics of *flexibility*, *diversity* and *creating common ground* shown by the *Integrated Care Systems* and *Community-led* models which bring values that foster truly *altruistic, locally-centred* and delivered solutions. These may help to engage directly with the individual citizen as a key actor with the vision of '*putting local power in the hands of local people*' (Low Carbon Hub, 2023). Both the *Integrated Care Systems* and *Community-led* models reveal strong characteristics that would help connect and anchor the *Informal Local Authority-led* approach observed in the three County areas to local stakeholders, whether institutional, communal or the individual citizen. This would not only help to legitimise the governance structure but potentially unlock untapped skills and capacity.

9.3.4 Assessing maturity

Maturity matrices are a common organisational performance assessment tool in the public sector allowing institutions to assess and benchmark their position when considering a matter of concern whether to them or their stakeholders (Good Governance Institute, 2022; NHS Employers, 2023). Maturity matrices can be used either as '*a framework for reflective self-assessment, or as part of an independent review of governance*' (Good Governance Institute, 2017, p.1). Of note is the inclusion of benchmarking and positioning as part of organisational

transformation and ongoing '*value for money*' analyses (HM Government, 2019; Infrastructure and Projects Authority, 2020).

To date, little emphasis has been placed on councils to assess the fitness of area-wide governance as part of their Climate Emergency or net zero planning with little published academic research or public policy guidance. To illustrate this, although a key word search of academic literature identified four hundred and forty-two publications across all disciplines (EBSCO search TI "Maturity matrix" AND TI maturity matri* OR TI maturity grid* run on 03 September 2023), there was an absence of research literature considering the climate-related disciplines in public authorities.

Informal, local authority-led climate change or net zero partnerships are typically an early stage to catalysing nascent support and creating a vehicle for coordinated action (Sustainability West Midlands, 2022). Yet, informal partnerships are likely to face challenges when the participants start to build on initial progress due to them not having robustly considered the principles of good governance. This may be exacerbated by the barriers previously highlighted in the thesis including budgetary pressure in public administrations and the perceived political and reputational risk arising from devolving responsibility for delivery to others. There is also the challenge of achieving appropriate representation and participation of other sectors of society using processes that are fair and open. These factors could lead to some societal sectors being under-represented or missed completely which could ferment a lack of trust in the governance arrangements amongst some stakeholders who may perceive themselves as being excluded.

The Sustainability West Midlands study (Sustainability West Midlands, 2022) undertook the first stage of identifying and outlining the types of local authority climate change partnerships that are emerging in the East of England. The models and assessment process developed in this thesis build on this by providing a way of assessing the maturity of a local area's existing governance. This requires both a means of assessing whether the principles set out in the criteria assessment are part of '*good*' governance arrangements with reference to the features of the eight models, and relationships between participants in the governance arrangement that are appropriately robust and enduring. How far these partnerships are on the journey to becoming fully functional, cross-societal forces for net zero delivery at local level is a key factor in how successful localities will be in achieving their Climate Emergency commitments.

Vayaliparampil et al. (2021) outlines a method based on behavioural self-organisational theory for assessing the maturity of the relationship within institutional partnerships, which they term

the *Co-operative Capacity Framework* (Table 41). Their maturity method complements the models and assessment method set out in this thesis. They could therefore be used together either where a local area is seeking to develop new or looking to strengthen existing net zero governance arrangements.

Table 41. Summary of differences between the five co-operative capacity states (Extracted from Vayaliparampil et al., 2021, p.11)

Fragmented	* Top-Down	Inclusive	Aligned	Integrated
<i>No clear vision</i> or mission with weak leadership	A dominant partner holds vision, mission, and strategy	All partners are invested in vision, mission, and strategy	All partners are invested in vision, mission, strategy, and their own workplans	All partners are invested in vision, mission, strategy, and share workplans
<i>Ad hoc ways of working</i> together according to self-interests and practices of each partner	Partners follow dominant partner's directives, typically without opportunity to give feedback	All partners work in a haphazard fashion toward achieving vision, mission, and strategy, and share feedback	Higher-level goals are delegated to areas of responsibility. Each area performs well but coordination among areas is difficult	Processes are in place to automatically share resources across the partnership to maximize performance
Only <i>ad hoc</i> or <i>individual accountability</i> to one or more individual leaders or stakeholders	A dominant partner holds partners accountable for outputs	All partners begin to hold each other accountable for outputs and some outcomes	Each area of responsibility is accountable for achieving their own outcome metrics	All partners hold each other accountable for optimizing the partnership's outcomes and impact

9.3.5 Comparing the method

Comparison by the researcher between assessment principles developed by the Leicestershire CAN project and this research are shown in Table 42. The researcher considered that the relationship between the two was strong although there were key areas of divergence. The weakest relationship was between the Leicestershire CAN project principle of *funding* and any of the principles identified in this research. This can be attributed to interpretation, since the issue of funding is not treated as a principle of good governance in this thesis. It could be argued that *funding* is not a characteristic but a function of how well the adopted governance framework is demonstrating its value such that it becomes a fundable or investable proposition. The best fit was within the characteristics of *well-resourced* under the principle of *capable* and several of the characteristics under *strategic*. Moderately strong relationships were observed: between the Leicestershire CAN principle of *communications and Information* and the researcher's principles of *enabling* and *joined-up*; between *clarity on key stakeholders* and *credible*; and between *resource and capacity* and *competent* with the focus of the Leicestershire CAN principle on helping to address resource constraints and ensure skills and knowledge are shared across agencies.

The Leicestershire CAN project selected only four of the eight governance models for further consideration: *Integrated Care Systems*, *Informal Local Authority-led*, *Formal Local Authority-Led* and *Community-led*. At the time of the engagement between the Leicestershire CAN project and this research in 2023, climate change governance structures were nascent in Leicestershire. Leicester City Council, for example, established an informal climate emergency partnership after launching its Climate Emergency Strategy in 2020. Having launched its county-wide strategy in 2023, Leicestershire County Council recognised the need for a cross-sectoral partnership. Feedback provided to the Leicestershire CAN Project highlighted that for such a partnership to be successful it would need to include both tiers of local government with representation from them and stakeholders drawn from across society. At the time of writing, this is emerging although taking those first steps has shown that there is cross-sector willingness to act with flexibility and agility to enable local action.

Table 42. Comparison of governance principles between the thesis research and the Leicestershire CAN project

Leicestershire CAN	<i>Accountability and Ownership</i> The framework should: be transparent and clearly define who has the authority to make decisions and ownership of specific issues and responsibilities.	<i>Communications and Information</i> The framework should: enable the sharing of best practice, help raise public awareness and knowledge whilst also making it easier for different levels and agencies of the place to communicate.	<i>Clarity on key stakeholders</i> The framework should: identify key stakeholders, define their involvement and bridge the gap between public and private stakeholders, for example Local Authorities and energy system network operators.	<i>Funding</i> The framework should: help navigate available funding and secure funding required.	<i>Resource and Capacity</i> The framework should: help address resource constraints and ensure skills and knowledge are shared across agencies.	<i>Coordination and collaboration</i> The framework should: encourage and facilitate joined up working between key stakeholders to help co-develop solutions and avoid duplication.	<i>Engagement with neighbourhoods and communities</i> The framework should: harness the power of communities through engagement and ensuring clear links between county and neighbourhood level.
Best match with governance principles and characteristics developed in this research	<i>Accountable</i> Transparent and effective oversight. There is clarity on the roles and responsibilities being performed by institutions, with recourse for non-delivery.	<i>Dynamic</i> Adaptive, customisable, opportunistic. The sharing of expertise and resources is enabled through an adaptive and flexible approach.	<i>Credible</i> Well-led, connected and authoritative. Institutions are both trusted and perceived to be credible in delivering their respective roles and responsibilities.	<i>Strategic</i> Targeted, outcome focused, long-term.	<i>Competent</i> Efficient, practical, well managed. Institutions have the necessary skills and competencies to deliver their roles and responsibilities effectively.	<i>Joined-up</i> Well-engaged, coordinated, whole system view. There is effective coordination between institutions supported by robust engagement with stakeholder.	<i>Enabling</i> Inclusive, creates common ground, personal.
Comparison	Strong match	Moderate match	Moderate match	Weaker match	Moderate match	Strong match	Strong match

9.4 *Mitigating the limitations of the tool*

The results presented in this chapter are based on the researcher's application of the governance assessment tool which will be subjective and may be subject to bias. The results should, therefore, be treated as illustrative and open to challenge. The research has, in mitigation, endeavoured to apply experiential insight and a reflective approach in both the design and application of the assessment tool.

Use of the tool by others under different circumstances are likely to change the results. Further mitigation of bias could be achieved by applying two discrete controls. The first proposed control deals with potential bias introduced by participating individuals caused either through their lack of expertise in the subject or the dominance of one individual's opinion over that of another. The Delphi research technique discussed in chapter 6 is one way of quickly establishing solutions to complex problems (Dalkey & Helmer, 1963; Hasson, Keeney and McKenna, 2000). This approach has been recognised as an effective way of suppressing bias and herd thinking (Gronseth, Getchius and Hagen 2012).

A second mitigation, which recognises that the characteristics of the local area are important, could be applied using the process shown in Figure 42. This incorporates both local definition and stakeholder identification at the commencement stage followed by a weighting assessment undertaken by the stakeholders participating in the governance design process. In this way, future applications of the tool, whether in research or real-world governance development, could therefore be applied with more confidence that the results reflect the conditions being evaluated.

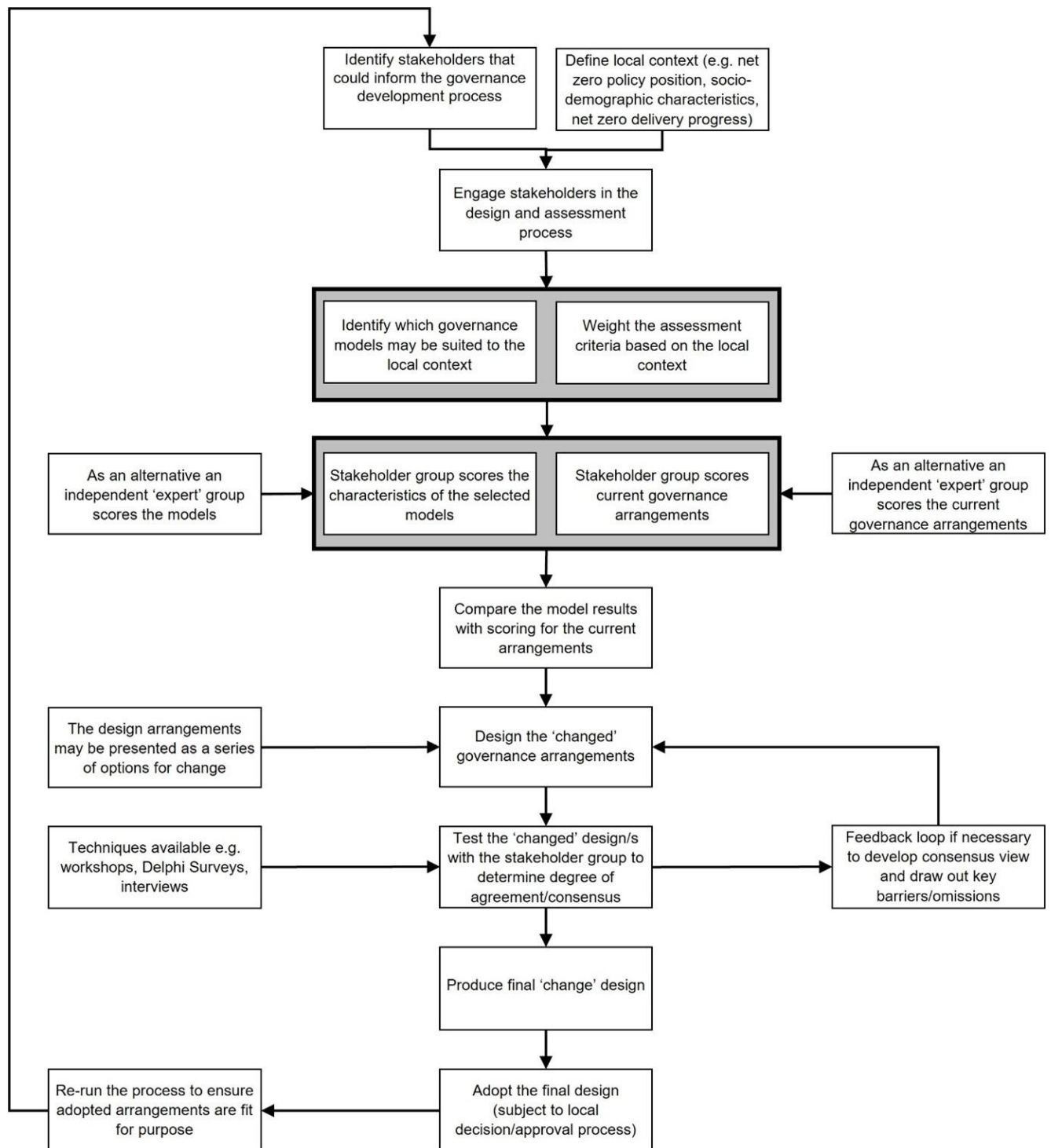


Figure 42. Process flow for improving local net zero governance

Note: Grey boxes denote grouped activities using the tools developing in this research

Chapter 10: General discussion and conclusions

10.1 Contributing to the gaps between theory and practice

This thesis fills gaps observed in research, public policy and practice by focusing on the dilemma faced by English local authorities, and more widely across the UK, as they try to meet their Climate Emergency commitments. It responds to the call to pay more attention to smaller local authorities who are under-represented in the research literature (Kuzemko and Britton, 2020). It provides a governance framework identified as lacking in public policy research (CCC, 2021; Borrowman et al., 2020). Finally, it presents a suite of tools to help local authorities improve decision-making and governance arrangements whilst recognising their constrained resources (NAO, 2021).

By observing practice across the study area, this thesis shows that governance development follows paths typically applied to other public policy challenges; public authorities applying top-down, centrist, techno-bureaucratic arrangements based on limited active engagement with other sectors of society. Meanwhile, central government appears to treat Climate Emergency governance as an addendum to current devolution negotiations. If the UK is to meet its legal obligations under the Climate Act 2008, climate governance needs to stand above these devolution deals with a consistent policy and delivery framework. Furthermore, both national and local developmental approaches seem to ignore calls within governance theory literature for more poly-centric, multi-actor models (Broto, 2019; Russell & Christie, 2021). This thesis offers ways to address the divide between theory and practice.

The outcomes that this thesis could achieve by helping smaller local authorities respond to the Climate Emergency should not be underestimated. The observation in the research literature still stands that focus of net zero governance research and policy development is confined to larger urban authorities, despite shifts in public policy research (Adger & Jordan, 2009). The evidence presented here highlights the differential pressure that is faced by district and county councils compared to cities in the UK. By applying the framework and tools developed in this research, the opportunity exists to close the differential by creating better governance arrangements which could in turn, unlock local capacity and accelerate delivery.

10.2 The climate emergency challenge as a ‘wicked problem’

The issue that this thesis tries to address is a clear example of a wicked problem described in chapter 3. How can public authorities in the UK respond to their own local political commitments to tackle climate change and within that net zero as a policy and delivery focus, when each lacks a coherent mandate, the institutional capacity and capability, and a funding landscape that has been constrained for nearly two decades?

Such a wicked problem as the Climate Emergency is by its nature '*complex, unpredictable, open ended, or intractable*' (Head & Alford, 2015, p.711). It lacks definition, the problem-solving process is complex and the factors that define the solutions are highly dynamic (Roberts, 2000). Addressing Climate Emergency has until recently been perceived and treated by policy makers and institutions alike as niche and *environmental* at their heart. Yet, the issues, solutions and how those solutions can be delivered occupy complex socio-economic dimensions based on scientific uncertainty. A predominantly technical-economic approach is not valid. Nor is a conventional public administrative top-down governance model.

A further dimension to the Climate Emergency is the apparent '*slowness*' of the impacts that are manifested. Emergencies engender a sense of urgency (Delina & Diesendorf, 2013). However, the local impacts of climate change in the UK demonstrate more varied and subtle characteristics, with '*forms of harm and damage that are not punctual and acute but rather occur gradually and out of sight*' (Anderson et al., 2020, p.630). The absence of harm or damage at this scale or impact as a direct consequence of climate change can lead some to question the motivations of politicians who have committed their organisations to act urgently. Public concern and frustration with policy makers and politicians advocating investment in climate mitigation is elevated when the state of public finances lead to other services being cut. The practicing professionals drawn from public administration who were interviewed for this research expressed wider concerns that politicians either may not appreciate the consequences of their council's Climate Emergency declaration or could retrench under external negative pressure.

Viewing Climate Emergency declarations as merely drivers of the planning and delivery process of a public institution would be to undersell their value. Some academics consider them '*tools for governance*' (Asayama et al. 2019) with wider impact on local areas led by '*under-resourced, overburdened local authorities*' (Howarth et al., 2021, p.27). Coupling this wider dimension with the complexity of tackling climate change leads to the need for new governance and decision-making architecture bringing together State and non-State actors with diverse perspectives and values.

Roberts (2000, p.14) talks of the expectation to see urgent action where '*stakeholders, especially under crisis conditions, can be impatient and want to get on with things*' so that normality can return. However, responding to a Climate Emergency requires wider society to adopt solutions that do not currently sit within the current norms. For institutions like councils faced by such a '*wicked*' problem there can be real benefit from, as Roberts describes, '*learning together, not learning as independent entities.*' (ibid., p.14), and acknowledging that working unilaterally is likely to exacerbate the problem. The material presented in this thesis

draws upon academic and policy-based research alongside the experiences of those tackling the day-to-day delivery challenges which responds to this call.

10.3 Overcoming the barriers

This thesis highlights the current nature and scale of the shortcomings within local public administration traced to multiple factors (chapter 5). The research systematically analyses the barriers. Of note, the evidence that is presented consistently reveals the lack of cohesion of the UK Government policy response towards supporting local authorities despite the acknowledgement of their importance in delivering the national commitment to net zero (Webb, 2019; Committee on Climate Change, 2020; Beechener et al., 2021; Skidmore, 2022). Successive UK governments have chosen not to mandate the role of English public authorities in support of the national climate obligations despite calls from across the academic and grey literature (Borrowman, Singh and Bulleid, 2020; Committee on Climate Change, 2020; Regen/Scottish and Southern Electricity Networks, 2020; Russell and Christie, 2021; Skidmore, 2022). Participants in this research argue for regulatory powers to deliver on climate commitments. In the absence of defined powers and institutional arrangements, there has been no alternative but for local politicians and officers to adopt their own policy and delivery pathways (Cowell & Webb, 2019).

Local authorities are also finding it difficult to establish their place in a liberalised energy system where actors, both incumbent and new, must operate according to State-level policies and regulations designed under very different operating conditions. Although change is starting to happen, this has resulted in an energy system where policy makers and regulators in the UK '*actively maintaining lock-in to the dominant sociotechnical pathway, leaving little room for agency beyond techno-economic fixes and supply-side solutions*' (Bolton and Foxon, 2013, p.2207). A view expressed by council staff as part of this research was that they expect, and in certain cases, wish to embrace new roles in the design or function of the energy system despite the lack of clarity that predominates. Should local authorities stay within the traditionally functional public authority tramlines where their activities are defined by national statute? Should they be niche-level place-shapers with delivery left to other societal actors? Or is their role to define, deliver and enable their communities to take part through new relationships between State and non-State? This ambiguity creates opportunities for local authorities to redefine their response to address the energy transition, climate change and wider sustainability, offering them '*a chance for some local authorities to challenge the dominant regime and to become more active players in energy governance*' (Fudge et al., 2016, p.15). This requires a change in councillor and senior officer mindset to move beyond the conventional public service provision model towards more entrepreneurial, engaged and collaborative arrangements with other actors both in the energy system and wider society.

The findings of the attitudes survey presented in chapter 5 reinforces and updates the extensive body of research and policy literature. The focus on smaller local authorities specifically fills a gap in the literature (Kuzemko and Britton, 2020). Furthermore, some researchers highlight the need for more exchange between academic research and public sector practice with a focus on tools related to '*gaining management and political support*' (Ruijter et al., 2023, p.893). The tool presented in chapter 6 takes this approach to address barriers and solutions using the expertise of practitioners and robust research applied to improving local authority delivery.

10.4 Providing a framework for local net zero delivery

The evidence presented in this thesis shows that local net zero governance structures are emerging but with variable consideration to the principles of good governance (IFAC-CIPFA, 2014, p.8). The governance framework set out in chapter 7 establishes a clear relationship and set of mechanisms to enable councils and their local stakeholders to work together with national government to tackle net zero, using the Climate Emergency declaration as a key driver for action. The framework adds depth and functionality to contemporaneous published research literature whose recommendations are more generic and may be less relevant to councils outside the metropolitan areas in the UK, on which their analysis is principally based.

The framework responds to calls in the research literature and from local authority staff to strengthen and formalise the relationship across the tiers of public administration in England, and between different actors at a scale that is meaningful to councils and communities alike. It focuses on the goal of net zero by connecting national and local commitments, whilst actively encouraging local flexibilities in a way that could unlock unrealised capacity and capability. It should also be able to cope with the '*turbulence*' inherent in complex systems, something which conventional models of public administrative-led governance systems have been weak, given the institutional desire to return to the status quo after system shocks (Ansell et al., 2021).

The evaluation presented in section 9.3.3 suggests that the most mature of the three county-wide climate partnerships, County C, demonstrates clarity of purpose with a good balance of priorities, is well-organised and led, and that it can claim to be authoritative, skilled with effective internal systems of operation. It shows relative weaknesses in the areas of adding value, being place-based, capable of sharing and demonstrating inclusivity. As examples of governance structures that may be replicated across England, all three county partnerships show public administration acting as agenda leaders although, as den Exter et al. (2015) observe from their analysis of twenty-five Dutch municipalities, that leadership varies

significantly. As previously discussed, this may be a reflection of local conditions as well as the need for trust to build up over time.

One of the features that is little observed compared to examples in the academic literature is a lack of externalisation of functions or creation of sub-regional co-operative structures with non-public organisations (ibid., 2015; Lee & Painter, 2015). It could be argued that, contrary to the conclusion drawn by Ruiz-Campillo et al. that '*emergency declarations mediate forms of performative power that influence climate governance at the local level*' (ibid., 2021, p.19), non-metropolitan administrative areas struggle to unlock the full potential of their areas or develop the supportive decentralised governance structures witnessed in the literature. Rather, the evidence presented in chapter 9 could, if representative of non-metropolitan English areas, lead to the conclusion that a patchwork of emergent forms of multi-level governance prevails, that may even be described as '*proto-governance*', dominated by the public sector in a manner similar to that noted by Fudge et al. (2016) in respect of energy governance.

Although local conditions are highly likely to shape the structures that emerge in the absence of a nationally mandated blueprint, this thesis argues that each governance-making process should be based on a common set of principles and values. Furthermore, a comprehensive body of climate governance research has not been found during this thesis considering this area of study. The governance models put forward in chapter 8, along with the assessment tool set out in chapter 9, therefore, give those responsible a way to compare and improve existing or develop new net zero governance arrangements.

The research presented in the thesis makes no claims that the models demonstrate best practice, nor that there is a commonly adoptable solution. The assessment tool presented in chapter 9 has undergone limited testing during this research and will benefit from wider application in different geographies and public administrative arrangements from which a more robust data set can be developed to further inform the process of net zero governance development. Using these tools, local actors involved in these arrangements can decide what is right based on the prevailing circumstances and conditions. These will change spatially and temporally so no start nor end-state of governance can be defined. Achieving good governance should, therefore, be a constant source of review, reflection and improvement in response to the needs of the local area and national policy objectives with the core focus of the Climate Emergency at its heart.

Actors within geographies are having to explore what is best and suited to their local circumstances with no national blueprint for governance. New governance structures which try to accommodate both democratic institutions and wider society will appear messy,

compared to the traditional public administration models. However, they may be more productive with the potential to harness the energies, capacity and support of a wider proportion of society compared to the closed conversations, herd-thinking and conventional public sector practice that a single or set of councils working separate to society can create. The framework supports this multi-tier, multi-sectoral approach and goes further to identify how different parts of local society can act together with national government, both shaping and supporting local delivery.

10.5 Parallels with climate governance literature

The research presented in this thesis looks to address the gap in the climate governance literature recognised in chapter 4 which highlights a bias towards the city (Castan-Broto, 2020; den Exter et al. 2014; Eckersley, 2018; Lee and Painter, 2015; Vedeld et al., 2021). This research focuses on rural and semi-rural areas to the extent that Castan Broto's 2017 research may be of relevance in which a divide is drawn between resource-rich urban and resource-diminished rural places, *'akin to highlighting a difference between places where the priorities of climate change governance are to reduce emissions and those where the priority is to reduce structural vulnerabilities'* (ibid., p.2).

The evidence of regional climate change partnership structures across the East of England study area presented in Chapter 8 along with the results of the governance assessment presented in Chapter 9 suggests that mature multi-level and poly-centric structures are rare. Engagement by local authorities with other stakeholders is typically limited to public, academic and larger private sector institutions. Lee and Painter's conclusion may hold true that public authorities that engage in collaboration with the likes of environmental NGOs, business and local research communities are more likely to plan and implement a more comprehensive climate change policy. It may be that opportunities for open discourse and shared activity over time builds trust between the local authority partners and key stakeholders. The example of County C scoring higher than the other assessed county-wide partnerships (Section 9.3.3) is likely to be reflective of nearly two decades of shared working; *'effective multi-level arrangements depend on a fruitful combination of horizontal and vertical collaboration'* (Kern & Alber, 2008, p.179).

A key contribution of urban climate governance literature to this research is the breadth of examples and types of innovation that are witnessed and evaluated. Urban areas are considered by researchers to be endowed with highly innovative and creative capacities allowing them to emerge as leaders in climate governance interventions (Kern & Alber, 2008; Vedeld et al., 2021). The thesis research suggests that there is a way to go before non-metropolitan areas fully embrace the models that are available to them.

10.6 The emergence of local authorities as key players

Although local authorities have maintained a long and active role in addressing climate change it is only relatively recently that they have started to be mentioned in national policy pronouncements (Department for Levelling Up, Housing & Communities, 2022; Evans et al., 2022; Ofgem, 2023). Recent public policy research sees them as critical to delivering national net zero obligations with calls for an enhanced role '*as a key partner*' to national government (Skidmore, 2022, p.12). However, the thesis findings highlight the asymmetric balance that continues to exist between national and local government, and between councils which are well resourced and those that are not.

The evidence presented in this thesis shows that smaller English councils are caught in a double bind due in part to this asymmetry. They neither have the resources to fund net zero-related activity nor the pre-requisites of capacity or capability. Furthermore, there may be a lack of long-term senior executive and political support to compete for central government funding. The result is that local councils may be forced to employ '*quick fixes*,' for example by bringing forward inappropriate or poorly aligned proposals for current central government competitive funding or miss out altogether (Wade, Webb and Creamer, 2022).

The hypothesis that increased involvement of local government in the net zero, or by association the energy system transition is leading to a coherent, comprehensive and sustained programme of delivery at local level, operating within a robust governance national-local framework of governance, is not supported by the research evidence presented in this thesis. As Wade, Webb and Creamer conclude '*the capacity of local authorities to engage with this type of institutional innovation can be over-estimated in the context of energy transitions*' (ibid., 2022, p.3). Poupeau calls this the '*streetlamp effect*' (2014, p. 165) that, by focussing on specific components of the problem, researchers, policy makers and politicians miss what is happening all around.

Despite the asymmetry, practitioners interviewed for the thesis expressed a clear desire and ambition for their organisation to become '*system players*'. Poupeau's research into the role of local government in the French energy transition creates an interesting parallel to the UK. In both countries, local authorities are taking a more prominent place in the energy transition process, becoming significant local players and partners with central government (Poupeau, 2014). This can be seen in England in various forms, for example in the metro-mayor authority areas who are negotiating the Trailblazer devolution deals, and through the rise of local decarbonisation planning.

10.7 The impact of English devolution

The debate over centralisation versus decentralisation continues to play out both across the domains of academic research and policy making (Steiner et al, 2018; Department for Levelling Up, Housing and Communities, 2022). A tenet of this thesis is that devolving more responsibility and resources for net zero delivery from central government to local authorities, whether through legislation or adopting common practice, is fundamental to achieving the UK's climate commitments. From an efficiency perspective, decentralised public service provision is considered valid to achieve '*allocative efficiency*' whereas '*centralization enhances cost-efficiency because it avoids duplication and "reinvention of the wheel"*' and '*economies of scale*' (Steiner et al., 2018 p.395). The democratic argument for decentralisation is that local government is '*closer to the people than a distant central government*' (ibid., p.396), creating opportunities for wider stakeholder engagement and opportunities to collaborate, although some contend that national government holds higher levels of democratic legitimacy given higher turnout rates in elections (de Vries, 2000).

Net zero is being introduced into pre-existing devolution arrangements as they undergo a refresh (Sandford, 2023). However, the same issue of '*asymmetry*' referred to previously is appearing, in this case in the devolution arrangements and the pace of roll-out of devolved powers and responsibilities in England (Torrance, 2024). In the Government statement for the current devolution round, local government is referred to as having '*an essential role in meeting national net zero ambitions*' with no reference to local commitments ahead of 2050 (Department for Levelling Up, Housing and Communities, 2022, p.23). Yet, only the trailblazer agreements of the West Midlands and Greater Manchester address net zero governance directly, while county deals under negotiation in Norfolk and Suffolk, for example, are on hold with no clear prospect of net zero being part of the settlement.

The devolution process cannot be the single solution to the conundrum of local net zero governance in England given its limited geographical coverage, focus on larger public administrations and the pace at which it takes to negotiate the deals. Furthermore, central government shows no desire to define or advocate a model of local governance using this mechanism. In the absence of a mandate, whether through specific net zero legislation or devolution, multi-tier local public administrative areas will continue to struggle to develop their own approach to governance. The positive attributes identified within the models presented in chapter 8 could provide inspiration to encourage progress beyond the informal local authority governance model. This could help councils to overcome constrained resources and find fresh solutions working more closely with wider society. The governance assessment tool outlined in chapter 9 could act as a stimulus to push existing arrangements forward as part of a maturity pathway in the absence of a formal devolution deal.

10.8 Improving public decision-making

Councils are expected to make decisions to address complex issues in very dynamic environments based on sub-optimal information whilst ensuring that they adhere to the principle of democratic accountability. This can lead to the decision process becoming overloaded by the combined complexity of the *wicked problem* under consideration, a lack of coherent evidence and the decision-making bureaucracy that prevails in public administration compared to other sectors (Simon in Schwarz et al., 2022; Permana and Wening, 2024).

The insights of practitioners captured in this research (chapter 5) supports the literature which consider that smaller councils generally struggle when making decisions in support of their Climate Emergency commitments compared to their larger counterparts (Kuzemko and Britton, 2020). This has been exacerbated by over two decades of budgetary austerity (Davis, 2021; Hoddinott, Fright and Pope, 2022; Ferry and Ahrens, 2017; Tingey and Webb, 2018; NAO, 2020) leaving a funding landscape described as '*disjointed, unfair, and expensive for local authorities to navigate*' (Skidmore, 2002, p.12). Given the scale, complexity and timescale of the challenge, all components of the internal decision-making environment will need to operate dynamically while councils will need to find new pools of resources and delivery mechanisms.

The thesis research highlights the complexity and inertia that is sometimes exhibited within the public authority decision-making process. Yet, council staff who contributed to this research expressed almost unanimous endorsement of the value of public administrative decision-making processes in their institutions and with the appropriate levels of personal and professional agency they are prepared to make change happen. They have an appetite to develop novel approaches to decision-making to facilitate more effective solutions. Opportunities were identified across a range of factors shaping how decisions are made: innovations in council policy, practice, financing and collaboration; establishing investment policies and strategies which make it easier to take individual investment decisions; developing high levels of trust between internal project development teams and those that have an influencing or decision-taking role; increasing collaboration between councils through sharing technical resource to increase local capacity and technical understanding, and having access to development finance so that early stage project development can advance more quickly in a dynamic market environment. The benefit highlighted by interviewees of wider participation of external stakeholders during the early stages of the decision-making process, extending to specialist expertise and the public, reflects evidence presented to government (Hansard, 2018). These solutions could be applied to improve constitutional and democratic

processes using the examples of good practice highlighted both in this research and the wider literature.

The thesis research shows that such decisions are, in varying degrees, influenced by the inherent biases of decision-takers based on their first-hand experiences and, in the case of local politicians, how they reflect and respond to their constituents and party affiliations. Institutional mindsets, processes and structures along with the capability, competence and confidence of those involved in important decisions may need to undergo radical change to be able to meet the Climate Emergency challenge. Acknowledging these factors within the decision-making process is a hard but necessary truth. Policy makers and delivery planners will need all the tools available to them. In chapter 6, this thesis offers a low-cost, evidence-based tool to help local authorities assess the barriers and solutions to some of their challenges to improve the decisions that they take.

Current climate and carbon literacy training, whether for staff or councillors, is inadequate for the complexity of the decisions that need to be taken. Although discrete initiatives are offered by a range of commercial and not-for-profit organisations in England like the Local Government Association, UK100, the Association of Public Service Excellence, the Net Zero Hubs and Net Zero Leaders Forum, uptake is discretionary with cost a barrier to access (Local Government Chronicle, 2021). The Innovate UK Net Zero Living Programme is endeavouring to address such non-technical barriers although the thesis research challenges the rate, reach and effectiveness of knowledge dissemination across the public sector. A coherent programme of training and skills development is, therefore, needed which engages all local authority staff and politicians involved in the public decision-making process. Although there is no national government appetite for mandatory schemes, the Local Net Zero Forum set up as a commitment in the UK Net Zero Strategy to support engagement between central and local government, could act more collectively with others acting as vehicles for training, skills development and knowledge sharing (HM Government, 2021).

A key risk this research identifies is that with the erosion of staff expertise and capacity leading to poorer quality and fewer proposals likely to be presented to decision-takers, councils may retrench from their Climate Emergency commitments. The research reveals short term employment contracts and the use of junior staff who may lack the knowledge, experience, agency or seniority to appreciate or challenge traditional decision-making practices. Council managers play a vital role by ensuring that relationships are built, systems and processes are followed, and robustly evidenced business cases are fed into an accountable decision-making environment (Bryson, Crosby, & Bloomberg, 2014, p.448). The responsibility therefore lies

with the service manager, sitting between the junior and senior management team, to drive the agenda.

10.9 Making decisions to invest in net zero

Councils have traditionally utilised their own capital reserves, grant funding whether through national or European programmes, prudential borrowing or '*equity debt*' to fund '*infrastructure-type*' activities. The principal source of equity debt to finance capital projects in the public sector is the Public Works Loan Board administered by the UK Debt Management Office (DMO) on behalf of HM Treasury. UK Government introduced other routes to specifically finance climate change projects, initially through the Green Investment Bank (now the National Wealth Fund) which it sold to the private sector in 2017 (BEIS, 2017). In 2021, the UK Infrastructure Bank was launched by HM Treasury to provide funding for clean energy infrastructure (HM Treasury, 2023).

Some councils took the opportunity offered by the *Feed-In-Tariff* and the *Renewable Obligation* schemes during the 2010s to invest in technologies like solar photovoltaics. Examples include Warrington, West Suffolk Council, and West Sussex councils which have utilised a blended investment approach of capital reserves, borrowing and tariff-based income to build their own renewable energy portfolios. For others who were unable or chose not to take advantage of such financial stimuli, inadequate levels of net zero investment continue (Evans, 2020; Borrowman et al., 2020; Regen/Scottish & Southern Electricity Networks, 2020). The Committee on Climate Change concludes that a more market-focused model is needed (Evans, 2020). Bristol City Council, public-private partnership with Vattenfall-Ameresco is one potential long-term solution to area-wide decarbonisation (Bristol City Leap Energy Partnership, 2022).

These councils provide exemplars to others to show the value of '*a change in mindset away from grant funding towards returns-based investment and innovation in financial structures*' (Beechener et al., 2021). This will require a change in the way that council policies and decision-making processes currently operate to accommodate initiatives that cut across portfolios and involve local and national stakeholders, some of which will not have engaged or worked together at the scale that is needed. Guidance from the Local Government Association reflects this need for change, stating that '*for councils to decarbonise, it is vital that consideration of carbon impact forms part of every decision the council makes*' (LGA, 2021, para. 3.2.1.4). Decision-making tools such as the Cornwall Development and Decision Wheel discussed in chapter 3 can help councils make better, more holistically based decisions. There is a clear opportunity to align these with the tools set out in this thesis to form part of a

governance and decision-making toolkit for improving the functioning and quality of council activity towards a more sustainable model.

10.10 Establishing collaborative working

The thesis research found no uniformity or consistency of collaborative council working across the study area. In some localities, mature relationships are underpinned by formal quasi-legal commitments to work together. In others, however, relationships are emergent or even absent. The fact that there are governance structures demonstrating positive characteristics shown by the models developed in this study, despite prolonged budgetary pressure, political differences and the absence of a mandate, suggests that other contextual drivers are at play (Kuzemko and Britton, 2020). Amongst these are a shift towards devolution as previously discussed, the ambition of local administrations to tackle climate change, the move towards decentralised energy systems and recognition that this entails a new relationship between councils and other stakeholder institutions.

Some of the models described in chapter 8 exhibit multi-agency relationships between and beyond the public sector as a strength. Partnerships can be seen as a natural and imperative response by local government to prolonged financial austerity in *'an increasingly fragmented organizational landscape'* (Lowndes and Skelcher, 1998, p.315). These provide opportunities for strong governance collaborations across local geographies where multiple tiers of public administration prevail (Steiner et al., 2018). The benefits of collaboration have been proven elsewhere where *'public sector entities can reduce waste of assets, avoid unnecessary information gathering, and improve service delivery'* (IFAC-CIPFA, 2014; p.17). Better collaboration between public administrative bodies is needed to address the *'complex challenges that extend across municipal boundaries'* where *'service delivery in cooperation with other municipalities, in networks, or even by higher echelons of the state may be more appropriate, as long as the principle of subsidiarity is respected'* (Steiner et al., 2018: p.406).

Osborne & Gaebler (1992) recognised that all three main institutional sectors of society bring positive values to collaborative working: public administration is strong at policy making and regulation, the private sector is better at complex technical tasks or adapting to change, while Non-Governmental Organisations perform better at direct citizen-facing tasks. This affords each *'a legitimate role ... to play in our public and commercial lives'* (ibid., p.45-6). The *Integrated Care System* and *Community-led* models developed in chapter 8 reflect this and pull upon different ideological, institutional, cultural and geographical dimensions. The Dutch experience, for example, demonstrates that local programmes are likely to have more success when they have *'a particularly supportive governance arrangement'* (Warbroek et al., 2019, p.10). Furthermore, a breadth of sectoral actors working in collaboration bring *'diverse*

experiences, skill sets, competences, and ideas that are needed to stimulate learning processes and out-of-the-box thinking' (Torfing, 2019, p.8). However, despite recognising these advantages, there was weak evidence found during the research that smaller local authorities were willing or able to enter such arrangements.

Despite recognising these advantages, there was weak evidence found which shows that smaller local authorities were willing or able to enter such arrangements. The opportunity exists for non-metropolitan administrations to learn from the experimentation in urban climate governance covered extensively in the literature. For example, the work of Vedeld et al. (2021) exploring polycentric governance in Oslo identify three key instruments that need to interplay for effective governance and climate collaboration to develop; *'broad and long-term political support facilitates the adoption of ambitious climate goals, utilization of regulatory powers, and the design and operations of innovative hybrid mixes of integrative and interactive governing instruments'* (ibid., p.347). The researchers argue that, if working in combination, the three key *'instruments'* provide a strong base for both the development of strong governance arrangements and also the co-creation of linkages *'among public and private 'units' within the wider urban climate governance ecosystem*.

Eckersley's comparative analysis of Newcastle and Gelsenkirchen reveals how the former is having to work more interdependently with local actors since it receives fewer resources, both in terms of financial budget and direction on climate and energy policy, from national government. Taking this point further, it may be argued that Newcastle and other city and unitary authorities in England are less dependent on other public administrations in their geography based on their functional autonomy. However, this makes them more dependent on others in their city following the *'horizontal dimension'* of governance (Eckersley, 2018, p.152). They cannot rely on central government for resources and are gaining more local responsibility under devolution hence they become more dependent on actors around them.

In their review of networked climate governance, Tosun and Schoenefeld (2017) highlight a way to unlock latent local resource and build consensus for action using citizen grass roots participation. This may be of tangible value to non-metropolitan areas. Although this thesis is centred on the role of the local authority, the evidence presented during the analysis of Climate Emergency declarations (Chapter 7), the analysis of governance structures across the East of England study area (Chapter 8) and the evaluation of the three county climate partnerships (Chapter 9) all suggest that citizen participation is proportionately weaker and less coherent in non-urban areas. The models and the assessment tool presented in Chapters 8 and 9, therefore, have the potential to provide local authorities in multi-tier administrative areas, in particular, evidence to create deeper multi-sector collaborations to accelerate net zero delivery.

10.11 Concluding remarks

The challenge posed by this research was to help public administration in England and more broadly across the UK, in particular smaller local authorities, to develop coherent governance arrangements to '*operationalise*' their Climate Emergency declarations. The research demonstrates that there is a clear need for coherent and collaborative planning, investment and delivery mechanisms set within appropriate place-centred governance frameworks, which can operate dynamically to deliver net zero (Beechener et al., 2021). This will require enhanced working arrangements within and between the tiers of public administration as well as between State and non-State actors.

Since commencing this thesis, the research gap has been closing. For example, there has been a shift in UK Government funded research (UKRI, 2023). Inherent in many of the projects in the IUK programme outlined in chapter 8 are decision-making, governance, investment and delivery. Solutions to address these issues will vary from place to place and '*will need to take advantage of the different resources available across the country*' (Billington et al., 2020, p.6) to create local energy systems that achieve decarbonisation. The research presented in this thesis provides a complement to these programmes, emphasizing the need for local authorities and their areas to choose their own models and solutions suited to their circumstances while working within a coherent framework.

Local political climate ambitions are looking increasingly unachievable given the financial austerity faced by the public sector and wider society. The research shows the under-resourced nature of local authorities to deliver their Climate Emergency declarations and the consequential hard choices that must be made to allocate finite resources. The research period straddled the start of the COVID-19 pandemic, the conflict in Ukraine and disruption to global energy systems, the impacts of which continue to affect the UK economy. The resulting impact on local government finances has been immense and far reaching, affecting local tax raising and revenue generation and loss of grant aid (UK Parliament, 2020; Institute for Fiscal Studies, 2020; LGA, 2020). The current state of local government and its ability to manage competing calls to fund public services is an urgent matter of concern, with one in five English council chief executive officers surveyed by the Local Government Association considering it *very* or *fairly likely* that their council will need to issue a Section 114 notice⁹ (Local Government Association, 2024). However, the will of many local politicians and officers remains undimmed. Despite the current financial landscape council net zero activity continues to ramp up with

⁹ 'A section 114(3) report is issued by a council's statutory chief finance officer (section 151 officer) when it appears to them that the council's expenditure will exceed the resources it has available in a financial year. Following the issuing of the report all new agreements that incur expenditure are stopped for a period of up to 21 days in which time the full council must meet and respond to the report' (LGA, 2023)

recognition from central government that it needs local authorities to take a key role in local delivery. As Councillor Holland, Leader of Lambeth Council, summarised the position in evidence to the House of Commons Environmental Audit Committee in 2021:

‘...without local authorities delivering on the ground, the Government will not meet their own net zero targets.’ (House of Commons Environmental Audit Committee, 2021, p.5).

Bryson et al. (2017) describes the world as *‘polycentric, multi-nodal, multi-sector, multi-level, multi-actor, multi-logic, multi-media, multi-practice place characterized by complexity, dynamism, uncertainty and ambiguity in which a wide range of actors are engaged in public value creation and do so in shifting configurations’* (2017. p.641). Dealing with an issue as complex as climate change will require *‘changing governance systems to create enabling conditions for usual and unusual action strategies’* (Termeer et al., 2015; p.695).

In the absence of a local-authority specific duty to tackle climate change or well-designed and financed delivery models, local authorities will choose their own routes and finishing lines shaped by the complex ecosystem of organisational, societal, economic and environmental factors. Their heterogeneous administrative structures, lack of resources and diverse geographies make it harder for smaller local authorities to translate national policy, research and guidance to their own circumstances. The gap in support to local government to develop net zero governance arrangements is recognised in both the research and public funding programmes. Local authorities need practical and cost-effective tools that they can apply beyond generic advice that is currently offered.

The outcome of this research is a suite of practical ways to help local authorities as they try to deliver their Climate Emergency declarations. The framework, governance models and tools that are presented have been designed to account for the fact that every area is different. while the principles and values that make for good governance and decision-making are the same. The approaches presented here may also help to engage stakeholders, giving them confidence that their councils are committed to working collaboratively with them to address the Climate Emergency in a way that reflects their own circumstances.

APPENDICES

Appendix 1: Research Protocol with Ethics Committee approvals

Researcher: Peter Gudde

Supervisory Team: Nicholas Caldwell, Peter Cochrane, Nic Bury

Status log		
Name	Issue date	Summary of change
Peter Gudde	26.10.2021	Revised to reflect shift in research focus. Inclusion of reference to collaboration with third parties and resulting data sharing and management (Section 7)
Peter Gudde	02.08.2022	Change to Research title. Amendment to research questions (Section 3). Addition of test stage either using follow-up interviews and/or a panel format drawing upon the experience of Local Government (Section 4). Removal of specific reference to Delphi process (Section 4). Inclusion of interview structure template (Anne 2). Correction of the research period covered by the protocol to correct administrative error.
Peter Gudde	12.09.2022	Revision of arrangements to cover collaborations with external organisations (Section 7). Change of sub-title to reflect wider scope of the protocol. Removal of Annex 5 with key information incorporated into Section 4.

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4. Methodology and design
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Bibliography

Annexes

- Annex 1: Online survey e-mail (template)
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- Annex 4: Consent Form (template)
- Annex 5: Panel(s) template
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1. Introduction

This protocol sets out the research process that will be followed in order to answer the questions set out in Section 3. The way that it has been developed is both pragmatic and flexible given the highly dynamic nature of this research field and the wide range of interrelated aspects and impacts that it encompasses. The protocol acts, therefore, as a framework rather than a fixed methodology guiding the research process and is subject to regular review and revision during the term of the research programme.

2. Context

Local authorities (LAs) in the United Kingdom (UK) have had a role in climate mitigation and adaptation for over twenty-five years. In that time, many have employed public declarations as a tool for showing their intention to tackle climate change, from the Sustainable Development Local Agenda 21 commitments following the Rio Earth Summit in 1992, the Nottingham Declaration on Climate Change in the early 2000s and more recently the Local Government Association's Climate Local Commitment (LGA, 2020).

Over 75% of local authorities in the UK have now declared Climate Emergencies, choosing to make their own local commitment following Special Report SR15 (IPCC, 2018). Their commitments are responses to public pressure to act and the statutory obligations made by the UK Government and Devolved Administrations to reduce carbon emissions to net zero.

In securing the UK Government's Net zero ambition, local authorities are seen as key agents in their localities, described as '*a cornerstone of climate change partnerships across the country that link key delivery organisations to deliver Net Zero*' (Evans, 2020, p.4). Evidence shows that there has been variable progress since the UK Research and Innovation (UKRI) sponsored research was undertaken with some local authorities matching both ambition and commitment with investment (Webb, Tingey and Hawkey, 2017). More progress is evident in larger, metropolitan authorities which, although not explored in detail in this research, could be because of several factors; geographical size, scale of challenge, regional leadership, and mandated strategic delivery through the directly elected mayor model and delivery mechanisms backed up by significant resources. However, many of the smaller borough and district councils are struggling to meet their climate emergency commitments; barriers to investment, decision-making processes and engagement have been identified leading to a patchwork of delivery planning (Gudde et al, 2021).

Central government and the devolved administrations have not created a consistent overarching policy message nor delivery framework with UK Government and devolved administrations each declaring different net zero carbon targets. In the absence of a local-authority specific duty to tackle climate change along with well-designed and financed delivery models, local authorities will choose their own routes and finishing lines shaped by the complex ecosystem of organisational, societal, economic and environmental factors (Gudde et al, 2021b).

Both the Green Alliance (Borrowman, Singh and Bulleid, 2020) and the Committee on Climate Change (CCC) have called for a '*Net Zero Delivery Framework*' (Committee on Climate Change, 2020 p.8) in the absence of a statutory duty to do so. The CCC sets out some of the powers and duties available to local authorities; however, these are not enough '*due to gaps in key powers that prevent systems-scale or holistic approaches, policy and funding barriers, and a lack of capacity and skills*' (ibid, p.5). The CCC concludes that a new framework is needed which accommodates the diversity that exists across local government, allowing '*local flexibility to deliver an agreed national outcome*' (ibid, p.9).

The extent to which these declarations are successful is of profound importance to the success of national climate change and energy policy, given that the shift from fossil fuel-based energy use to low and zero carbon alternatives is the principal route to reducing greenhouse gas emissions in the UK.

There is evidence that an increasing number of local authorities are investing in local Renewable Energy (RE) technologies¹ as well seeking to enable others in their localities to do the same to meet specific Net Zero targets while also looking to create local value, whether through retained investment return and local ownership (Ibid., 2021). The evidence presented in the academic and grey literature, however, shows that many smaller local authorities experience significant barriers to delivering RE projects as new entrants into the energy market. Significant investment will be needed not only to deliver RE projects, whether directly commissioned by local authorities or supported through their various scopes of influence to secure community-wide decarbonisation.

3. Research Questions

The research questions will be structured in a way to explore the following themes:

- To assess the coherence of the local government response to tackling climate change through the declaration of Climate Emergencies
- To understand the motivations of, and influences upon, those investing in local energy technologies and the role of local authorities
- To critically assess Climate Emergency governance models and decision-making arrangements in the context of smaller local authorities

The findings will lead to establishing the following:

- Can we derive model governance arrangements for smaller local authorities?
- Can we derive model decision-making arrangements for smaller local authorities?

4. *Methodology and design*

A sequential process has been adopted underpinned by a dynamic review of academic and grey literature.

4.1 *Surveys of Local Authority Net Zero decision-making*

This research stage comprises of a practitioner survey followed by 1-1 interviews and panels as appropriate. The survey will capture data and information about barriers to RE investment and how project developers across sectors evaluate the performance of their projects. The interviews/panels will explore their decision-making processes and governance arrangements.

4.2 *Design of online survey – Investment decision-making*

A review of survey-based stakeholder research literature undertaken in the last five years in the UK along with discussions with a range of stakeholders engaged with local authorities has informed the design.

The literature review identified a suite of sector-focussed surveys two of which were of relevance to this research. The first was a business survey developed by PriceWaterhouseCoopers in association with Energy UK which was run initially in 2017 and again in 2019. The B2B Smart energy survey asked 504 businesses, across the public and private sector, how they were managing their energy options and what was driving their actions (PwC, 2019). The survey used a mix of question types and is designed to be completed in less than 15 minutes to maximise

response rate. Therefore, the choice of question styles is a compromise between the depth and granularity of information retrieved from a respondee and ease of completion. A similar study aimed at assessing the state of the Community Energy sector has been undertaken annually since 2017 with the latest report published in 2018 (Community Energy England, 2018). The survey targeted CEE members using a series of choice-driven and open questions using the SoGoSurvey online survey software.

Based on the findings, a template survey has been prepared, including discussions with PwC to seek permission to use some of the questions in the B2B Smart Energy Survey within the proposed template survey (Annex 1 contains the introductory email template only with the online survey presented separately in Main Thesis Appendix 2). The template will be tested with a sample of organisations drawn from the three sectors, after which a final version will be prepared.

4.3 Design of Interviews – Local Authority energy project decision making and governance

Local Authority participants drawn from the East of England will be invited to take part in a more in-depth interview. The purpose of the interview will be to gather specific information about the participant's organisation and how decisions are made when developing local energy projects. This will assist both in gaining deeper insight and identify any case studies which may be used to draw out any general themes or characteristics of the sector being surveyed or technologies that have been considered.

An indicative content list to the interview is set out in Annex 2. An invitation email following the format presented in Annex 3 will be sent out in advance of the interview setting out the format and types of questions that will be asked. The interviews will be carried out using a semi-structured format. Participants will be asked to complete a consent form (Annex 4). Transcripts of the interviews will be captured using verbatim recording.

4.4 Design of follow-up interviews/panels

The final stage will be a mix of follow-up interviews and/or panels with participants drawn from local authorities. The purpose will be to develop some of the themes identified from the previous stages and exchange examples of practice and test model decision-making and governance models.

Interview and panel composition will be derived from those that have already been interviewed with the possibility that new participants being introduced based on the value of their knowledge and experience of the research area.

The interviews will follow a semi-structured format similar to that adopted for the first interview stage while the panels may use Delphi or Q-Sort type methods with the purpose testing models and approaches to illicit qualitative responses.

5. Sampling

5.1 Method

For the online survey, a decision has been taken to focus on specific organisational sectors in England. It is planned to use a mixed sampling method to attract a sufficiently meaningful sample size of responses to be able to draw any meaningful conclusions. Specific sectors have been chosen on the basis that they are likely to be actively considering or taking investment decisions that align with the research questions. A convenience sampling approach is being taken within each selected sector; the reasoning for this is primarily one of practicality.

The survey will be disseminated nationally (England) either directly or through intermediaries. Examples of intermediaries that will be approached are shown in Table 1. Intermediaries will be approached initially by e-mail or telephone on a semi-formal basis to explain the nature of the research with the intention of eliciting their support.

Table 1, Indicative list of intermediaries who will be approached

Sector	Organisation
Public	Energy Hubs
	Local Government Association
	Association of Public Service Excellence (APSE)
	Association of Local Energy Officers (ALEO)
Private	Chambers of Commerce
	Local Enterprise Partnerships and associated support services
	Federation of Small Businesses
	Sector-specific publications (e.g. Business Green)
Third	National Association of Local Councils (NALC)
	Community Energy England
	National Council of Voluntary Organisations (NCVO)
	Churches, Charities and Local Authorities (CCLA)
	National Association of Voluntary and Community Action (NAVCA)

No sample size will be set for three reasons. Firstly, it is not known whether the intermediaries that have been identified will participate. Secondly, the resulting response rate cannot be predicted. Thirdly, the review of previous studies has shown no consistency of sample size since each has targeted different populations using different sampling strategies. Furthermore, there is wide variation in the population size of each selected sector ranging from the public sector (N=343), the third sector (N=166,854) and the private sector (N=5.9 million). It is proposed that the final sample size will be established during the study by monitoring the response rate against the time and effort required and the quality of the data that is being gathered, following some of the principles established in the method described by Mason (2002) as '*organic sampling*'.

5.2 Interviews

A decision has been taken to focus on one geographical area of the UK, the East of England and within that area two tier structure of local government giving a population size of around 45 local authorities. Based on research carried out by Sim et al (2018), a target sample size between 10 and 15 interviews is proposed, the upper figure therefore corresponding to 33% of the population.

5.3 Follow-up interviews/panels

Although a decision to set a target sample size has yet to be made, it is considered likely that it will be smaller than the interview stage with participants selected primarily from the interview cohort based on their experience and understanding of local authority decision-making and governance arrangements.

6. Research Ethics

Any survey-based activities covered by this research will be undertaken and only proceed after academic ethics approval has been given. The data gathering process and any subsequent data management will be undertaken in accordance with the General Data Protection Act 2018. Wherever possible, the collection of data that would allow an individual to be identified will be avoided. Informed prior consent will be sought from any individual participating in the research. Except for the participant's e-mail address, no other personal data will be requested and will be used only to verify that the response is from real individual, to identify any duplication of responses from the same individual and to be able to provide feedback of the results once the research has concluded. Responses from generic e-mail addresses, for example '*info@abc.co.uk*,' will be accepted within the response data set subject to the data being reviewed by the researcher to verify that the response appears legitimate for the purposes of the research. Once the research

process is completed, all contact details will be deleted, and data anonymised. No attributions will be made in any output without prior permission from the participant being granted.

In addition to any statutory or academic requirements, this work will be undertaken according to principles of the Market Research Society Code of Conduct (MRS, 2019). The MRS Code of Conduct sets out the standard that professional market researchers should follow with members of the Society obliged to follow the Society's Code. The Code of Conduct requires that in any research undertaken by a member that it should "*conform to the national and international legislation relevant to a given project, including in particular the Data Protection Act 2018 in the UK, the EU General Data Protection Regulation 2016, and any amendments and superseding legislation that may be enacted*". Members are required to adhere to all relevant legal and ethical requirements, that all activities must be conducted in an honest and transparent manner, never participate in activities that "*manipulate, misled or coerce individuals*" and avoid participants being "*harmed or adversely affected*." Signatories to the Code of Conduct must also avoid "*knowingly take advantage, without permission, of unpublished work of other practitioners, which is the property of those other practitioners*."

GDPR/Data Protection information, including the need for and implications of informed consent, will be set out on the access/landing pages for the online surveys. An additional consenting process will be applied for the interview stage based on the UOS Informed Consent Form and Invitation Summary. Participants will not be able to proceed without confirming that they that both understand the information and agree to their participation based on the conditions. Consent will take the form of signing a standard consent form or in its absence providing verbal consent at the commencement of participation.

As the research proceeds, any identified potential or actual breaches of ethical standards will initially be reported to the research supervisory team and University of Suffolk Graduate School Coordinator for guidance. In the case of a potential or actual breach of privacy regulations the University of Suffolk's Data Protection Officer will also be contacted, and any further action will be taken under their guidance.

Where sensitive information is identified which in the opinion of the researcher risks an organisation's or individual's anonymity even with this general provision being applied, the information will be tagged; options will include withdrawing the information from the research or

discrete anonymisation of the data. Any decision will be reported to the participant prior to being included to allow them to comment and if necessary, allow them to veto the use of the information in the research.

In the event of a data breach by the researcher whether identified by the research team, the participant or a third party, the breach will be reported to the supervisory team and the University of Suffolk Data Protection team for investigation. The participant will be kept notified and kept informed during and following the conclusion of any investigation. Individuals will have the right to refuse to participate or having chosen to participate can request at any time for their personal information removed from any records held as part of the research.

All information will be kept confidential with any personal information held for a period of up to one year after the end of the survey period. Other non-confidential information will be held for two years after the completion of the wider PhD research programme. Correspondence with individuals will set out their rights and contact details should they wish to comment or complain about their involvement in the research.

Where there is collaboration with other organisations for the purpose of furthering the research covered by this protocol, appropriate arrangements will be agreed in advance to cover issues such as allocation of research roles, research attribution and compliance with the principles set out in the protocol. A copy of any relevant communications establishing collaborations will be made available separately on request as part of the Ethics Approval process.

7. Quality assurance to reduce bias and errors

The potential for building in bias is an inherent characteristic of experimental research drawn from an individual's experience. As Norris (1997, pp.173) says '*most of the conventional constructs of validity are inappropriate for naturalistic forms of inquiry*'. All stages of the research process are vulnerable, not least through the personal preferential biases that the researcher unknowingly builds into the design of the survey strategy and then takes forward into its implementation. Without recognition and appropriate mitigation, the interactions that may occur between the researcher and those participating in the research could potentially undermine the validity of the data that is gathered, the analysis that is undertaken and the conclusions that are drawn.

In its findings following research into community energy, The Department of Energy and Climate Change identified the lack and the format of data that was gathered along with the sample size were potential limitations to their study. These issues have been borne in mind in considering the factors that may adversely affect the research, hence have been considerations in developing the sampling protocol (DECC, 2013).

An attempt has been made here to identify, assess and plan to mitigate for the potential impact of bias in this research (Table 2).

8. *Data extraction, transformation and analysis*

How data extraction will be undertaken has yet to be determined. All data supplied by participants will be assessed for potential errors, accuracy and relevance to the research. Any queries will be clarified and addressed wherever possible or recorded as unresolved. Key findings will be drawn out to inform the research programme. Study limitations will be identified, assessed and recorded with any conclusions and recommendations for improvement.

9. *Reporting and disseminating findings*

The research will be written up with the intention of it being able to be published as well as incorporated within the research programme. Drafts any reports or publications will be reviewed by the supervisory team and where possible prior to finalisation. Any study limitations will be reported.

10. *Duration of Study*

The research is planned to be undertaken between 2020 and 2023. Within this timeframe, the processes will be dynamic and flexible allowing the researcher to be able to adjust the approach and timescale to the circumstances to ensure a relevant and reliable outcome.

Table 2. Factors which may introduce bias or error into the research and ways that it is intended to mitigate their impact in the research

Research stage	Factor	Potential risks	Mitigation approach
Literature research	Too narrow evidence base reviewed to inform design of the research approach and content	Comparative data and learning not considered. Previous research duplicated	Continue with literature review and incorporate any key evidence into the research
Data capture design	Selection and design of the survey strategy	Poor alignment with research questions, inadequate data capture	Use of peer review/discussion with supervisory team
Data capture design	Selection of the survey questions	Potential for participants to be steered toward certain responses	Pilot prior to use
Data capture design	Style of questioning employed	Potential for participants to be steered toward certain responses	Pilot prior to use
Surveys/interviews	Duration and timeliness over which the research activity will be undertaken	Poor uptake, insufficient data collected, transient external factors influencing responses	Identify and evaluate the impact of external factors that could have an influence on the survey results
Surveys/interviews	Timing of the research driven by wider academic research timetable	See above	No mitigation
Surveys/interviews	Prior interactions between the researcher and those responding to the research process	Potential for higher proportion of participants within key sectors with similar responses captured	Aggregate and anonymise data where appropriate. Accept in some situations and use as anonymised case studies. Identify, assess and look to manage any observable biases
Surveys/interviews	Selection of sectors to be sampled	Too narrow a research focus, affecting both the potential responses rate and results and the drawing of more general conclusions	Review academic literature in other sectors (e.g. domestic sector), and consider impact in conclusions section

Research stage	Factor	Potential risks	Mitigation approach
Surveys/interviews	Selection of technologies considered in the research	Findings may be skewed toward the technologies limiting the scope to draw more general conclusions	Allow participants to include other technologies. Evaluate the impact
Surveys/interviews	Use of intermediaries to access research subjects	Introduction of organisational bias, self-selection, potential impact on response rate	Try to ensure a range and diversity of intermediaries are used
Surveys/interviews	Inadequate sampling approach	Low response rate	Consider changing the sampling strategy based on response rate/quality of the response/feedback from participants
Surveys/interviews	Incomplete survey responses	Skewed data capture for specific questions	Review the data quality and the survey wording to identify any underlying reasons and make any necessary changes
Surveys/interviews	Self-selecting group	May not be representative of the sector population	Randomise selection. Accept some bias
Surveys/interviews	Self- selecting group	May not be representative of the sector population	Randomise selection. Accept some bias
Data extraction	Poor data handling and storage processes	Error leading to inappropriate findings and conclusions being drawn	Test data handling arrangements prior to implementation Consider third party review of data management at stages through the process
Data analysis	Poor selection of analytical approach	Findings and conclusions may not accurately reflect the survey data	Compare some of the extracted data sets against any other relevant published data sets to provide some level of validation. Consider testing findings with a selection of representatives drawn from each sector.
Data analysis	Poor interpretation of data		Peer review/use of critical friend approach to review findings

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Annex 1: Online survey e-mail (template)

This research is seeking to understand how organisations make decisions about their investment in energy technologies such as solar photovoltaics (PV), heat pumps, battery storage or electric vehicles.

The survey should take you no longer than twenty minutes to complete and covers the following areas:

- You and your organisation - your role, what your organisation does
- What energy technologies your organisation has installed or considered installing
- How your organisation makes energy technology investment decisions
- How your organisation judges the performance of its energy technology investments.

Your participation is totally voluntary. If you complete the survey but subsequently want to withdraw, please contact me as soon as you can preferably within two weeks of taking part in the survey or any follow-up stage of this research programme.

Once the results have been collected, you will be sent a link to the results via email. We will contact a selection of survey participants at random to discuss in more detail their views and approach to energy technologies. You can opt out of being contacted or participating at any time by e-mailing p.gudde@uos.ac.uk.

Please provide your preferred contact details.

Name [you do not have to provide this]:

Organisation name [please provide this]:

E-mail [please provide this]:

Phone/ mobile [you do not have to provide this]:

We would greatly appreciate receiving your response as soon as possible and before the end of [add date].

This survey is being conducted in accordance with the General Data Protection Regulations, the Market Research Society (MRS) code of conduct and under strict academic ethics codes. No data will be used to personally identify any person or organisation. All information will be kept confidential with any personal information held for a period of up to one year after the end of the survey period.

Other non-confidential information will be held for two years after the completion of the wider PhD research programme.

Should you feel at any time that your information has been mishandled in any way, please contact the researcher or the University of Suffolk Data Protection Officer at the University of Suffolk at dataprotection@uos.ac.uk.

If in any event you wish to make suggestions, comment or make a complaint regarding this research please contact graduateschool@uos.ac.uk quoting the researcher's name in the e-mail title.

Thank you for agreeing to take part.

Contact: Peter Gudde - Doctoral Researcher, University of Suffolk

p.gudde@uos.ac.uk

Annex 2: Interview (template)

Background

What sort of organisation do you work for and summarise your role?

- Organisation, your role, what is the LA area like?

The process

- What sort of energy-related projects is your LA delivering?
- What sort of energy-related projects would you like your LA to deliver?
- Can you tell me what the main points of that journey (i.e. project stages) are?
- For two/three projects you have identified briefly describe the steps you go through
- Can you tell me at what points in developing a project you need to get a decision to proceed and from whom?
- Which steps do you find hardest to get decisions made?
- What in your opinion is making that approval decision difficult to secure?

Decision makers and timelines

- What sort of committee/governance structure does your organisation operate?
- Who, within the local authority, is/are the main decision maker(s) involved in get an energy project to delivery?
- Are there any specific committees/cabinets/members that are always/usually consulted?
- What is the usual timeline for a project to be initially proposed to the final business case being signed off?
- Are there any specific areas where the timeline can be varied? Or a point where there are often delays?

Engagement

- how do you currently involve external stakeholders [residents/members of the public/communities/other organisations]?
- Do you work with other external organisations when developing your projects?
- What value do you place on involving external stakeholders in your LAs approach to making decisions affecting your projects?
- What is your view on developing projects with others?

- What is your view about your LA being involved in decisions affecting other energy-related projects in your area through its influencing (non-statutory) role/?

Improvements and inefficiencies

- How and where do you think the decision-making process could be improved with specific reference to the following?
 - National/international policies and regulations – e.g. around energy, finance, procurement, the ways decisions are taken
 - Your LAs policies and procedures – applying corporately or to your area of responsibility
 - Your LAs structure or approach to energy-related projects
 - Your own expertise and experience
-

Annex 3: Interview invitation e-mail (template)

Thank you for agreeing to participate in the interview.

The interview will explore the following areas:

- Decision makers and timelines
- The energy project development process
- Engagement
- Inefficiencies and potential improvements.

Consent and how we will handle your data

Please complete and return the attached consent form. The interview will be recorded, and a transcription made purely to assist in the gathering of insights. Your information will not be shared beyond the research team. Your data will be held for the duration of the research programme (no longer than 2 years). You can withdraw at any time during or following the interview by contacting me. We request that you e-mail us no later than 7 days after the interview if you wish to withdraw.

Academic research into LA decision making

On behalf of the University of Suffolk, I am undertaking doctoral research into Governance and investment decision-making in the context of Climate Emergency declarations by local authorities in the United Kingdom. The research programme is due to be completed by 2024.

Annex 4 Interview Consent Form

Research Consent Form		
Study Title: Governance and investment decision-making in a Climate Emergency – an evaluation of local authorities in the United Kingdom		
Lead researcher: Peter Gudde		
Academic Supervisor: Professor Nic Bury		
The University of Suffolk expects all research to be carried out in accordance with the following principles:		
• The emotional well-being, physical well-being, rights, dignity and personal values of research participants should be secured. • Research participants and contributors should be fully informed regarding the purpose, methods and end use of the research. They should be clear on what their participation involves and any risks that are associated with the process. These risks should be clearly articulated and if possible quantified. • Research participants must participate in a voluntary way, free from coercion. Participants have the right to withdraw at any time.		
This research has been approved by the University of Suffolk Ethics Panel. Should you have any concerns about the Ethics of this research, please feel free to contact the Chair of the Ethics Panel, Professor Emma Bond e.bond@uos.ac.uk (01473 338564) or the Research Development Manager, Andreea Tocca a.tocca@uos.ac.uk (01473 338656).		
Please initial/tick shaded boxes:		
I confirm that I have read and understand the accompanying e-mail explaining the above research project and I have had the opportunity to ask questions about the project.	☐	
I understand that my participation is voluntary, that I am free to withdraw up to seven days after taking part and that you will destroy records or information provided by me.	☐	
I give permission for members of the research team to use my anonymised responses in their research and publications and with those organisations named in the accompanying e-mail.	☐	
I understand that the data I provide will be used solely for the purposes outlined in the accompanying e-mail. I also understand how long my data will be stored for.	☐	
By signing I confirm that I am happy to take part in the research		
Please type your name above (to act as signature)/Date		
Peter Gudde 01.10.2021		
Name of Lead Researcher (to act as signature)/Date		
Copies:		
You will receive a copy of the signed form for your records with a copy retained by the researcher		

Annex 5: Panel(s) template

Purpose

The purpose of this stage of the research is to answer the following question: in the absence of a specific duty to act, how could local authority ambition to deliver Net Zero local areas be harnessed to the national policy objectives adopted by the UK Government and devolved administrations in the UK?

Scope

Participants will be provided with a series of decision-making models and governance arrangements for delivering Net Zero in their locality. They will be asked to discuss the benefit and drawbacks based on their experiences. Examples which may be tested include:

- The West Midlands Energy Capital innovation partnership model¹⁰
- The “deliberative” model e.g. applied in Camden
- The non-contractual partnership model e.g. Suffolk, Liverpool City Region
- The ‘Freeport’ model.

Method options

A suite of panel-based approaches is being considered to gather evidence including Delphi, Q-Sort, open discussion.

¹⁰ Established by the Mayor of the West Midlands to explore new models of regional energy governance and delivery, Energy Capital is the smart energy innovation partnership for the West Midlands which brings together business, utilities and academics to provide low cost, clean and efficient power. <https://energy-capital-tfwm.hub.arcgis.com/>

Annex 6: Ethics Committee approvals



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8 January 2020

Project Lead: Peter Gudde

Subject: A multi-dimensional analysis of smart energy systems – Towards developing a common framework for assessing the sustainability of small-scale renewables in selected societal sectors

Type of study: Postgraduate Research

Start Date: 3 January 2020

End Date: 11 August 2020

Paper Number: RETH19/023

Primary Supervisor: Professor Nic Bury

Second Supervisor: Prof Peter Cochrane and Prof Nicholas Caldwell

Dear Peter

Thank you for resubmitting your application for ethical approval and taking action on the feedback points provided by the University of Suffolk Research Ethics Committee on 19 December 2019.

As Chair of the University Research Ethics Committee, I have reviewed your application again, which was resubmitted on 23 December 2019 and a further clarification email on 8 January 2020 and am happy to approve this via Chair's action. This approval is based on all your action/s explained or completed.

As principal investigator, your responsibilities include:

- ✓ ensuring that (where applicable) all the necessary legal and regulatory requirements in order to conduct the research are met, and the necessary licenses and approvals have been obtained;
- ✓ reporting any ethics-related issues that occur during the course of the research or arising from the research to the University of Suffolk Research Ethics Committee to the Committee Secretary, Sue at s.raychaudhuri@uos.ac.uk (eg. unforeseen ethical issues, complaints about the conduct of the research, adverse reactions such as extreme distress);
- ✓ submitting details of proposed substantive amendments to the protocol/proposal to the University of Suffolk Research Ethics Committee for further approval.

Yours sincerely

Professor Emma Bond

Director of Research and Chair of the University Research Ethics Committee
University of Suffolk

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14 December 2021

Project Lead: Peter Gudde**Subject:** Governance and decision-making in a Climate Emergency – an evaluation of local authorities in the United Kingdom**Type of study:** Postgraduate Research**Start Date:** 3 January 2020**End Date:** 11 August 2020**Paper Number:** RETH19/023**Lead Supervisor:** Professor Nic Bury**Co-Supervisors:** Professor Peter Cochrane and Professor Nicholas Caldwell

Dear Peter

Thank you for submitting the amendment form for changes to the Ethical approval reference RETH19/023 dated 24 November 2021.

As Chair of the University PGR Research Ethics Committee, I have reviewed the amendment and changes, and am pleased to advise that I give approval under Chair's Actions.

Please be reminded that as principal investigator, your responsibilities include:

- ✓ ensuring that (where applicable) all the necessary legal and regulatory requirements in order to conduct the research are met, and the necessary licenses and approvals have been obtained;
- ✓ approval by the University PGR Research Ethics Committee should not be taken as evidence that the study is compliant with GDPR and the Data Protection Act 2018. You are expected to have completed the GDPR training and follow the guidance from <https://www.ukri.org/files/about/policy/ukri-gdpr-fags-pdf/>. Final responsibility for GDPR compliance remains with you;
- ✓ reporting any ethics-related issues that occur during the course of the research or arising from the research to the University of Suffolk PGR Research Ethics Committee to the Committee Secretary, Joanna Walpole at J.Walpole2@uos.ac.uk (eg. unforeseen ethical issues, complaints about the conduct of the research, adverse reactions such as extreme distress);
- ✓ submitting details of proposed substantive amendments to the protocol/proposal to the University of Suffolk PGR Research Ethics Committee for further approval.

Yours sincerely



Dr Sarah Richards
Chair of the University PGR Research Ethics Committee
University of Suffolk

Cc
Lead Supervisor: Professor Nic Bury
Co-Supervisors: Professor Peter Cochrane and Professor Nicholas Caldwell

Appendix 2: Sector survey smart energy investment

1. Welcome to the Smart Energy Investment Survey

This research is seeking to understand how organisations make decisions about their investment in energy-based technologies such as LED lighting, solar panels (termed here Solar PV), Solar Hot water heating, heat pumps, wind turbines, battery storage or electric vehicles.

The survey covers the following areas:

You and your organisation - your role, what your organisation does
What energy technologies your organisation has installed or considered installing
How your organisation makes energy technology investment decisions
How your organisation judges the performance of its energy technology investments.

As you proceed, you can save what you have done and return to complete the survey on another occasion.

Your participation is totally voluntary. If you complete the survey but subsequently want to withdraw, please contact me as soon as you can preferably within two weeks of taking part in the survey or any follow-up stage of this research programme.

Once the results have been collected, you will be sent a link to the results via email. We will contact a selection of survey participants at random to discuss in more detail their views and approach to energy technologies. You can opt out of being contacted or participating at any time by e-mailing p.gudde@uos.ac.uk.

We would greatly appreciate receiving your response as soon as possible and before the end of May 2020.

This survey is being conducted in accordance with the General Data Protection Regulations, the Market Research Society (MRS) code of conduct and under strict academic ethics codes. No data will be used to personally identify any person or organisation. All information will be kept confidential with any personal information held for a period of up to one year after the end of the survey period.

Other non-confidential information will be held for two years after the completion of the wider PhD research programme.

Should you feel at any time that your information has been mishandled in any way, please contact the researcher or the University of Suffolk Data Protection Officer at the University of Suffolk at dataprotection@uos.ac.uk.

If in any event you wish to make suggestions or comment about this research, please contact graduateschool@uos.ac.uk quoting the researcher's name in the e-mail title.

Thank you for agreeing to take part.

Contact: Peter Gudde - Doctoral Researcher, University of Suffolk

p.gudde@uos.ac.uk

1. Do you agree to take part in this survey prepared by Peter Gudde at the University of Suffolk? Any data collected using the survey will be anonymised, aggregated and used for research purposes. Anonymised/aggregated data may be shared with third parties. No personal data will be shared without prior consent of the individual. *

- ☐ I am happy to take part in this survey prepared by Peter Gudde of UOS using SmartSurvey.
- ☐ I do not want to take part in this survey.

2. Introduction - you and your organisation

2. Please provide your preferred contact details. You only need to provide your e-mail address. This is being asked for in order to confirm that an individual response is being made. *

Your name [you do not have to provide this]:

Organisation name [you do not have to provide this]:

Your e-mail address [please provide this]:

*

3. How would you describe your role in your organisation's decisions to invest in energy? *

- ☐ I have little to no input
- ☐ I have some input (e.g. I am involved in project concept, design or making the investment case to others)
- ☐ I am a key decision maker (e.g. I sit on the board or investment panel of my organisation)

- ☐ I am the sole decision maker (e.g. I am the only one who can authorise this type of investment)

4. Which sector is your organisation in? *

- ☐ Private sector
- ☐ Public sector
- ☐ Charitable/Voluntary/Community sector
- ☐ Other (please specify e.g. Parish Council):

3. For Private Sector organisations

5. Which best describes your role? *

- ☐ Business owner/Partner
- ☐ Executive (please state your role on the board)
- ☐ Buyer/Procurement Manager
- ☐ Operational Manager
- ☐ Property/Estates Manager
- ☐ Energy/Utilities Manager
- ☐ Environmental/Sustainability specialist
- ☐ Other (please specify)

Comments:

6. Which of the following best describes what your business does? *

- ☐ Agriculture, forestry and fishing
- ☐ Mining and quarrying
- ☐ Manufacturing (please state)
- ☐ Energy
- ☐ Water supply, sewerage, waste management and remediation
- ☐ Construction
- ☐ Wholesale and retail trade including motor sector
- ☐ Transportation and storage
- ☐ Accommodation and food services
- ☐ Information and communication
- ☐ Financial and insurance services
- ☐ Real estate services
- ☐ Professional, scientific and technical services
- ☐ Administrative and support services
- ☐ Education (including non-state administered schools, colleges and universities)
- ☐ Human health and other social work activities
- ☐ Arts, Entertainment and recreation
- ☐ Other service activities
- ☐ Other (please specify)

Comments:

4. For Public Sector organisations

7. Which best describes your role? *

- ☐ Politician/Councillor (please state your portfolio)
- ☐ Chief Executive/Director
- ☐ Buyer/Procurement Manager
- ☐ Business Unit/Service/Operational Manager
- ☐ Property/Estates Manager
- ☐ Energy/Utilities Manager
- ☐ Environmental/Sustainability specialist
- ☐ Other (please specify)

Comments:

8. Which of the following best describes your organisation? *

- ☐ County council
- ☐ Unitary authority
- ☐ Borough/district council
- ☐ Parish/town council
- ☐ Health & Social Care

- ☐ Education (not Further or Higher education)
- ☐ Education (Further or higher education)
- ☐ Other (please specify)

Comments:

5. For Charitable and Voluntary Sector organisations

9. Which best describes your role? *

- ☐ Trustee (please specify your area of responsibility if relevant)
- ☐ Board chair
- ☐ Treasurer/Finance lead
- ☐ Specialist project leader
- ☐ Property/Estates Manager
- ☐ Project team member
- ☐ Other (please specify)

Comments:

10. Which description best describes your organisation? *

- ☐ Small group (unconstituted)

- ☐ Small group (constituted)
- ☐ Unincorporated group/association
- ☐ Incorporated group/association
- ☐ Community Interest Company
- ☐ Company Ltd by Guarantee with charitable status (CLG)
- ☐ Community Interest Company (CIC)
- ☐ Community Benefit Society
- ☐ Charitable Incorporated Organisation (CIO)
- ☐ Other (please specify)
- ☐ Don't know

Comments:

6. More about your organisation

11. Approximately, how many people are there in your organisation? *

- ☐ Less than 10
- ☐ 10 to 49
- ☐ 50 to 249
- ☐ 250 to 999
- ☐ More than 1,000
- ☐ Don't know

12. What is the location of your building with the largest energy use (if known) or your principal building? *

- ☐ East Anglia
- ☐ East Midlands
- ☐ Greater London
- ☐ Greater Manchester
- ☐ Merseyside
- ☐ North East England
- ☐ North West England
- ☐ Scotland
- ☐ South East England
- ☐ South West England
- ☐ Strathclyde
- ☐ Tyne & Wear
- ☐ Wales
- ☐ West Midlands
- ☐ Yorks & Humberside
- ☐ Yorkshire
- ☐ Don't know
- ☐ Non-UK location (please specify the Country where your main activities are based in the Comments box below)

Comments:

13. Which of the following best describes the building(s) that you occupy? *

- ☐ We own the buildings outright (n.b. do not worry if there is a ground lease)
- ☐ We own the buildings with a mortgage or loan outstanding
- ☐ We lease the buildings
- ☐ We mix leases and owning outright across multiple sites
- ☐ Don't know/Not able to answer for other reasons
- ☐ Other status (please add comment)

Comments:

7. Investment in energy technologies

14. Has your organisation had any of the following technologies installed on its buildings (or land)? *

- ☐ Solar PV
- ☐ Smart meter(s)
- ☐ Wind turbines
- ☐ Heat pumps
- ☐ Biomass boilers
- ☐ Combined Heat and Power
- ☐ Battery storage

- ☐ Electric vehicle charging points
- ☐ Fuel cells
- ☐ Other (please comment)
- ☐ No
- ☐ Don't know

Comments:

15. Does your organisation plan to invest in any of the following energy technologies over the next 5 years? Note: please provide an answer for each technology listed below. *

	Yes/No/Don't know
Smart meters	☐
Solar PV	☐
Wind turbines	☐
Heat pumps	☐
Biomass boilers	☐
Combined Heat and Power	☐
Battery storage	☐

Yes/No/Don't know

Electric vehicle charging points

☐

Fuel cells

☐

Other (please comment)

☐

LED lighting

☐

Solar hot water heating

☐

Comments:

16. What is your current preferred approach to funding energy-related investments? *

- ☐ We fund from own resources
- ☐ We fund using 3rd party finance
- ☐ We fully fund using a solution provider under lease finance
- ☐ We fund and own using a solution provider with benefit sharing
- ☐ We blend funding arrangements
- ☐ We use other ways to fund projects
- ☐ We have no preference
- ☐ Don't know

Comments:

17. Would you consider any of the following to fund energy technologies? *

- ☐ Institutional lending e.g. bank loans, mortgage, venture capital, pension funds, asset-backed finance
- ☐ Community lending or social funding e.g. community municipal bonds, crowd-funded through share rights issue or other financial instruments
- ☐ Debt equity
- ☐ Grant support e.g. Lottery Grant, Government Grant, Planning Gain/Community Infrastructure Levy
- ☐ Private equity/Philanthropic lending e.g. legacies, private individual donations
- ☐ Other/Don't know (please explain your choice):

Comments:

8. Making investment decisions

18. Is your organisation able to make its own energy investment decisions? *

- ☐ We have not made any investment decisions
- ☐ We make our own investment decisions without needing to consult others outside our organisation
- ☐ We make our own investment decisions in close consultation with others outside our organisation
- ☐ Investment decisions are controlled by someone else (e.g. landlord) AND we have some influence

☐ We have no influence

☐ Don't know

Comments:

19. Who else do you involve when making energy investment decisions (excluding statutory or regulatory bodies)? *

☐ Our landlord, where we are the tenant

☐ Our financial institution – bank, mortgage company, pension fund

☐ Where we are the landlord, our tenants or other occupants within our building(s)

☐ Where we are the lead tenant, other tenants or users within the building(s)

☐ Neighbouring building users

☐ Local community/residents

☐ Other (please specify):

Comments:

20. Who do you consider has most influence over your energy investment decisions? *

☐ Our shareholders

- ☐ Our Board/Shareholders/Cabinet
- ☐ The CEO or key member of the Board/Cabinet
- ☐ A specialist manager (e.g. Investment/Finance, Asset Management, Procurement, Energy)
- ☐ The project team specialist/operations lead
- ☐ Our landlord, where we are the tenant
- ☐ Our financial institution – bank, mortgage company, pension fund
- ☐ Where we are the landlord, our tenants or other occupants within our building(s)
- ☐ Where we are the lead tenant, other tenants or users within the building(s)
- ☐ Neighbouring building users
- ☐ Local community/residents
- ☐ Don't know
- ☐ Other (please specify):

21. Which of the following factors would have/have had the greatest influence on your organisation's energy investment decisions? Please rank from greatest (1) to least (12) influence. (Note: your choices will automatically re-order as you rank them) *

To reduce energy costs	
To generate new sources of revenue	
To reduce carbon emissions	
To receive more accurate bills	
To increase reliability of energy supply for vital activities	
To reduce reliance on traditional energy suppliers	
To gain reputation benefits – "doing the right thing"	
To comply with regulatory requirements	

To improve stakeholder relationships

To take advantage of government support or tax break

Another reason (Please specify in the comments box)

Comments:

--

22. In your opinion, what are the greatest barriers to your organisation's investment in energy technologies? Using the slider, please rank each barrier from not important (1) to extremely important (10).

Lack of accessible or affordable finance

The upfront cost of the technology

Local power network connection costs

Insufficient understanding of the technologies

Complexity and time needed to deliver projects

Access to appropriate advice and support

Securing legal agreements e.g. leases, wayleaves

Technical issues e.g. inadequate building structure

Our existing building contracts/lease arrangements prevent us from installing

Disruption to our activities during installation

Energy projects not being a high priority for your organisation

Lack of support from senior management/CEO/Board/Owner

Other barriers (please comment below)

Comments:

23. In your opinion, what are the biggest energy-related issues for your organisation over the next 3 years? You can choose more than one issue. *

- ☐ Reliability / Security of supply
- ☐ Energy prices
- ☐ Energy and environment related taxes and levies (e.g. Climate Change Levy)
- ☐ Environmental impact
- ☐ Sustainable and renewable sources
- ☐ Implications of moving to smart energy technology
- ☐ Don't know
- ☐ Other (please specify):

11. How we perform

24. How do you measure the performance of your energy technology investments? You can choose more than one measure. *

- ☐ Payback
- ☐ Internal Rate of Return
- ☐ Net Present Value
- ☐ Cash savings/income generated
- ☐ Carbon savings
- ☐ Energy savings/generation

- ☐ Improved energy resilience/reliability
- ☐ Wider environmental benefit
- ☐ Local community benefit
- ☐ Wider economic benefit
- ☐ We don't measure the performance of our investments
- ☐ Other (please specify):

Comments:

25. Do you use any of the following performance modelling tools when assessing investment in energy technologies? Please tick all which you use. *

- ☐ Life Cycle Assessment (LCA)
- ☐ Whole Life Cost (WLC)
- ☐ Marginal Abatement Cost Curves (MACC)
- ☐ Levelised Cost of Energy (LCOE)
- ☐ Multi-criteria decision analysis (MCDA)
- ☐ Social Return on Investment (SROI)
- ☐ Other (please specify):

- ☐ We do not use anything
- ☐ Don't know

26. When applied to your organisation's investment in energy technologies, which statement is most accurate? *

- ☐ We have set quantified targets against a baseline and are now measuring our progress
- ☐ We have set quantified targets against a baseline but yet to measure our progress
- ☐ We plan to set quantified targets and are confident of how we will do this
- ☐ We have not identified any targets or a way of tracking our progress
- ☐ We have not thought about how we measure our progress
- ☐ Don't know (please specify)
- ☐ Other (please specify):

Comments:

12. The wider perspective

27. This question relates to the UK's wider commitments to the UN Sustainable Development Goals (SDGs) and what they mean to your organisation. Please tick which statement applies to your organisation. *

- ☐ We don't use the SDGs in my organisation
- ☐ We do not consider that the SDGs are relevant to my organisation
- ☐ We have no plans to commit to the SDGs but have made other Sustainability/Corporate Social Responsibility commitments
- ☐ We are aware of the SDGs and plan to make a commitment
- ☐ We've made a formal commitment to the SDGs but have yet to set targets

☐ We've made a formal commitment to the SDGs and measure investment performance against SMART targets

☐ Other (please specify):

28. With 0 being not important at all and 10 being crucial, in your opinion how important to your organisation are the following issues when it is considering energy?

Energy use	
Habitats & Biodiversity	
Noise and Vibration	
Carbon emissions	
Greenhouse Gases	
Local air quality	
Ionizing radiation	
Resource use	
Transport use	
Public health	
Waste	
Equity & Justice	
Climate Change	
Investment costs	
Economic growth	
Operating costs	
Ownership or control of energy infrastructure	
Community	

Skills, knowledge & awareness	☐
Return on value	☐
Employment, jobs, wages	☐
Energy consumption/cost	☐
Access to resources	☐
Planning & regulation	☐
Supply chain	☐
Skills and training	☐
Non-Greenhouse Gas emissions	☐
Population change	☐
Leadership & empowerment	☐
Mobility & accessibility	☐
Risk	☐
Energy affordability	☐
Supply resilience	☐
Organisational behaviours	☐
Safety	☐
Wellbeing	☐
Operational performance	☐
Knowledge development	☐
Corporate Social Responsibility	☐
Decision-making processes	☐
Our corporate vision & goals	☐
Other (please specify in the Comments box below)	☐

Comments:

29. In your opinion with 0 being TOTALLY DISAGREE and 10 being TOTALLY AGREE, please grade the following statements about the adoption of the energy technologies covered in this survey (e.g. LED lighting, solar panels (termed here Solar PV), Solar Hot water heating, heat pumps, wind turbines, battery storage or electric vehicles)?

I think these technologies will play a vital role in the future	
I know enough to help my organisation invest in these technologies	
I know who to speak to for the information I need about these technologies	
Getting a financial return from these technologies is the main reason to invest	
I believe that organisations like mine would invest if the capital cost was lower	
I believe that organisations like mine would install this technology if they did not have to pay the upfront cost	
I think that there should be a national plan to install these technologies	
I believe that organisations like mine would invest if energy costs were higher	
I believe that organisations like mine would be prepared to invest in these technologies if there was independent, objective and easy to use advice	
I believe that organisations like mine would invest if they were confident that it was the right thing to do for society	
I have another opinion (please specify)	

Comments:

13.

Many thanks for taking the time to complete this survey. Please feel free to share the survey link with colleagues in or outside your organisation if they are involved in similar energy technology projects. The final results of the research will be freely available with a copy downloadable from the Suffolk Sustainability Institute website www.uos.ac.uk/content/suffolk-sustainability-institute or by e-mailing p.gudde@uos.ac.uk

30. Please feel free to make add any general comments here.

14. Thank you

You can still receive the results of the research when they are published either by visiting the Suffolk Sustainability Institute website www.uos.ac.uk/content/suffolk-sustainability-institute or e-mailing the lead researcher, Peter Gudde, at p.gudde@uos.ac.uk

Appendix 3: Local authority practitioner interview checklist

Research title: Local authority governance and investment decision-making in a Climate Emergency – an evaluation of the response by smaller local authorities in the United Kingdom

Research lead: Peter Gudde, University of Suffolk

Interview Structure	
Item	Notes/ supplementary questions
Welcome	
Explanation of research purpose and parties involved	University of Suffolk
Interview approach	Semi-structured, recorded with consent.
The research question we are trying to answer	1. Can we derive model Net Zero governance arrangements for smaller local authority areas?
	a. What does governance look like?
	b. What are the key components of the governance models that currently exist?
	c. What changes can be identified to establish more effective Net Zero governance?
	d. Can model characteristics be derived?
How your data/information will be handled	Ensuring your anonymity and appropriate attribution
	Confirmation of your consent to participate
Questions	
Planning & Delivery	
What is the relationship between your Governance Board and the bodies responsible for the programmes of activity in the region?	Relationship between the Supervisory Board and the Partnership, delivery organisations, other relevant institutions
	Are all delivery organisations represented on the Board, do they report to the Board, is their work directed by the Board?
What gaps in delivery have you identified?	How are the gaps being filled?
	Who decides on how those gaps will be addressed?
Noting your ten 'Pathfinder Asks' published in 2021, how has that been received by Central Government?	Which 'Asks' have been endorsed by Central Government?
	Given that the 'Asks' could have equal legitimacy in many other localities if not across England, how would other areas benefit from you being granted Pathfinder status?

Investment	
Who approves investment plans?	Have they been accepted by key decision-takers across sectors?
Who is responsible for securing the investment needed to deliver Net Zero?	
How are finances for delivery managed?	How do you manage multiple decision takers and varied decision-making processes across the region?
Engagement	
How does the Partnership involve the public and local communities?	What influence do publics have over Board decisions?
What is the public scrutiny process of the Partnership's Programme?	How does external scrutiny occur? What form/s does it take?
	What is the process by which the Board and the wider Partnership receive and then respond to scrutiny or challenge?
How is the Energy Capital model influencing local political leadership?	What barriers have you faced with respect to political buy-in across the locality?
	How has this been/is being addressed?
General	
What do you see are the key components to successful Net Zero governance?	
Do we need separate Net Zero Governance arrangements?	Should they reasonably or justifiably be embedded into other governance structures?
	How could they reasonably or justifiably be embedded into other governance structures?
What advice do you give to local authorities where there is no formal cross-sectoral Net Zero decision-making or delivery structures?	
What would you do/avoid if you were starting your journey again?	

Appendix 4: Data sharing agreement - Local Authority practitioner interviews

This **LICENCE AGREEMENT** has an effective date of the 1st day of October 2021 (the "**Effective Date**")

Between:

- (1) **ENERGY SYSTEMS CATAPULT LIMITED** a company incorporated and registered in England and Wales with company number 08705754 whose registered office is at Cannon House, 7th Floor, 18 Priory Queensway, Birmingham, B4 6BS (the "**Catapult**"); and
- (2) **UNIVERSITY OF SUFFOLK** at School of Engineering, Arts, Science and Technology, Waterfront Building, Neptune Quay, Ipswich, IP4 1QJ UK, University of Suffolk (the "**Licensee**").

Acceptance of terms

The Catapult is making the Data available to the Licensee under this licence. The use of the Data made available under this Licence Agreement indicates acceptance of the terms and conditions below.

The Catapult always remain the owners of the Data. The Licensee's point of contact in relation to this research is Peter Gudde, Doctoral Researcher.

Contract Documents

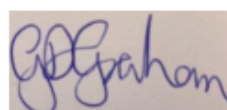
The documents forming part of this contract are (in order of precedence)
this Licence Agreement
the Licence Details set out in Schedule 1 to this Licence Agreement
the licence terms and conditions set out in Schedule 2 to this Licence Agreement

together the "**Licence**".

This Licence has been entered into on the date stated at the beginning of this Licence

Signed by:

Gordon Graham
(Print Name)



for and on behalf of

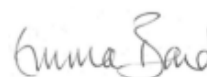
**ENERGY SYSTEMS CATAPULT
LIMITED**

(Signature)

on 20th day of October 2021

Signed by:

Professor Emma Bond
Pro Vice-Chancellor Research



for and on behalf of

UNIVERSITY OF SUFFOLK

.....
(Signature)

on 19 day of October .. 2021

Schedule 1
Licence Details

Purpose

The Licensee may use the Data for academic and research purposes, specifically related to research undertaken by Peter Gudde.

Term

For a term of [three years from the Effective Date of the Licence]

The Data

Information and data gathered through interviews and associated means relating to research into local authority decision-making to be gathered by the Catapult supported by the Licensee

Price

Nil

Additional restrictions (if any)

[The Licensee shall not grant sub-licences under this licence].

Schedule 2
LICENCE TERMS AND CONDITIONS

1. DEFINITIONS

- 1.1. In this licence the following expressions shall, unless the context otherwise requires, have the following meanings:

Affiliates means any entity that directly or indirectly controls, is controlled by, or is under common control with another entity;

Background IP means any Intellectual Property Rights which a party makes available for the performance of this licence;

Confidential Information has the meaning as set out in clause 5;

Data means the documents or data given to the Licensee by the Licensor for the Purpose as further described in Schedule 1;

Intellectual Property Rights means any patents, rights to inventions, copyright and related rights, trade marks, trade names and domain names, rights in get-up, rights in goodwill or to sue for passing off, rights in designs, rights in computer software, database rights, rights in Confidential Information (including know-how and trade secrets) and any other intellectual property rights, in each case whether registered or unregistered and including all applications (or rights to apply) for, and renewals or extensions of, such rights and all similar or equivalent rights or forms of protection which may now or in the future subsist in any part of the world; and

Purpose means the projects and activities set out in Schedule 1 together with any restrictions set out therein.

2. LICENCE

- 2.1. The Catapult grants the Licensee a worldwide, revocable, royalty-free, non-exclusive licence to:
- 2.1.1. use its Data for the Purpose, but not for the purposes of commercial exploitation; and
 - 2.1.2. subject to any existing third party obligations, use its Background IP for the purpose of undertaking the Purpose.

3. DURATION AND TERMINATION

- 3.1. This licence shall commence on the date stated at the beginning of this licence and shall continue, unless terminated earlier in accordance with this clause 3, for the term set out in Schedule 1 and shall expire automatically without notice.
- 3.2. If the Licensee fails to comply with the conditions of this Licence Agreement the rights granted to it under this Licence Agreement will end automatically.
- 3.3. Without affecting any other right or remedy available to it, either party may terminate this licence with immediate effect by giving written notice to the other if:
- 3.3.1. they commit a material breach of any term of this licence which is irremediable or (if such breach is remediable) fails to remedy that breach within a period of 30 days after being notified in writing to do so;
 - 3.3.2. is placed into receivership or administration or liquidation or enters into an arrangement with its creditors;
 - 3.3.3. there is any change in the legal status or the actual or effective ownership or control; or
 - 3.3.4. they have been guilty of conduct which in the reasonable opinion of the other brings either party into material disrepute.

4. PAYMENT

- 4.1. Subject to the terms of this Licence, the Licensee shall pay the Catapult the fees, in accordance with this clause 4.
- 4.2. The Licensee shall pay invoices:
- 4.2.1. within 30 days of receipt of the invoice; and
 - 4.2.2. in full and in cleared funds to the bank account nominated in writing by the Catapult.

5. CONFIDENTIALITY

- 5.1. Each party undertakes that it shall not at any time during this licence, and for a period of 5 (five) years after the expiry or termination of this licence, disclose to any person any Confidential Information concerning the other party, nor any of the terms of this licence, except as permitted by clause 5.2.
- 5.2. Each party may disclose the other party's Confidential Information:
 - 5.2.1. to its employees, officers, representatives or advisers who need to know such information for the purposes of exercising the party's rights or carrying out its obligations under or in connection with this licence. Each party shall procure that its employees, officers, representatives or advisers to whom it discloses the other party's Confidential Information comply with the obligations set out in this clause 5 as if they were a party to this licence; and
 - 5.2.2. as may be required by law, a court of competent jurisdiction or any governmental or regulatory authority.
- 5.3. No party shall use any other party's Confidential Information for any purpose other than to exercise its rights or perform its obligations under or in connection with this licence.

6. LIMITATION OF LIABILITY

- 6.1. Each party (the **Indemnifying Party**) will indemnify the other party and keep them fully and effectively indemnified, against each and every claim made against them as a result of that Indemnifying Party's use of any of the following: the Data and any materials or information received from an Indemnified Party pursuant to this licence, provided that the Indemnified Party must:
 - 6.1.1. promptly notify the Indemnifying Party of details of the claim;
 - 6.1.2. not make any admission in relation to the claim;
 - 6.1.3. take reasonable steps to mitigate its losses and expenses arising from the claim;
 - 6.1.4. allow the Indemnifying Party to have the conduct of the defence and settlement of the claim; and
 - 6.1.5. give the Indemnifying Party all reasonable assistance (at the Indemnifying Party's expense) in dealing with the claim. The indemnity in this clause 6.1 will not apply to the extent that the claim arises as a result of the Indemnified Party's negligence, its deliberate breach of this licence, its breach of clause 5 or its knowing infringement any third party's Intellectual Property Rights or its knowing breach of any third party's rights of confidence.
- 6.2. Subject to clause 6.3, the liability of each party to the other for any breach of this licence, any negligence or arising in any other way out of the subject matter of this licence, the Purpose and the Data, will not extend to:
 - 6.2.1. any indirect damages or losses; or
 - 6.2.2. any loss of profits, loss of revenue, loss of data, loss of contracts or opportunity, whether direct or indirect,even, in each case, if the party bringing the claim has advised the other of the possibility of those losses, or even if they were within the other party's contemplation.
- 6.3. Subject to clause 6.4, the aggregate liability of each party to the other for any or all breaches of this licence, any negligence, or arising in any other way out of the subject matter of this licence, the Purpose and the Data, will not exceed in total £10,000.
- 6.4. Nothing in this licence limits or excludes any party's liability for:
 - 6.4.1. arising from the indemnity set out in clause 6.1;
 - 6.4.2. for death or personal injury caused by negligence; or
 - 6.4.3. for any fraud or for any sort of liability which, by law, cannot be limited or excluded.

7. GENERAL

- 7.1. Neither party shall publish notice of this licence without the other party's prior consent, such consent not to be unreasonably withheld or delayed.

Appendix 5: Net Zero Barriers Survey template used in the Delphi

Net Zero decision-making and governance	Barriers survey	Research contact: p.gudde@uos.ac.uk	
How to complete the survey: Here are 40 barriers ("blockers") to progressing your organisation's Net Zero ambition. Please score each blocker between 1-10 using the drop-down in Column C (My Score) based on how much you feel that it is holding up your organisation's delivery. The following interpretations may help you select your scores: 1 (Not a blocker), 3 (Minor blocker), 5 (Moderate blocker), 8 (Significant blocker), 10 (Critical blocker). If you don't know how to answer or you consider that the statement does not apply, please score 0. If you want to add any explanation of how you have answered, please use Column D. When you have finished scoring, please rate how confident you felt when scoring. If we have missed any blockers, please add them at the bottom of the survey. Please return your completed survey to peter.gudde@uos.ac.uk.			
Themes	Blockers to progress	My score	If you want to comment on your score, please do so.
Staff roles and resourcing	Not having sufficient staff working in this area		
	Staff on short term contracts		
	Staff with limited influence or authority		
	Lack of appropriate skills and competence		
	Insufficient collaborative working across services		
The role and contribution of politicians	Resistance to spending public money on Net Zero or Climate Change action		
	Concerns over exposing the council to challenge or criticism		
	Local party politics causing decisions to be blocked or delayed		
	Lack of clear local leadership		
	Lack of clear national leadership		
Organisational structures and processes	Competing agendas and priorities		
	Complex internal decision-making processes		
	Issues of trust in the advice given by internal staff		
	Burdensome procurement processes		
	Ineffective scrutiny of decisions on Net Zero		
Investment funding and finance	Lack of project development funding		
	Concerns regarding the risk of investing in Net Zero solutions		
	Fragmented and short-lived public funding programmes		
	Uncertainty about who should pay for the solutions		
	The upfront cost of solutions		
	Lack of robust business cases		
	Uncertainty of where the money should come from		
	Financial regulations and taxation rules constraining investment		
	Funding opportunities favouring better resourced local authorities		
Integrated policy	Lack of a statutory mandate for local government		
	Complex, confusing and conflicting policy landscape		
Defining the problem	Confusing language of Net Zero/Climate Change		
	Doubt regarding the science of Climate Change		
Delivery	Doubt about what solutions to adopt		
	Lack of good quality suppliers		
	Lack of delivery plans		
	Volatile energy costs		
	Unrealistic timescales to deliver projects		
The role of others	Other factors diverting attention and resources		
	Doubts about the role of stakeholders in project delivery		
	Uncertainty regarding local stakeholder support		
	Conflicting needs of stakeholders		
Technical complexity	Technical challenges (e.g. connecting to the local power network)		

	Lack of affordable, high quality, independent information and advice		
	Complex licensing and permitting processes		
Overall, how confident do you feel about your scoring? Please use drop-down in the yellow box.			
If you think of any blockers we have missed, please add them in the yellow box.			
Please send the completed survey back to p.gudde@uos.ac.uk .			

Appendix 6: Solutions survey template used in the Delphi

Net Zero decision-making and governance

Solutions survey

Completing the survey: Please score each solution between 0-10 using the drop-down in Column C based on how much you feel that it could help your organisation's delivery. The following interpretations may help you select your scores: 1 (Not a solution for my organisation), 3 (Minor solution), 5 (Moderate solution), 8 (Significant solution), 10 (Critical solution). **If you don't know how to answer or you consider that the statement does not apply, please score 0.** If you want to add any comments, please use Column D. When finished, please rate how confident you felt when scoring. If we have missed any solutions, please add them at the bottom of the survey.

Please return your completed survey to the research contact: p.gudde@uos.ac.uk

Themes	Potential solutions to improve progress on Net Zero	My score	If you want to comment on your score, please do so.
Embedding Net Zero	Making the impacts of Net Zero (i.e. the financial and non-financial) transparent across all council decisions		
	Supporting more participation of stakeholders in Net Zero planning, delivery and progress monitoring		
	More training and awareness to support leaders and decision-takers across sectors in the local area		
	Leading area-wide energy planning to help focus Net Zero delivery		
	Establishing a regional carbon budget to align with the UK statutory equivalent		
Investment funding and finance	Establishing multi-year investment budgets for council Net Zero projects		
	Establishing locally-controlled Net Zero funds accessible across organisations in different sectors		
	Using different sources of finance for Council projects (e.g. locally-raised finance, private sector investment)		
	Establishing early-stage funding for new project ideas		
	Having local control of national Net Zero-related funding		
	Establishing a regional energy infrastructure fund to stimulate commercial investment at scale		
	Establish a finance mechanism for scaling-up retrofit across all types of housing		
	Having the ability to control taxation locally to stimulate Net Zero investment		
	Focusing developer planning contributions on essential Net Zero infrastructure		
Improving the democratic decision-making process	Improving democratic scrutiny of Net Zero decisions		

	Integrating Net Zero into policies across functions within Councils and between local organisations		
	Establishing advisory panels to inform, support and monitor Net Zero delivery plans		
	Streamlining Council decision-making processes (e.g. through more targetted delegations)		
Staff roles and resourcing	Increasing resource-sharing (i.e. people and finance) between local authorities		
	Bringing in expertise from other sectors in the local area to support staff		
The role and contribution of politicians	Providing councillors more opportunities to participate in Net Zero planning, delivery and monitoring progress		
	Offering more training to develop councillor knowledge and expertise in Net Zero		
	Mandating Net Zero training for councillors as a way of developing knowledge and expertise		
	Lobbying National Government to introduce a Statutory Duty/Powers for Local Authorities to lead Net Zero at local level		
Organisational structures and processes	Establishing a 'Net Zero Duty to Co-operate' between local authorities		
Increasing local capacity and capability to deliver Net Zero	Establishing formal Net Zero delivery structures across sectors at local level		
	Establishing a statutory role for local authorities to help shape changes in the energy network		
	Increasing the level of collaboration with external parties (e.g. the private sector, communities) to deliver new projects		
	Being able to relax planning rules (e.g. around consultation and decision-time scales) where evidence supports Net Zero		
	Being able to establish innovation zones for Net Zero		

Overall, how confident do you feel about your scoring? Please use drop-down in the yellow box.	
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If you think of any solutions we have missed, please add them in the yellow box.	
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Please send the completed survey back to peter.gudde@uos.ac.uk.	
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Appendix 7: Delphi process participant documentation

Participant Research Information Sheet – template

Net Zero and the place-based investment requirement

Local Government is identified in the UK Government Net Zero Strategy¹ as playing a central role in the delivery of Net Zero at local level. Analysis by the UK Committee on Climate Change² placed the cost to achieve the national 2050 commitment between 1-2% of UK Gross Domestic Product. Taking the median projection gives an estimate of UK Net Zero investment around £33bn each year to 2050.

Translating this to the local area would mean an investment requirement across the two council areas of around £121m and for [REDACTED] £450m **every year** to 2050.

This research activity

This research aims to gather your expert opinion on possible solutions to address some of the identified barriers to investing in Net Zero solutions and how the Councils work with others across Norfolk. In particular, we firstly want to r[REDACTED]nd validate some of our already-completed research which looked at the barriers that local authorities face when they are making decisions to invest in Net Zero.

Secondly, we want to understand how local authorities in two-tier administrative areas like [REDACTED] contribute to the area-wide investment to Net Zero. The findings, along with research by others, will be collated with the aim of developing some best practice guidance for similar local authorities across the UK.

The types of investment that local authorities or their partners may participate in could include local energy networks, renewable power or heat, installing electric vehicle charging, insulating public buildings or homes, energy storage or replacing fossil fuel-powered transport.

Our research to date

The University of Suffolk research team has already analysed local authority Climate Emergency declarations across the UK, surveyed a range of sectors to identify the key barriers to renewable energy technology investment and undertaken in-depth interviews of 25 local authority staff across 21 councils in the East of England to explore the barriers that councils face. Our research has been published with copies of our papers available on request.

What is a Delphi study?

The research will use the “Delphi” technique which seeks to obtain consensus on the opinions of experts, termed panel members, through a series of structured questionnaires. As part of the process, the responses from each round are fed back in summarised form to the participants who are then given an opportunity to respond again to the emerging data. The Delphi is therefore an iterative multi-stage process designed to combine individual opinion into group consensus.

Why have I been invited to take part?

As an established expert in your role in your organisation, we are keen to gain your views about how the Council decides to invest in Zero Carbon technologies and the way the Council works with others to achieve Net Zero more widely. Specifically, we would like to ask your views on the barriers you see from your perspective and whether some of the possible solutions to address

these barriers, many of which are being employed elsewhere, could work successfully both within the Council and as part of its delivery arrangements with others.

We plan to recruit between 10-20 participants for the expert panel consisting of staff and members with a range of expertise and positions across the Council to form the expert Delphi Panel for [REDACTED] Councils. We plan to replicate your panel with at least one other local authority to provide the research with comparative data.

What will I be asked to do if I take part?

We are inviting you to participate on a Council Expert panel. This would involve completing three brief questionnaires over a six-week period. Following each questionnaire, you will receive a summary of your ratings, a summary of the expert panel's responses and a follow-up questionnaire with the opportunity to review your responses in the light of the unattributed views of other panel members. This review process will continue over a total of three questionnaires. Each questionnaire should take less than 30 minutes to complete.

Who is organizing and funding the research?

This research is part of a doctoral research programme at the University of Suffolk. This study will be conducted by Peter Gudde, Doctoral researcher at the University of Suffolk (e-mail: p.gudde@uos.ac.uk), supervised by Professor Nicholas Caldwell, Professor of Information Systems Engineering.

Confidentiality

Confidentiality is key to ensure that any one voice does not bias the research. To achieve this, no personal information will be collected, and survey responses will be collated anonymously using an identifying number known only to the participant and lead researcher. All responses received in the study will be strictly confidential, and your identity will not be divulged. Direct quotes to free-text answers may be used during the research or as part of the study report but these will not be traceable back to you.

Data protection

Survey responses will be collected online and stored securely by the University of Suffolk. Results will be downloaded, anonymised and coded to allow analysis by the researchers. Data will be stored for the duration of the PhD research programme only and then deleted. Please note that the unattributed findings may be shared with Aarhus University as part of the research programmes. You have the right to access submitted information according to UK data protection laws.

Research ethics

The proposed Delphi study abides by the ethical requirements of the University of Suffolk, aiming to assure 'rigour, respect and responsibility' in the conduct of any research project. A copy of the research protocol approved by the University's ethics committee is available on request. All participants will be asked to complete and return a consent form.

E-mail template for participants

Many thanks for agreeing to participate in this Net Zero research programme being run by the University of Suffolk.

You are part of an expert panel for your organisation alongside other expert panels drawn from other local authorities across the East of England. With your help, the research aims to identify solutions to barriers faced by local authorities across the UK to delivering Net Zero places. I attach a briefing note explaining the context and how the research will be carried out and how we will manage your data to ensure anonymity and compliance with both GDPR and research ethics.

Your participation is requested in **three online activities over the next two months**. These activities **should take no more than 90 minutes in total**:

Activity 1 - you are asked to complete and return the attached survey (Excel spreadsheet) which explores 40 barriers to success. The survey should take **no more than 30 minutes to complete**. You are also encouraged to provide commentary in the spreadsheet based on your expertise and experiences - any comments will be anonymised in the research. **Please return the survey and the attached research consent form to me ideally WITHIN 14 days of receiving this e-mail**.

Activity 2 - At the beginning of [insert date], you will receive your panel's results for the Barriers Survey alongside your own responses. You will be asked to reflect on your scoring in the light of the panel's output. You can choose to retain or revise your scores. You will also receive a Solutions Survey which I would be very grateful if you will complete following the same approach for Activity 1. Both activities combined should take **no more than 45 minutes to complete**.

Activity 3 - At the end of [insert date], you will receive your panel's results for the Solutions Survey alongside your own responses. Again, you will be asked to reflect on your scoring in the light of the panel's output. You can choose to retain or revise your scores. This activity should take **no more than 15 minutes to complete**.

We plan to complete the research **by the end of [insert date]** and prepare a report of the findings which the research team hopes will be of value to your organisation in achieving its Net Zero ambition.

If you have any specific questions or queries, please do not hesitate to get in touch with me.

I really look forward to hearing from you.

Kind regards,

Peter Gudde

Participant briefing template

Introduction

The research will explore how Net Zero investment decisions are made and the governance structure within which the decision-making processes operate to compare with other governance and decision-making models.

The Delphi process

The process that will be followed involves bringing together a series of expert panels drawn from Councils across the East of England where individual participants are posed questions in a series of stages. Using feedback loops from each question stage, the process aims to work towards a consensus solution. This is called the Delphi Research method.

It is proposed that participants for the [insert name of organisation] Panel are drawn from across both tiers of [insert area name] Councils (i.e. Borough/District and County). The design of the Panel will aim to include both officers and political members with experience of the Council's decision-making processes and activities to address the individual council's and the area's Climate Emergency declarations or Net Zero ambitions.

This Delphi process will comprise of 3 rounds of questionnaires, each taking approximately 30 minutes to complete. The first questionnaire will focus on barriers while the second will consider solutions. Questionnaires will be sent out at regular intervals over 2 months this winter.

Participants will be asked to score a series of statements using a range called a Lickert Scale (e.g. 0-10).

The results will be analyzed and fed back to each participant in an aggregated and anonymized form, asking them to reflect and, if they feel appropriate, revise their original score based on the evidence presented to them from the panel.

This iterative approach is designed to bring forward consensus whilst reducing the direct influence of other participants.

Participants

It is proposed that each expert panel should comprise of up to 15 panelists, with a minimum of 10 considered a viable panel size.

The principal selection criteria for each panel are that each participant is an expert in their field within local government and that they have been involved in some way with Net Zero projects including their finance or funding.

Arrangements and participation will be confirmed with each participant with their agreement to participate confirmed in advance using a consent form. All participation will be anonymous.

Output of the research

Once the research stage is completed, the results will be analyzed with feedback sessions and reporting offered to each participating organisation.

It is also hoped to develop good practice guidelines to support the types of councils represented in the study.

Participant consent form template

Research Consent Form		 University of Suffolk
Research Programme: Local Authority Net Zero decision-making and governance in the UK Stage 4: Net Zero research (Delphi Panels)		
Lead researcher: Peter Gudde Academic Supervisor: Professor Nicholas Caldwell		
The University of Suffolk expects all research to be carried out in accordance with the following principles: • The emotional well-being, physical well-being, rights, dignity and personal values of research participants should be secured. • Research participants and contributors should be fully informed regarding the purpose, methods and end use of the research. They should be clear on what their participation involves and any risks that are associated with the process. These risks should be clearly articulated and if possible quantified. • Research participants must participate in a voluntary way, free from coercion. Participants have the right to withdraw at any time. This research has been approved by the University of Suffolk Ethics Panel. Should you have any concerns about the Ethics of this research, please feel free to contact the Chair of the Ethics Panel, Professor Emma Bond e.bond@uos.ac.uk (01473 338564) or the Research Development Manager, Andreea Tocca a.tocca@uos.ac.uk (01473 338656).		
Please tick shaded boxes:		
I confirm that I have read and understand the accompanying e-mail explaining the above research project and I have had the opportunity to ask questions about the project.		
I understand that my participation is voluntary, that I am free to withdraw up to seven days after taking part and that you will destroy records or information provided by me.		
I give permission for members of the research team to use my anonymised responses in their research and publications and with those organisations named in the accompanying e-mail.		
I understand that the data I provide will be used solely for the purposes outlined in the accompanying e-mail. I also understand how long my data will be stored for.		
By signing I confirm that I am happy to take part in the research		
Please type your name (to act as signature)/Date		
Name of Lead Researcher (to act as signature)/Date		
<u>Copies:</u> Please keep a copy of the signed form for your records.		

Follow-up email to participants – template

Thank you for your continued participation in this Net Zero research for local authorities. We have collated the first set of results from your panel relating to Barriers. We now invite you to review your scores and then complete the next survey which explores possible Solutions.

Reviewing the Barriers Survey: Alongside your scores, you will find results from the whole panel. We have provided the minimum, maximum and most common score along with comments from your fellow panelists. If you want to change your score after reviewing the results, please enter a revised score in the column provided using the same 0-10 scale. You do not have to amend your score if you do not wish. Please return the spreadsheet whether or not you choose to amend your scores.

Completing the Solutions Survey: We attach our second and last survey. Please follow the same process as before using the 0-10 scoring scale. We really look forward to receiving the completed survey.

We look forward to receiving both completed spreadsheets by [insert date] to allow us to process the findings and prepare the final stage of your participation in this research.

Many thanks again for your support.

Appendix 8: Climate Action Plan Scorecard questions 2023-24

Source: <https://councilclimatescorecards.uk/2023/sections/>

Delivery (all questions) N=91

Buildings (n=12)

Transport (n=15)

Planning & Land Use (n=14)

Governance & Finance (n=17)

Biodiversity (n=9)

Collaboration & Engagement (n=13)

Waste & Food Reduction (n=11)

Buildings (n=12)

- 1.1 Has the council completed extensive retrofit work on any of its significant buildings to make them low carbon?
- 1.2 Are the council's operations powered by renewable energy?
- 1.3 Are the homes owned and managed by the council energy efficient?
- 1.4 Does the council have a target to retrofit all council owned and managed homes and has this been costed?
- 1.5 Is the council part of a programme or partnership to support home retrofitting, through providing the skills and training needed or in other ways?
- 1.6 Does the council have a staff member employed to work on retrofitting across the council area?
- 1.7 Are the homes and buildings in the council area energy efficient?
- 1.8 Is the council actively enforcing Minimum Energy Efficiency Standards of homes in the private rented sector?
- 1.9 Does the council provide a service to support private homeowners to make their homes more energy efficient?
- 1.10 Does the council offer funding to private renters or homeowners to retrofit their homes?
- 1.11 Does the council have a scheme to allow residents to purchase renewable energy cheaply, through collective buying?
- 1.12 Has the council supported local community renewable energy creation?

Transport (n=15)

- 2.1 Is the council transitioning their vehicle fleet to electric?
- 2.2 Has the council set up or supported a shared transport scheme that can be used across their whole area?
- 2.3 Does the council have enforced school streets across its area?

- 2.4 Is the council committed to making 20mph the standard speed limit for most restricted roads?
- 2.5a Has the council introduced a Clean Air Zone or Low-Emission Zone?
- 2.5b Does the council's Clean Air Zone or Low Emission Zone require charges for private vehicles?
- 2.6 Has the council taken clear steps to support active travel?
- 2.7 Does the council have controlled parking zones across all the residential areas of the local authority?
- 2.8a Are there any low emission buses used within the council's area?
- 2.8b Is bus ridership within the council's area high?
- 2.9 Does the council have a workplace parking levy?
- 2.10 Has the council supported the expansion of a public network of electric vehicle chargers?
- 2.11 Has the council approved, expanded or built a high carbon transport project since 2019?
- 2.12a Do the NO2 levels in a significant proportion of neighbourhoods within the council's area exceed the safe World Health Organisation (WHO) air pollution guidelines?
- 2.12b Do the PM 2.5 levels in a significant proportion of neighbourhoods in the council's area exceed the safe World Health Organisation (WHO) air pollution guidelines?

Planning & Land Use (n=14)

- 3.1 Is the council's area wide net zero target a strategic objective of the Local Plan?
- 3.2 Has the council committed to building all future council owned or managed housing to a high energy efficiency or operationally net-zero standard?
- 3.3a Does the council require new homes to make an improvement on the Part L building regulations?
- 3.3b Does the council require a fabric first approach for new development?
- 3.3c Does the council set a requirement that all new homes to be built must be operationally (regulated) net zero?
- 3.4 Does the council require developers to carry out a whole life cycle carbon assessment of new build developments?
- 3.5 Does the council require a higher level of water efficiency for all new homes?
- 3.6 Has the council removed minimum parking requirements for new residential homes across their area?
- 3.7 Does the council include a policy in the Local Plan to create 15/20 minute neighbourhoods?
- 3.8 Has the council committed to avoiding new building developments on the functional flood plain?
- 3.9 Does the council have a minimum requirement for on-site renewable energy generation for new building development?
- 3.10a Does the Local Plan identify suitable areas for new solar energy, wind developments and district heat networks?
- 3.10b Has the Council approved any planning applications for new or expanded solar or wind developments, battery storage, or renewable district heat networks since 2019?
- 3.11 Has the Council approved a planning application for a carbon intensive energy system to be built or expanded from 2019?

Governance & Finance (n=17)

- 4.1a Does the council's corporate plan include a net-zero target and make tackling the climate emergency one of its main priorities?
- 4.1b Does the council's medium term financial plan include the council's net zero target and make tackling the climate emergency one of its main priorities?
- 4.2 Has the council published a climate change risk register?
- 4.3a Is the council reporting on its own greenhouse gas emissions?
- 4.3b According to the council's own reporting, have the council's own greenhouse gas emissions reduced since 2019?
- 4.4 Has the council's area wide carbon emissions decreased, according to UK Government data?
- 4.5 Has the council adopted a new governance or decision making process to put tackling the climate emergency at the heart of every council decision made?
- 4.6 Has the Council embedded climate action and waste reduction into their procurement policies?
- 4.7 Does the council have a Cabinet member or Portfolio Holder that has climate change explicitly in their remit?
- 4.8 What percentage of the council's overall staff work on implementing their Climate Action Plan or other climate change projects?
- 4.9 Have all senior management and councillors in the cabinet or committee chairs received climate awareness training?
- 4.10a Has the council raised income for climate action from property development?
- 4.10b Has the council launched a Climate Bond, Community Municipal Investment or equivalent?
- 4.10c Has the council raised income for climate action from any other sources?
- 4.11a Has the council passed a motion in support of divestment from all fossil fuels from the councils' pension funds?
- 4.11b Has the council's pensions fund committed to divesting from all fossil fuels?
- 4.12 Does the council have direct investments in airports or high carbon intensive energy industries?

Biodiversity (n=9)

- 5.1 Does the council use peat free compost or soil in all landscaping and horticulture?
- 5.2 Has the council banned the use of pesticides on all council owned and managed land?
- 5.3 Has the council committed to mowing their green spaces less for wildlife?
- 5.4 Are two thirds of the local wildlife sites in the council's area in positive conservation management?
- 5.5 Does the council have a target to increase tree cover and is a tree management plan agreed as they grow?
- 5.6 Does the council turn off or dim their street light network to reduce light pollution?
- 5.7 Have the council's parks been awarded Green Flag status?
- 5.8 Does the council employ a planning ecologist to scrutinise planning reports for biodiversity net gain?
- 5.9 Does the council require a higher biodiversity net gain commitment from new developments?

Collaboration & Engagement (n=13)

- 6.1 Do the council's climate pages include information about behaviour changes that residents can take, and are they easy to find?
- 6.2a Has the council published a climate action plan with SMART targets?
- 6.2b Has the council published an up to date and easy-to-read annual report on their Climate Action Plan?
- 6.3 Has the council lobbied the government for climate action?
- 6.4 Is the council working with external partners or other councils to seek to influence national governments on climate action, or to learn about and share best practice on council climate action?
- 6.5a Does the council have an ongoing way for residents to influence the implementation of the council's Climate Action Plan?
- 6.5b Does the council's ongoing engagement with residents include those most affected by climate change and climate action policy?
- 6.6 Does the council provide funding for community climate action, for example through an environment fund or climate action fund?
- 6.7 Is the council working in partnership with health services on active travel, home insulation, air pollution, green spaces or other climate action policies?
- 6.8 Is the council working in partnership with cultural institutions and organisations to encourage decarbonisation within culture and arts locally?
- 6.9 Is the council working in partnership with schools or other education settings to deliver climate action that young people can engage with?
- 6.10 Is the council working in partnership with local businesses to encourage decarbonisation?
- 6.11 Has the council passed a motion to ban high carbon advertising and sponsorship?

Waste & Food Reduction (n=11)

- 7.1a Has the council reduced single use plastic in its buildings and events?
- 7.1b Has the council reduced single use plastic at external events on council land, property or public spaces such as roads and parks?
- 7.2 Has the council taken steps to support a circular economy locally?
- 7.3 Does the council support initiatives to redistribute surplus food?
- 7.4a Does the council have a sustainable food strategy?
- 7.4b Is the council part of a sustainable food partnership?
- 7.5 Has the council taken steps to support local food growing?
- 7.6 Do schools in the council area serve less meat in school meals?
- 7.7 Does the council provide kerbside food waste recycling?
- 7.8 How high is the councils' area wide annual recycling rate?
- 7.9 How low is the councils' area wide level of household waste produced?

Appendix 9: Selection of graphical data representation in Chapter 7

Table A.9.1. Selections made to present the data derived from analysis of the Climate Emergency UK database.

Graphical data representation shown with colour-code	Data type	Data sub-type	Independent variable	Single variable chart	Multi-variable chart
Climate language	Categorical	Nominal	Time	Stacked/multiple bar	
Type of local authority	Categorical	Nominal	LA	Pie	Stacked/multiple bar
Region	Categorical	Nominal	LA	Pie	
Political Control	Categorical	Nominal	LA	Pie	
Date of CE declaration	Scale	Discrete	LA	Line chart	
Target date	Scale	Discrete	LA	Bar	
Scope of declaration	Categorical	Nominal	LA	Bar	
Level of Engagement	Categorical	Nominal	LA	Bar	
Action planning	Categorical	Nominal	LA	Bar	
Financing delivery	Categorical	Nominal	LA	Bar	
Action planning status May 2020	Categorical	Nominal	LA	Bar	
Action planning status November 2020	Categorical	Nominal	LA	Bar	

Table A.9.2 Metadata

Action	Date carried out	Source
Download dataset	10-Mar-20	https://www.climateemergency.uk/
Update download	07-Apr-20	https://www.climateemergency.uk/
Update download	24-May-20	https://www.climateemergency.uk/
Update download	30-Oct-20	https://www.climateemergency.uk/
Upload of Lower Tier Local Authority to Upper Tier Local Authority (April 2019) Lookup in England and Wales	25-Nov-20	Lower Tier Local Authority to Upper Tier Local Authority (April 2019) Lookup in England and Wales - data.gov.uk
Statistical tests run	05-Dec-20	

Appendix 10: Interview checklist for governance/delivery organisations

Interview (template)

Background

What sort of organisation do you work for and summarise your role?

Organisation name, your role, what is the LA area like?

The process

- What sort of energy-related projects is your LA delivering?
- What sort of energy-related projects would you like your LA to deliver?
- Can you tell me what the main points of that journey (i.e. project stages) are?
- For two/three projects you have identified briefly describe the steps you go through
- Can you tell me at what points in developing a project you need to get a decision to proceed and from whom?
- Which steps do you find hardest to get decisions made?
- What in your opinion is making that approval decision difficult to secure?

Decision makers and timelines

- What sort of committee/governance structure does your organisation operate?
- Who, within the local authority, is/are the main decision maker(s) involved in get an energy project to delivery?
- Are there any specific committees/cabinets/members that are always/usually consulted?
- What is the usual timeline for a project to be initially proposed to the final business case being signed off?
- Are there any specific areas where the timeline can be varied? Or a point where there are often delays?

Engagement

- how do you currently involve external stakeholders [residents/members of the public/communities/other organisations]?
- Do you work with other external organisations when developing your projects?
- What value do you place on involving external stakeholders in your LAs approach to making decisions affecting your projects?
- What is your view on developing projects with others?
- What is your view about your LA being involved in decisions affecting other energy-related projects in your area through its influencing (non-statutory) role/?

Improvements and inefficiencies

- How and where do you think the decision-making process could be improved with specific reference to the following?
 - National/international policies and regulations – e.g. around energy, finance, procurement, the ways decisions are taken
 - Your LAs policies and procedures – applying corporately or to your area of responsibility
 - Your LAs structure or approach to energy-related projects
 - Your own expertise and experience

Appendix 11: SWOT analysis of the governance models described in Chapter 8

The Integrated Care System (Multi-stakeholder) model	
Strengths	Weaknesses
Strategic	Strategic
Established nationally under statute	Needs to achieve consensus between disparate independent voices at strategic level and across the local area
Delivers to a strategic plan based on an area-wide needs evidence base	Capable
Multi-stakeholder strategic planning function enables wide support	Key organisations could withdraw own resources
Clear link from strategic leadership to local delivery	Some (parts of) communities may not have the capacity or ability to participate creating patchy engagement and delivery
Accountable	Competent
Political representation at board level provides democratic accountability	Capacity and competence for delivery will need to be established and maintained
Delivery bodies take responsibility on how services are delivered	A lead organisation is needed to administer the framework
Overseen by a lead body and answerable to its stakeholders	Multiple stakeholders and agencies could create potential points of failure
Independently scrutinised	Individual roles and responsibilities of participating stakeholders may be poorly defined
Capable	Joined-up
Wide stakeholder participation provides varied routes to funding, resources, skills and knowledge	Multiple viewpoints and agendas need managing
Key organisations are independently funded and can bring their own resources	Complex communication routes across multiple stakeholders could dilute or confuse key messages
Joined-up	Dependency on local delivery could lead to area-wide opportunities being missed and variable service quality
Extensive data and information availability across participating stakeholders	Strong coordination required to ensure a whole system approach and maintain stakeholder support
Stakeholder representation throughout provides a comprehensive opportunity to raise awareness and share knowledge	Dynamic
Builds on existing practice and stakeholder relationships	Achieving agreement on key decisions across multiple organisations could make the approach slower to react
Participation of key stakeholder throughout provides the basis for strong links within and beyond the local area	
Enabling	
A range of delivery scales helps to foster inclusivity and empowerment of the public and local communities	
Offers the opportunity for coordination and collaboration given the range of stakeholders represented throughout	
Dynamic	
Takes a multi-disciplinary as well as thematic delivery approach	

The formal LA led model - Example: Joint Decision-making Arrangements for Local Development	
Strengths	Weaknesses
Strategic Established locally under statute Delivers to a strategic plan Led by the participants holding formal democratic responsibility	Accountable Lack of accountability and scrutiny beyond the participants Little transparency beyond the participants
Accountable Scrutiny by democratically elected representatives	Capable Capacity and competence limited to the participants
Capable Delivery is coordinated and undertaken centrally avoiding complicated organisational structures and processes Participating organisations are independently funded and choose to pool resources Defined resource commitment by the participants	Joined-up Communication and information-sharing subject to the processes agreed between participants Little engagement or empowerment of others at local level
Competent Similar types of participants working to common purpose and decision-making processes	Coordination and collaboration limited to the participants
Joined-up Similar types of participants able to communicate and share information commonly Communication messages can be agreed and consistency can be assured Builds on existing practice and stakeholder relationships	

The Public-Private Partnership model - Example: Bristol City Leap	
Strengths	Weaknesses
Strategic Clear formal relationship between the strategic commissioning and delivery body Clear objectives and deliverables linked to strategy	Accountable Risk of poor external scrutiny External transparency and scrutiny only assured if specified in the formal arrangement between commissioner and delivery body
Accountable Scrutiny by the client local authority built into contract monitoring	Joined-up Data and information held within the terms of the contractual arrangement may hamper sharing with third parties
Capable Defined resource commitment by the participants	Capable The contractual arrangement could limit opportunities to access other routes for funding, resources, skills and knowledge
Joined-up Clear lines of communication between commissioning and delivery body	Enabling Control is passed to the commissioned delivery body which may reduce the agency of the commissioning body and other stakeholders

The informal LA-led model - Example: Suffolk Climate Change, Environment and Energy Board	
Strengths	Weaknesses
Strategic	Accountable
Led by the participating democratic organisations	Lack of accountability or scrutiny beyond the democratic organisations
Delivers to a strategic plan	No legally binding commitment to ensure ongoing participation of democratic organisations
Accountable	Capable
Scrutinised by democratically elected representatives	Capacity and competence limited to the participants
Capable	Joined-up
Defined resource commitment by participants	Communication and information sharing subject to the processes agreed between the participants
Joined-up	Little engagement or empowerment of others at local level
Delivery is coordinated centrally enabling clear link to the strategic plan	Coordination and collaboration limited to the participants
Builds on existing practice and stakeholder relationships	
Small group of similar stakeholders eases communication and information sharing	
Knowledge is held within the control of the participating councils	
Communication messages can be agreed and consistency assured	
Enabling	
Strong collaboration and coordination between lead participants	

The Multi-Sector model - Examples: Greater Manchester Climate Change Partnership, West Midland Combined Authority (Energy Capital)	
Strengths	Weaknesses
Strategic Delivers to a strategic plan based on an area-wide needs evidence base Multi-stakeholder strategic planning function enables wide support Clear link from strategic leadership to local delivery	Strategic Needs to achieve consensus between disparate independent voices at strategic level and across the local area No legally binding commitment to ensure ongoing participation of democratic organisations
Accountable Political leadership provides democratic accountability Delivery bodies take responsibility on how services are delivered Overseen by a lead body and answerable to its stakeholders Independently scrutinised	Capable Key organisations could withdraw own resources Some (parts of) communities may not have the capacity or ability to participate creating patchy engagement and delivery
Capable Clear political leadership commands authority appropriate to its purpose Wide stakeholder participation provides varied routes to funding, resources, skills and knowledge Key organisations are independently funded and can bring their own resources	Competent Capacity and competence will need to be established and maintained A lead organisation is needed to administer the framework Multiple stakeholders and agencies could create potential points of failure Individual roles and responsibilities of participating stakeholders may be poorly defined
Joined-up Extensive data and information availability across participating stakeholders Stakeholder representation throughout provides a comprehensive opportunity to raise awareness and share knowledge Builds on existing practice and stakeholder relationships Participation of key stakeholder throughout provides the basis for strong links within and beyond the local area	Joined-up Multiple viewpoints and agendas need managing Complex communication routes across multiple stakeholders could dilute or confuse key messages Dependency on local delivery could lead to area-wide opportunities being missed and variable service quality Strong coordination required to ensure a whole system approach and maintain stakeholder support
Enabling A range of delivery scales helps to foster inclusivity and empowerment of the public and local communities Offers the opportunity for coordination and collaboration given the range of stakeholders represented throughout	Dynamic Achieving agreement on key decisions across multiple organisations could make the approach slower to react
Dynamic Takes a multi-disciplinary as well as thematic delivery approach	

The Project Delivery model - Example: Zero Carbon Oxford/Low Energy Oxfordshire	
Strengths	Weaknesses
Strategic	Strategic
Clear objectives and deliverables linked to the project brief	The project scope defines the ability to deliver strategically
Accountable	Accountable
Delivery bodies take responsibility on how services are delivered	Risk of poor external scrutiny
Overseen by a lead body and answerable to its stakeholders	Capable
Capable	Capacity and competence limited to the participants and finite project term
Delivery is coordinated and undertaken centrally avoiding complicated organisational structures and processes	Joined-up
Defined resource commitment by the participants	Communication and information sharing subject to the processes agreed between the participants
Participating organisations are independently funded and choose to pool resources	Little engagement or empowerment of others at local level
Joined-up	Coordination and collaboration limited to the participants
Extensive data and information availability across participating stakeholders	
Participation of key stakeholder throughout provides the basis for strong working relationships	
Small group of participants eases communication and information sharing	
Knowledge is held within the control of the participating organisations	
Communication messages can be agreed and consistency can be assured	

The Community-led model - Example: Brighton & Hove Energy Services Company, Low Carbon Hub, Oxford	
Strengths	Weaknesses
Accountable Delivery bodies take responsibility on how services are delivered Overseen by a lead body and answerable to its stakeholders	Strategic The scope of the participation defines their ability to deliver strategically
Competent Similar types of participants working to common purpose and decision-making processes Participants focussed on addressing real-world problems	Accountable Risk of poor external scrutiny Lack of democratic accountability beyond the defined area of delivery
Joined-up Participants are integrated into and reflect their local community Stakeholder representation throughout provides a comprehensive opportunity to raise awareness and share knowledge Small group of participants eases communication and information sharing	Capable Capacity to deliver severely limited by the resources available them
Dynamic The nature of the participants means that that they must be adaptive and opportunistic	Competent Participants are unlikely to have access to existing delivery structures or processes
Enabling The local delivery scale helps to foster inclusivity and empowerment of local communities and individuals Participants are highly motivated to act altruistically and inclusively	Joined-up Unlikely to be engaged with other activities beyond their sector and geography Unlikely to be able to take a whole system view

The Free Trade model - Examples: Freeports and Investment Zones	
Strengths	Weaknesses
Strategic	Strategic
Established nationally under statute	The scope of the participation defines their ability to deliver strategically
Delivers to a strategic plan	Accountable
Accountable	Little transparency beyond the participants
Political representation at board level provides democratic accountability and scrutiny	Risk of poor external scrutiny
Delivery bodies take responsibility on how services are delivered	Competent
Overseen by a lead body and answerable to its stakeholders	Participants are unlikely to have access to existing delivery structures or processes
Joined-up	Joined-up
Participation of key stakeholder throughout provides the basis for strong working relationships	Unlikely to be engaged with other activities beyond their sector and geography
Small group of participants eases communication and information sharing	Unlikely to be able to take a whole system view
Knowledge is held within the control of the participating organisations	
Communication messages can be agreed and consistency can be assured	
Dynamic	
Freedoms granted to the model encourages participants to be adaptive and opportunistic	

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