

**Governing turbulent transitions: the politics of climate change and low-carbon
transitions during austerity in the UK, 2006-2016**

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The candidate confirms that the work submitted is their own, except where work which has formed part of jointly authored publications has been included. The contribution of the candidate and the other authors to this work has been explicitly indicated below. The candidate confirms that appropriate credit has been given within the thesis where reference has been made to the work of others.

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Publications

This thesis includes work from four academic articles, which have been published as:

Gillard, R., Gouldson, A., Paavola, J. & Van Alstine, J. 2015. Transformational responses to climate change: beyond a systems perspective of social change in mitigation and adaptation. *WIREs Climate Change Review*, 7, 251-265.

Gillard, R., 2016. Unravelling the United Kingdom's climate policy consensus: The power of ideas, discourse and institutions. *Global Environmental Change*, 40, 26-36.

Gillard, R. and Lock, K., 2016. Blowing policy bubbles: rethinking emissions targets and low-carbon energy policies in the UK. *Journal of Environmental Policy & Planning*, 1-16, DOI: 10.1080/1523908X.2016.1266931

Gillard, R., Gouldson, A., Paavola, J. and Van Alstine, J., 2017. Can national policy blockages accelerate the development of polycentric governance? Evidence from climate change policy in the United Kingdom. *Global Environmental Change*, 45, 74-182.

As sole / lead author on these publications I was responsible for developing the articles' hypotheses and narratives, designing the methodology, carrying out the data collection, handling and analysis, and writing and revising the manuscripts throughout the peer review process. The co-authors provided guidance on methodology and feedback on draft manuscripts, except in the case of Gillard and Lock (2016), which included the use of additional data sets that the co-author collected.

Rationale for alternative format thesis

There are three main reasons for opting for the alternative format. First, the thesis draws on multiple analytical frameworks to support its empirical contributions. Differences in their core assumptions mean they are more accurately presented as stand-alone articles, rather than forced into a single epistemological framework that would display internal inconsistencies. Second, the thesis includes several significant theoretical contributions, which are better presented in the form of a review article and in the discussion sections of separate articles, rather compressed into an introduction chapter to a conventional thesis. Third, the research topic is a fast-changing area requiring iterative waves of data collection and analysis, which can in turn be published as academic outputs and then subsequently presented as parts of a longer narrative.

In summary, the thesis consists of the following:

- An introduction setting out the scientific and empirical context, as well as an outline of the research design
- A review paper offering detailed analysis of current approaches to climate change governance and theoretical propositions which are then tested and discussed throughout the rest of the thesis
- Three empirical papers presenting findings from a case study, generalising the implications and engaging with debates in the social science literature on climate change politics, policy and governance

- A conclusion discussing cross-cutting themes from the papers and stating the main contributions of the thesis as well as future directions for research

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Abstract

Addressing the causes and consequences of anthropogenic climate change is one of the most pressing challenges facing the world. A range of social and technical responses to this challenge have been proposed, which – if successfully mobilised – can limit dangerous climate warming through a transition to a low-carbon and resilient society. The role of the nation state in governing such a large-scale transition is often presumed, but it is in fact highly uncertain. At a time when political and economic trends in Western Europe have made government intervention and investment in climate policies particularly difficult, this thesis offers a timely analysis of the politics of climate change in the UK.

Drawing on extensive qualitative data this thesis addresses four questions. First, to what extent do current approaches to describing and prescribing low-carbon transitions adequately address their social and political dimensions? Second, how have the fundamental ideas of climate change politics and economics changed during 2006-2016? Third, what impact have these changes had on climate and energy policy outputs? And finally, where are the governance innovations coming from and what is government's role in empowering them? Multiple analytical frameworks are used to answer these questions in four distinct, but related, articles.

The first article offers a critical review of popular academic and governance approaches to sustainability transitions. The following three articles explore these theoretical claims through empirical analyses of: the fluctuating nature of institutionalised discourses, the rationalisation of renewable energy policy

retrenchment, and the ambiguous role of the state in facilitating a more polycentric approach to climate governance. This thesis argues that the complexity of climate change as a political issue is a double-edged sword, which provides opportunities for mobilising multiple sources of agency on the one hand, but which also diffuses responsibility and creates unhelpful trade-offs between various interests and policy goals on the other. It provides new theoretical tools for analysing this paradox, as well as new empirical insights into the UK case study and beyond.

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Acronyms and Abbreviations

BBC	British Broadcasting Corporation
BEIS	Department for Business Energy & Industrial Strategy
BIS	Department for Business Innovation & Skills
CBI	Confederation of British Industry
CCA	Climate Change Act
CCC	Committee on Climate Change
CFD	Contracts for Difference
COP	Conference of the Parties
DECC	Department of Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
DCLG	Department for Communities and Local Government
DI	Discursive Institutionalism
EC	European Commission
ECO	Energy Company Obligation
EMR	Electricity Market Reform
ESRC	Economic and Social Research Council
EU	European Union

FIT	Feed In Tariff
GDP	Gross Domestic Product
HMRC	Her Majesty's Revenue & Customs
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
INDC	Intended Nationally Determined Contribution
MP	Member of Parliament
OECD	Organisation for Economic Co-operation and Development
RHI	Renewable Heat Incentive
RO	Renewables Obligation
SE	Socio-Ecological
ST	Socio-Technical
TM	Transition Management
UK	United Kingdom
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change

1. Introduction

This thesis addresses the increasingly important question of how industrialised societies can mitigate their impact on the Earth's climate. In doing so, it raises significant concerns about the role, and capacity, of national governments in steering and facilitating a timely transition towards a low-carbon future. It offers novel theoretical and analytical contributions to a social science understanding of anthropogenic climate change, including empirical contributions to policy and governance studies in the United Kingdom (UK) and beyond. To begin, existing conceptualisations of how societies respond to the threats of climate change are critically examined and some suggestions are made for increasing the sensitivity of these theories to issues of politics, power and agency. Then, the benefits of one such approach, discursive institutionalism, are illustrated through an analysis of interactions among key stakeholders in the UK climate policy area, showing how the meaning and influence of fundamental ideas about climate governance and economics has changed over time. The effects of these ideational and discursive factors are then further demonstrated in the context of emissions reduction targets and low-carbon energy policy decisions. Finally, the limitations of national government-led climate policy and governance are enumerated and the potential for more polycentric options are critically examined. Ultimately these contributions, and the in-depth case study from which they are drawn, serve as a warning against over-reliance on government-led transitions, particularly in the context of a globalised and unpredictable political and economic environment.

UK climate politics and policy represents a timely and relevant case study. In response to simultaneous political, scientific and economic pressures the UK parliament almost unanimously passed the Climate Change Act (CCA) in 2008. This legislation was the first in the world to set legally binding targets for reducing greenhouse gas emissions. Even more significantly for this thesis, it institutionalised a policy framework for setting and monitoring five-yearly interim targets with the expressed aim of maintaining political commitment. Since then a prolonged economic recession and a shift from centre-left to centre-right administrations has put this framework under significant pressure. As such, it is an opportune moment for conducting a detailed case study of the social and political dimensions of governing turbulent transitions towards a low-carbon future.

In this chapter, section 1.1 introduces the academic and empirical context for the thesis. This includes considerations of the broad nature of social-environmental change and the way they are articulated through large-scale political systems, as well as through specific inter-personal factors and governance strategies. The review highlights the need for a socio-political understanding of how social transitions are contested and governed, and in particular it calls for a critical analysis of the ideational foundations of state leadership and how this is problematised by new multi-actor forms of governance. Section 1.2 defines the overarching research aims and objectives, detailing how four specific questions are addressed in order to meet them. Section 1.3 offers a justification of the research methodology, which stems from a critical realist philosophy of science and incorporates a number of analytical frameworks and qualitative evidence sources. Section 1.4 briefly outlines the key

contributions of the thesis and explains the way they are structured in the remaining chapters.

1.1. Academic research context

Broadly speaking, the contributions of this thesis relate to three specific areas of social science. Given their most disciplinary titles, these include: 1) low-carbon transitions, 2) political science and policy studies, and 3) climate governance. There is significant theoretical and empirical overlap between all three; therefore, this inter-disciplinary thesis combines analytical approaches from each in order to advance dialogue between them and to provide multiple perspectives on the research subject. However, the thesis also takes a critical approach to these disciplines, challenging some of their assumptions, highlighting limitations and pointing out tensions between them. In this section some crosscutting themes, concepts and questions from each area of literature are outlined in order to set the academic context and rationale for the thesis.

1.1.1. Low-carbon transitions

1.1.1.1. Wicked problems and the challenge of mitigating anthropogenic climate change

Paradoxically, as the level of physical scientific certainty about the global atmospheric warming effect of anthropogenic greenhouse gas emissions has grown, so has the level of social scientific uncertainty about how best to govern a transition towards a more climate compatible future i.e. one that is low-carbon and adaptive. The Intergovernmental Panel on Climate Change (IPCC) has regularly published reports that collate the findings from a vast number and range of scientific studies, outlining the evidence that human activity is accelerating global atmospheric warming and

predicting the likely impacts as well as the steps that would be likely to be needed in order to avoid them. After years of publishing such work, in 2014 the IPCC's Fifth Assessment Report (IPCC, 2014) stressed the importance of greater scientific, political and civic coordination in order to achieve a society-wide transformational change. The following year, at the 21st Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris, the international community responded by agreeing to increase the stringency of their target for an acceptable level of warming from 2 to 1.5 degrees Celsius¹.

Beneath this international diplomatic fanfare, long running concerns remain about the capacity of nation states to achieve the reduction of emissions necessary, even for reaching the previous 2 degrees Celsius target. These concerns relate to both the technical and political feasibility of coordinating fundamental and rapid social changes. For instance, although annual growth in the global renewable energy market is outpacing that of fossil fuels, its long-term success and uptake in specific countries has been stymied by policy variability and a lack of infrastructure investment (IEA, 2015; Frankfurt School-UNEP Centre, 2015). Similarly, at an aggregate global level, emissions increases have slowed in recent years but there is a great deal of variability between countries and sectors that is a result of numerous social, political and economic factors e.g. legislative activity and international and domestic socio-economic inequalities (Bailey and Compston, 2012; Nachmany et al., 2015; PBL Netherlands Environmental Assessment Agency, 2016).

¹ The Agreement entered into force in October 2016. At the time of writing 144 of the 197 parties have ratified the Convention.

A clear indication of just how complex a challenge climate change poses is that engineers, climate scientists, political scientists and international organisations all regularly describe it as a ‘wicked problem’ (Grundmann, 2016; Incropera, 2015; Stang and Ujvary, 2015; Sun and Yang, 2016; Urry, 2016). This dramatic sounding designation is intended to highlight the fact that both the problem and its solutions are often cross-cutting, contradictory and emergent. This has led to calls for greater reflexivity, learning, and socially sensitivity when searching for – and implementing – solutions.

After a century of (if not longer) of catastrophic attempts to impose ideological social orders in the West there is now an underlying sense of critical pragmatism with regards to driving social change (see: Rorty, 1999), which is expressed in specific instances by social scientists concerned with the politics, policy and governance of climate change. Within this field it is assumed that the appropriate response of social science to the wickedness of the climate problem is to acknowledge, analyse and mobilise multiple interpretations of ‘what ought to be done’ i.e. to avoid the lure of any silver bullet solution (e.g. Bäckstrand, 2010; Hulme, 2009; Stirling, 2011). Immediately this opens questions of how climate change is understood and articulated and how society’s responses are enacted, providing space for critical scholars to challenge the assumptions and norms of dominant theories and modes of governance.

1.1.1.2. *Building resilient social and ecological systems*

‘Complex systems theory’ has become a popular and influential way to conceptualise (and intervene in) the interactions between ecology and society. This work seeks to explain how human systems (such as technology, the economy, culture and livelihoods) evolve over time and in tandem with ecological systems (such as the global

climate, biodiversity and natural resources) (Fischer-Kowalski and Rotmans, 2009; Foxon et al., 2009). Epistemologically it produces a functionalist perspective, focusing on the ebb and flow of system attributes, with an overarching normative position of working towards an 'optimal' system state (an ontological assumption that is addressed in more detail in chapter 2). There is clearly space for contesting what such an optimal state should be, but most often it is assumed to be a stable natural environment operating in harmony with the human systems that depend on it. For instance, the notion of Earth System Governance and 'planetary boundaries' implies a level of human control over ecosystems that should be exercised to provide for a certain (often presumed) way of life (Biermann, 2007; Rockström et al., 2009). Similarly, a socio-technical perspective implicitly extends the modernist myth of unstoppable technical innovation overcoming environmental challenges (Bijker, 1997).

Within these strands of eco-centric / techno-centric social science it is possible to identify some shared theoretical assumptions about what 'system properties' are needed in order for society to successfully respond to the challenges of climate change (Bailey and Wilson, 2009; Foxon et al., 2009). Typically this includes high levels of adaptive capacity (e.g. changes to the way ecosystem services are secured in response to climate change impacts) and redundancy (e.g. renewable energy start-ups that drive innovation but don't derail the train when they fail) (Tompkins and Adger, 2004; Walker and Cooper, 2011). In theory, what these attributes aim to achieve is a sufficient level of *resilience*, enabling society to survive, and adapt, to the pressures of a changing climate.

But is resilience really what is needed at a time when significant and rapid emissions reductions are being called for? Furthermore, is a functionalist theory of system properties sufficient for explaining the complex social determinants of such significant change? Based on past examples of technological breakthroughs, some generalised transition pathways have been suggested (see figure 1) (Rotmans and Kemp, 2001; Geels and Schot, 2007), as have some specific pathways towards a low-carbon future (in the UK: Foxon, 2013). But neither provides a detailed account of the power dynamics, personal interactions and institutional factors that affect individuals' and societies' capacity to drive such change. As a result, the inherent conservatism of resilience as an overarching norm can be criticized for the limited forms of climate governance it gives rise to (see: Brown, 2014; Walker and Cooper, 2011). As more transformational aspirations are set, the governance recommendations of transitions studies need to be revisited and expanded to cope with the deeply social and political nature of the task at hand.

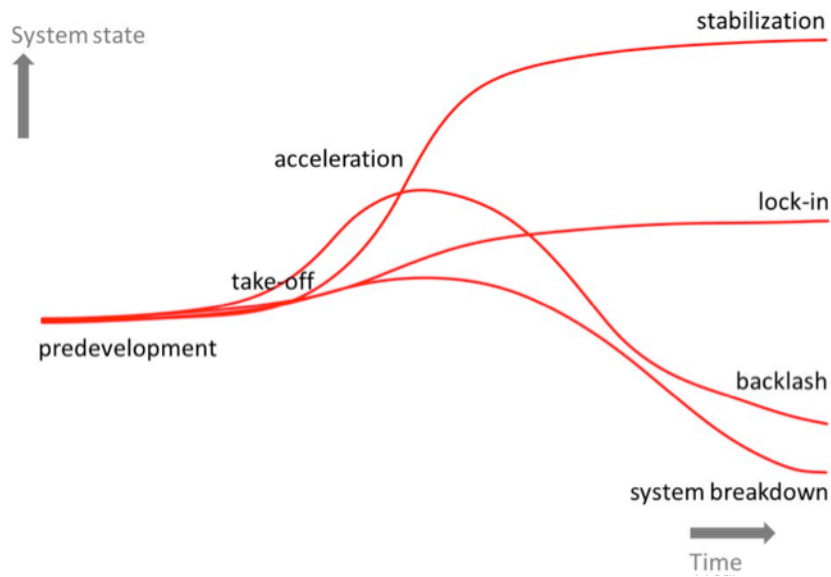


Figure 1.1: A typology of system transition phases and outcomes. Source: Vandevyvere and Nevens (2015).

1.1.1.3. Governing transitions through political and economic turbulence

The literature on socio-technical and low-carbon transitions can be fairly technocratic, as its disciplinary name of ‘Transitions Management’ suggests. It contains a tendency towards elitism and technological determinism inasmuch as a small number of leaders in society are entrusted with envisioning a low-carbon future and technical experts are expected to pave the way with material innovations that in turn alter social systems (see: Grin et al., 2010). Interestingly, this elitism is obscured by the repeated adage that complex systems cannot ever be fully controlled. It is claimed that through the management of certain system properties (such as adaptive capacity, redundancy and reflexivity) deliberate transitions can still be facilitated into existence (Loorbach, 2010; Hendricks, 2009). In theoretical terms this means trusting in Schumpeter’s notion of ‘creative destruction’ and Hayek’s free market dynamics to select the most effective drivers of change. In practice this means setting strategic policy goals and encouraging

entrepreneurialism and innovation before letting market forces – or some other, often unspecified, social processes – select the winners and losers (Grin et al., 2010; Walker and Cooper, 2011; Voß, Smith and Grin, 2009).

Although it is in keeping with the liberal capitalist zeitgeist of Western Europe and beyond, this form of governing appears to be at odds with the demands of a long-term policy problem such as climate change (Giddens, 2009). It cannot be entirely *laissez-faire*, as the overarching goal of steering society towards a low-carbon future provides a mandate for intervening in any social system that is either high-carbon or vulnerable to climate impacts (Hendricks, 2009; Grin et al., 2010; Voß, Smith and Grin, 2009). However, the reliance on market forces to select the pathways for change presumes that the selection criteria are set to prioritise emissions reductions (as opposed to profit maximization or short-term interests). This is patently not the case in many societies, despite the grand claims of green capitalism and ecological modernisation (Bailey et al., 2011; Prudham, 2009; York and Rosa, 2003). Linked to this, the public and political salience of climate change varies between sections of society and over time (Boykoff, 2008), potentially undermining whatever legitimacy governance actors thought their vision afforded them for intervening.

These theoretical and practical challenges facing the transitions governance literature can be summarized in two broad questions: 1) how to explain and overcome the social determinants of high-carbon inertia, and 2) how to explore the disruptive effect of competing visions of the future. Evidence from the Netherlands (where transition management has its intellectual roots, and has been applied most directly by government policies) highlights the enduring influence of incumbent interests and the

ambivalence of a flexible discourse, such as ecological modernisation (Smith and Kern, 2009; York and Rosa, 2003). Ultimately, the success of a particular transition governance initiative rests on how effectively it redefines the rules of the game and then maintains the legitimacy and impact of that arrangement over time i.e. its institutionalization ('stabilisation' in figure 1.1).

Potential barriers to this success story include individual factors (such as beliefs, values and behaviour of decision makers) as well as collective ones (such as power and political structures) (Geels, 2013; 2014; Kern, 2011; Shove and Walker, 2010). In Western Europe, cultural, political and economic turbulence associated with the effects of globalisation and economic recession continue to challenge the legitimacy of governing elites' discourses about climate change and many other issues (Burns and Tobin, 2016; Geels, 2013; Žižek, 2011). As such there is an opportunity for social science research in these contexts to begin answering these critical questions.

1.1.1.4. *Rationale for the thesis*

Critical social science that recognises the multiplicity, and limitations, of ontological and epistemological assumptions is well suited to researching 'wicked problems' such as climate change (Bhaskar, 2010; Urry, 2016). The physical and technical reality of human influences on the Earth's atmosphere has been well articulated (specifically, concentrations of greenhouse gases and their global warming effect). As current emissions trajectories and naturally occurring atmospheric processes continue to push the climate system beyond 'points of no return', there is an increasing urgency to understand the social, as well as material, factors that affect how quickly and how efficiently humans can mitigate their greenhouse gas emissions.

Many industrialised societies have a long high-carbon history, making the scale of change required to reach a low-carbon future significant. Studying the rocky road of such transitions can help address broad questions about processes of social change and the socio-material reality of reducing greenhouse gas emissions. For instance, this thesis will explore what happens at the various stages of ‘system change’ outlined in figure 1.1. It will do so from an empirically informed and explicitly socio-political perspective. This will provide particularly valuable insights for countries and sectors where low hanging fruit, such as non-disruptive low-carbon technology adoption, have largely been picked and only the more socially disruptive options remain. More broadly, it will address the tension between aiming for social resilience or transformation, between driving change through evolution or revolution. It will explore how this tension is expressed through more/less flexible discourses, policymaking and governance practices.

Pushing beyond the transitions governance literature this thesis seeks to open up the boundaries of who gets to envision and enact a pathway to a low-carbon future. Technology and behaviour are key components of the low-carbon story, but in this thesis the social structures and interactions that animate them will be the main focus, rather than a vaguely defined backdrop. Addressing how ideas, norms, values, policies and practices all change – or are stabilized – over time will help explain the most political aspects of transitions governance. This may start with the nation state, as the source of a particular climate policy discourse and strategy, but it will also include myriad interactions – formal and informal – between its representatives and various areas of society including business, communities, and individuals. This level of detail

and inclusivity will add a more inter-personal and power-sensitive layer to the transitions literature's current understanding of how systemic change is governed and contested.

1.1.2. Climate Politics and Policy

1.1.2.1. *Environmental politics and the challenge of greening the state*

The international political response to the threat of dangerous climate change impacts has predominantly been coordinated by the UNFCCC, thereby continuing a long tradition of prioritising the nation state, as a sovereign actor, and using international relations as the predominant form of analysis for understanding this arena (Harris, 2013). Herein, the overarching goals are to foster mutual trust, develop legal commitments and carry out effective monitoring to ensure states pursue sufficient domestic emissions reductions to collectively limit global warming. A succession of landmark COPs have driven this process forward since 1992, but in 2009, despite high expectations among politicians and the public (at least in Western Europe), the international consensus temporarily faltered. Coming just one year after the UK had passed the world's first legally binding domestic emissions reductions legislation, this breakdown may have been expected to stall a domestic race-to-the-top on climate policy. However, between then and 2015 the number of national climate policies rose from 426 to 804, collectively accounting for 93% of global emissions (Nachmany et al., 2015). This flurry of national level policymaking, combined with strong growth in low-carbon sectors of the economy (despite a prolonged period of economic austerity in Europe), and a resurgence of public and political campaigning on the issue led to an even stronger commitment to global targets at the 2015 COP in Paris (Jacobs, 2016).

But how do specific countries fit into this optimistic international backdrop? What happened to the UK's self-proclaimed climate leadership aspirations when progress faltered and how has this played out within domestic politics and policy? How has economic recession and domestic politics affected the climate policy community? To answer these questions in a detailed and explanatory way, rather than simply pointing to empirical descriptors such as number of policy instruments or annual emissions records, it is necessary to ask fundamental questions about the capacity of national governments to shape society-environment relations and to govern society-wide transitions.

Numerous attempts have been made to theorise a 'green state' capable of incorporating pro-environmental values into its *raison d'être* and governmental functions (Duit et al., 2016; Eckersley, 2004). Empirical work in this vein has engaged with political science typologies of the state to highlight the benefits and limitations each affords to environmental policy and governance e.g. the UK is described as an environmental neoliberal state with weak institutionalization of environmental values (Barry and Eckersley, 2005; Bäckstrand and Kronsell, 2015). This approach lends itself to categorizing states into 'leaders and laggards', evident in the comparative environmental politics and policy studies literature (e.g. Liefferink et al., 2009). For instance, within the European Union (EU), the UK, Germany and Sweden are often portrayed as leaders in climate policy (Giddens, 2009; Sarasini, 2009; Schaffrin et al., 2014). More in-depth analyses of the institutions and pioneering actors behind the flagship policies of these countries can help explain how leaders emerge (or do not)

and whether they are able to maintain this position through challenging circumstances (regarding the UK see: Carter and Jacobs, 2014; Lockwood, 2013).

There are a number of challenges any government can face when attempting to deliver a transformational response to climate change. These include: institutional path dependency, entrenched power dynamics, political economy pressures, and governance failures (Nalau and Handmer, 2015). Broadly these can be split into two interdependent themes: politics and policy. Table 1.1 presents a few examples of each, largely drawn from liberal democracies, with a brief description and some key references.

Cutting across many of these challenges is the enduring dialectic between social structures (e.g. in the form of democratic institutions and governance arrangements) and agency (e.g. in the form of policy discourses and low-carbon initiatives). Ultimately, this area of literature paints an ambivalent picture with regards to the role of the nation state; it can both help and hinder. A close look at the interactions between specific governmental structures and processes, especially during long-term (climate and energy) transitions, can reveal what works and in what context (Kern and Rogge, 2016).

Table 1.1: Examples of political and policy challenges for a transformational response to climate change

Challenge	Examples	References
<i>Politics</i>		
Party politics	<ul style="list-style-type: none"> • Political economy pressures make it difficult for governments to pass disruptive climate policies • New governments may repeal climate policies to appeal to voters 	Fankhauser et al. (2015); Giddens (2009); Pierson (2004)
Salience and agendas	<ul style="list-style-type: none"> • Interest cycles make it difficult to maintain support for old, or pass new, policies • Climate change is infrequently a priority agenda for governments or publics 	Boykoff (2008; 2015); Compston and Bailey (2008); Pralle (2009)
Post-politics	<ul style="list-style-type: none"> • Climate change is seen as a predominantly scientific and technical issue i.e. it is apolitical • Space for deliberating and innovating is limited for climate policymakers i.e. it is technocratic 	Swyngedouw (2014); Kuzemko (2016)
<i>Policy</i>		
Legitimacy	<ul style="list-style-type: none"> • Capacity and support for strong state intervention is low in many policy areas • Climate policies can be delegitimized as economics change over time 	Voß et al. (2009); Giddens (2009); Maor (2014)
Integration	<ul style="list-style-type: none"> • Climate goals are can contradict other entrenched policy goals • Coordinating climate goals across policy areas is difficult 	Adelle and Russel (2013); Jordan and Lenschow (2010)
Incrementalism	<ul style="list-style-type: none"> • There is limited scope for experimentation within certain policy areas • Policy feedback cycles are slow and path-dependent 	Fankhauser et al. (2015); Giddens (2009); Pierson (2005)

1.1.2.2. The structure-agency dialectic: an institutionalist view of government

Many social and political theories about government and processes of long-term intentional social change refer to the dichotomy of structure and agency. Although different terms are used, e.g. social fields (Bourdieu and Farage, 1994) or structuration

(Giddens, 1984), essentially what is being discussed is the interaction between historical context and human action. This distinction lends itself to philosophical debates about the relative influence of each on processes of continuity and change in society, and how best to study this. The intellectual footprint of this dichotomy can be seen in theories about governing sustainability and climate transitions. For example, in writing about the politics of climate change, Giddens (2009) puts forward the notion of an *ensuring state* to describe a government that simultaneously encourages innovative action and flexibility whilst also providing socio-economic structures that guarantee pro-environmental outcomes wherever possible. Similarly, Geels (2004; 2014) has analysed the interplay between social institutions and technical innovations to explore previous and future transitions towards new socio-technical regimes. This focus on institutions – such as markets, public policies and governance arrangements – as sites of structure-agency interplay is particularly useful for understanding the politics and power dynamics of otherwise technically-oriented analyses of low-carbon transitions (Geels, 2014; Kern, 2011; Meadowcroft, 2011).

Institutionalist thought has traditionally been concerned with the way social structures have emerged and continue to shape the future of societies (Blyth, 2002; Hay, 2004; Pierson, 2004; Powell and DiMaggio, 2012). It has informed work on different ways of governing environmental issues through and beyond the state, including: natural resource management, conservation, pollution and climate change (Ostrom, 2012; Hoffman and Ventresca, 2002; Young, 1994). This work analyses the influence of both ‘formal’ aspects, such as rules and resources, as well as ‘informal’ aspects such as norms and ideas (Hoffman and Ventresca, 2002). Recognising the dynamic relationship

between these formal and informal aspects, 'new institutionalism' gives more consideration to the role of agency, considering how individuals can deliberately change institutions in order to shape what is possible now and in the future (Peters, 2011; Powell and DiMaggio, 2012; Schmidt, 2010).

Broadly speaking new institutionalism includes four different strands (rational choice, historical, sociological, and discursive), each with its own set of assumptions and theories for explaining institutional stability and change (see figure 1.2). Given recent calls for more analyses of power, agency and ideas in transitions studies, sociological and discursive institutionalism is well placed to respond e.g. by studying the way ideas and discourses interact with interests, norms and culture.

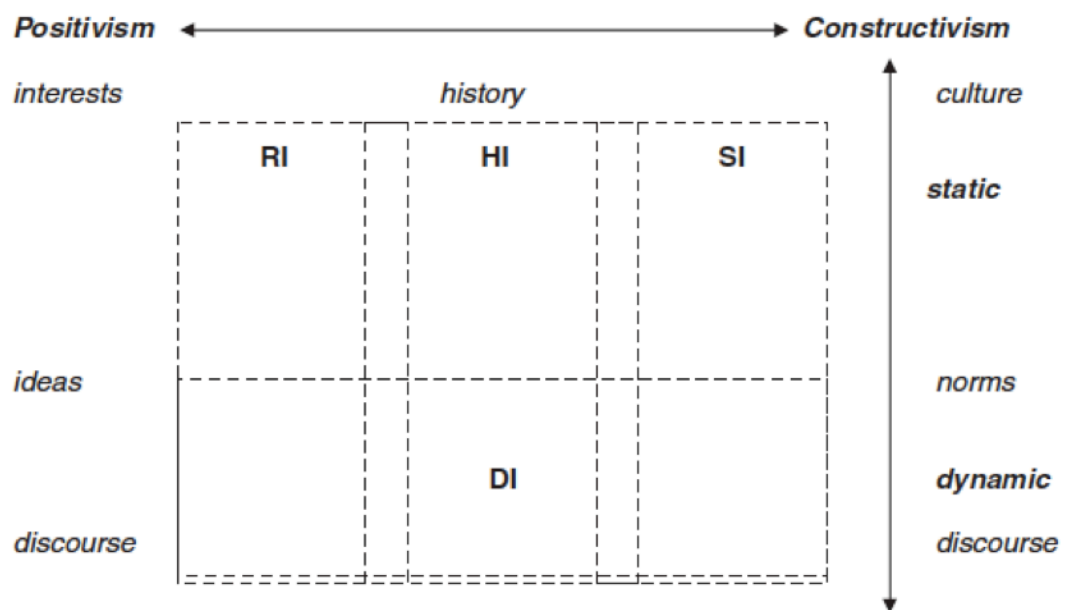


Figure 1.2: Four types of new institutionalism and their overlapping interests (RI = rational choice, HI = historical, SI = sociological, DI = discursive). Source: Schmidt, (2011).

The sociological and discursive approaches recognize the importance of discourse and its influential role in actors' strategies during moments of crisis (Fligstein and McAdam, 2012). This has been demonstrated in existing analyses of the adoption of climate change legislation in the UK (see: Carter and Jacobs, 2014; Lorenzoni and Benson, 2014). The strategic actions (discursive practices) of the climate policy community – including non-government stakeholders – are vital for putting the broad issue of climate change on the political agenda (Pralle, 2009; Bailey and Compston, 2012), but also for challenging deeply entrenched cultural norms and producing specific innovations in policy and governance. It is here that discursive institutionalism can offer a dynamic reading of how ideas about governing (climate change) are articulated, challenged, and enacted in power relations and throughout the policy process (Glynos and Howarth, 2008; Hay, 2004; Schmidt, 2010).

1.1.2.3. *Theories of the policy process: observing changes over time*

Public policymaking is an apt place to observe the push and pull of state structures and individual actions, especially around issues such as climate change that affect so many aspects of society. Many theories of the policy process have evolved over time, partly in response to the growing complexity of globalized environmental issues i.e. moving on from a linear description of discrete stages (including: agenda setting, formulation, legitimization, implementation, evaluation etc.), to appreciate the cyclical and often overlapping relationship between these stages and ever-changing circumstances (figure 1.3). Interestingly, this heuristic is also present in the transitions governance literature, which stresses the cyclical nature of innovation and experimentation to encourage reflexivity in decision-making and governance (figure 1.4).

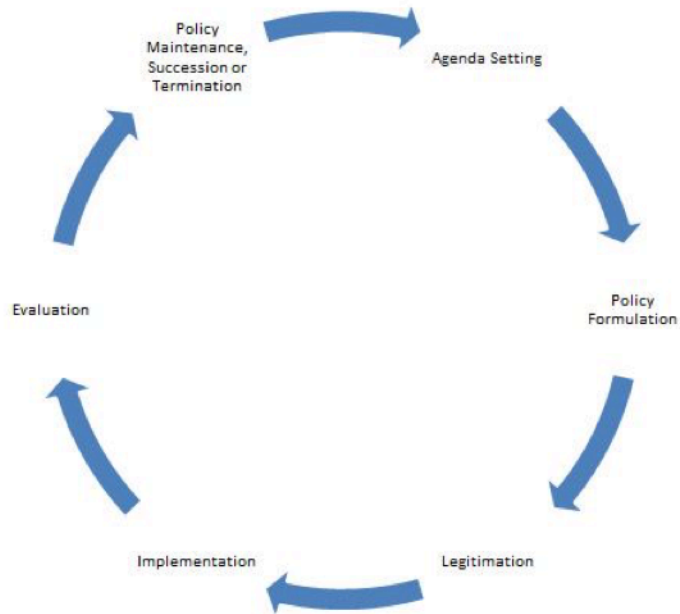


Figure 1.3: The policy cycle. Source: Cairney (2013)

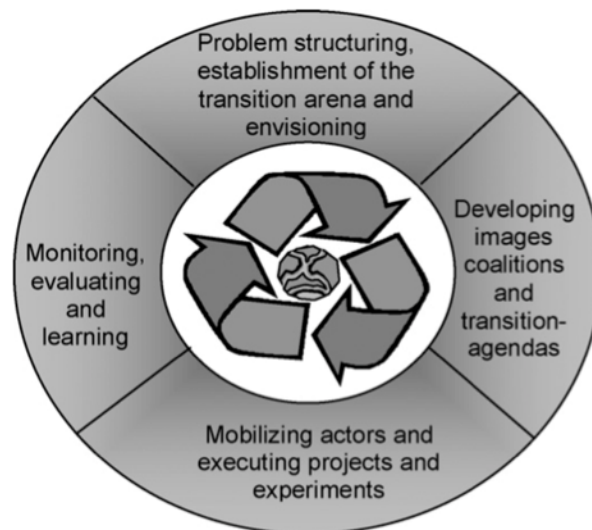


Figure 1.4: The transition management cycle. Source: Loorbach (2010)

Ranging from positivist empirical approaches through to more constructivist and interpretive schools of thought, theories of the policy process have mobilised this ideal type view of policymaking in order to analyse exactly how it plays out in reality. There are some key differences between these approaches that hinge on their ontological

and epistemological assumptions about what policy is and how it ought to be understood (for a summary see: Sabatier and Weible, 2014). A convincing case has been made for constructivist approaches on the basis of their ability to politicize the policymaking process i.e. to expose the power relations between actors (and structures) and the presumed norms, ideas and discourses through which they are enacted (Béland and Cox, 2010; Fischer, 2003; Glynos and Howarth, 2008; Schmidt, 2010). This is particularly pertinent to the case of climate policy, which has arguably been depoliticized through an over-reliance on technical and scientific discourses (Kuzemko, 2016; Scoones et al., 2015; Swyngedouw, 2014).

To illustrate, in the case of the UK's flagship climate policy, the CCA, an interests-based explanation uses a realist view of power to argue that political circumstances aligned to make innovation in this area something that was in everybody's best interests (Carter and Jacobs, 2014; Lockwood, 2013). Whilst this analysis does point to the importance of entrepreneurial individuals in building this coalition, a more discursive reading offers additional explanations of how such radical institutional change was brought about through new ideas and inter-personal interactions (Lorenzoni and Benson, 2014).

Given the importance of the 2015 Paris Agreement and the proliferation of national legislation described above, research into domestic climate policy has enjoyed a resurgence after a period of critique and pessimism associated with previous failings (Bäckstrand, 2010; Bulkeley and Newell, 2010; Okereke, 2007). For instance, climate policy innovation, experimentation and entrepreneurship are the subject of recent special issues, edited volumes and highly cited articles (e.g. Jordan and Huitema, 2014;

Boasson, 2014; Bulkeley and Castán Broto, 2013). Successive discursive and governance turns in the political sciences means that much of this literature now pays greater attention to the role of discursive practices and non-state actors throughout the policy process. This new wave of climate policy research raises some critical questions, which this thesis engages with directly, such as:

- What is the relationship between flagship strategies and specific policy outputs and implementation (Jordan and Huitmea, 2014; Howlett, 2014; Lockwood, 2013)?
- How are policies revised and calibrated over time, especially in response to political and economic pressures (Bauer et al., 2012; Howlett and Kemmerling, 2017; Maor, 2014)?
- How does government policymaking and climate governance interact with other jurisdictional levels and sites of authority (Bäckstrand et al., 2017; Boasson, 2014; Jordan et al., 2015; Scoones et al., 2015)?

1.1.2.4. *Rationale for the thesis*

The expectation being placed on nation states with regards to delivering transformational social change towards a low-carbon future has reached new heights. Following the submission of 162 Intended Nationally Determined Contributions (INDCs) covering 190 parties to the UNFCCC and the recent proliferation of national climate legislation there is now a pressing need for research that examines the likelihood of such pledges being delivered; commonly referred to as the 'post-Paris agenda'. Building on the leaders and laggards literature, as well as established theories of a green state, this thesis offers a timely and critical analysis of a self-proclaimed

'climate leader'. This entails consideration of how this position shapes the UK's relationship to international climate governance regimes (specifically the UNFCCC and the EU), as well as its domestic politics. By studying the political dynamics of climate change and the policy process associated with meeting its CCA targets, the case study reveals some of the structural challenges faced by states and policy actors pursuing transformational change during turbulent political and economic times. Accordingly, the findings will contribute to both the case specific debates in the UK, as well as to broader discussions of environmental statecraft and governance.

The use of new – rather than old – institutionalist theory in this thesis is justified on the grounds that it incorporates greater consideration of human agency as well as formal and informal socio-political factors that are often overlooked or underdeveloped in the climate transitions literature. Following this logic, the choice of a discursive form of institutionalism is intended to draw out the dynamic interpersonal processes – such as the exchange of ideas and construction of discourses about climate change – that underpin government institutions and policies. Specifically, this means that the formal institutional framework of the CCA and its long-term legal targets for emissions reductions are not taken at face value, but are critically analysed to reveal the informal ideas and interactions underpinning it. This case study also provides an opportunity to test the utility of relatively new discursive institutionalist concepts and to develop their explanation of how ideas and discourses translate into policy through different forms of power.

By applying these analytical approaches to the subject of climate policymaking, this thesis complements large-n quantitative descriptions of policy outputs or emissions

trends (e.g. Nachmany et al., 2015) with a qualitative account of an exemplary case study of a nation with strong legislation and leadership aspirations that have begun to face significant challenges (Lockwood, 2013). The causal link between policies and emissions trajectories is difficult to disentangle from wider social and economic trends, with implementation outcomes varying considerably across sectors (CCC, 2011; 2014). Therefore it is not the intention of this thesis to say categorically whether government strategies and policies will produce transformational change; indeed, the CCC's own modelling (figure 1.5) suggests that this is not the case (CCC, 2017). Rather, it is to analyse the dynamics of the policymaking process during difficult times to reveal the detailed interplay between actors and institutions, showing how they influence specific low-carbon policies as well as wider climate governance initiatives beyond the central state. Such insights are particularly important for addressing fundamental questions about the nature and capacity of the state's role in governing a rapid and potentially disruptive social transition.

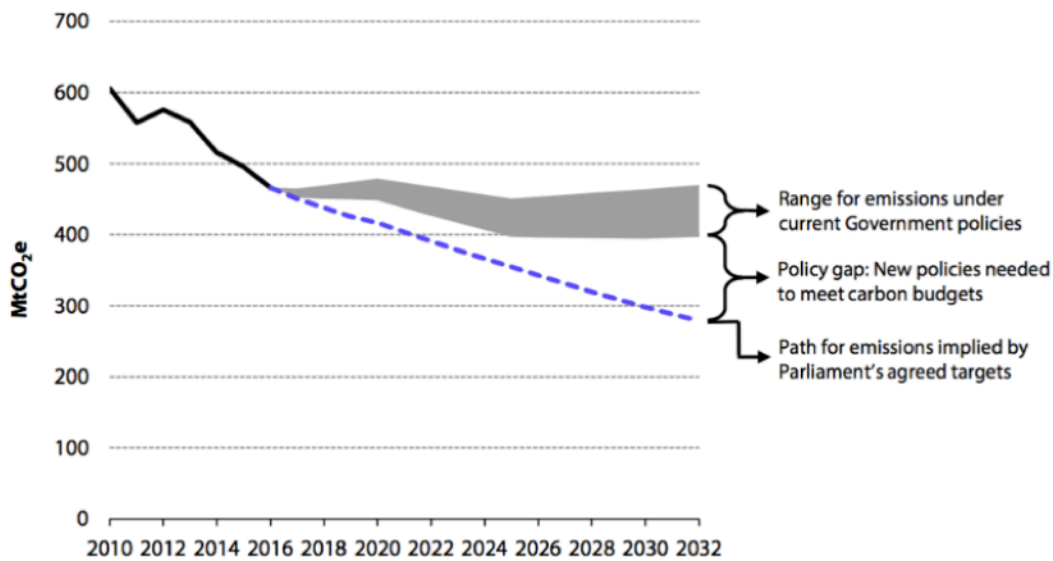


Figure 1.5: The projected policy gap between emissions accounted for and the legally binding targets. Source: Committee on Climate Change (2017).

1.1.3. Climate Governance

1.1.3.1. The governance turn and the state in transition

Critical questions about the role of the state in shaping social life have been reinvigorated by globalization and the 'governance turn' in public administration. To assert that the nation state's form and functions are changing is somewhat of an aphorism. Governmental authority in different areas of social life, and the institutions through which it is exercised, have always evolved over time. However, the crucial difference today (as compared to the decades following the establishment of the modern welfare state) is that external pressures are forcing the change, more so than the deliberate calculations of state architects (Pierre and Peters, 2000). The globalization of economic systems, the digitalization of information and communication, and the cross-border effects of global environmental disasters challenge the capacity and credentials of existing modes of governing; ultimately

demanding the establishment of new arrangements and the reconfiguring of power relations among public, private and civic sectors (Hajer, 2009; Delmas and Young, 2009; Žižek, 2011).

From such a governance perspective, nation states are not seen as homogenous and distinct entities with clearly definable boundaries. Rather, they are porous, malleable, and overlapping with non-governmental actors and sites of authority. The extent to which this conceptualization is empirically evident varies between different countries and is affected by political institutions as well as levels of civic freedom and private sector activity. The central hypothesis is that states that embrace such integration will be better able to adapt and respond to the challenges of globalization e.g. through increased opportunities for social learning, economies of scale and the efficient sharing of resources and responsibilities (Biermann and Pattberg, 2008; Bulkeley and Newell, 2010; Ostrom, 2012; Pierre and Peters, 2000).

This is not to suggest that external pressures are the only drivers of the governance turn. There are proponents and opponents, each with different ideas about the role of government; ranging from libertarian and free-market fundamentalism through to paternalistic social contracts and planned economies. In Western Europe and the UK, the economic ideology of neoliberalism has been influential in driving a deliberate rollback of state powers and regulation based on the argument that organisations and individuals would make 'better' choices without government intervention. The scale of cuts to public institutions and the continued political commitment to this agenda in the face of significant evidence contradicting its efficacy (e.g. the financial crash of 2008, which followed deregulation of the financial sector, or the shortcomings of the

EU's Emissions Trading Scheme (ETS) for incentivising emissions reductions) are testimony to the influence of ideas and their pervasive embodiment in governance arrangements (Bailey et al., 2011; Crouch, 2011; Pierre and Peters, 2000).

The impact of the neoliberal governance agenda on state institutions and policy in the UK varies across sectors. There has been a strengthening of some influential sectorial networks, typically made up of large private organisations e.g. in their ability to lobby government and protect their interests as the state is 'hollowed out' (Rhodes, 1997; Richards and Smith, 2002). However, because of neoliberalism's tendency towards market-based forms of governance, it can be argued that civil society has not enjoyed such increases in power and influence (Jessop, 2002; Swyngedouw, 2005). This may be partially due to the UK polity being based on majority rule and centralized control over policy discourses and practices, which is generally resistant to power sharing with other governance actors e.g. the EU (Pierre and Peters, 2000; Schmidt, 20006; 2008). As a result, governance initiatives, such as the 'Big Society' agenda for encouraging communities to deliver public services, lean towards an instrumentalist rationale (Catney et al., 2014). Such restrictive forms of localism fail to fundamentally alter uneven power relations and fall short of the democratic and participatory potential promised by new forms of governance (Bäckstrand, 2010; Fung, 2006).

1.1.3.2. Multiple scales, levels and actors – examples from climate change governance networks

The assumption that state-based impediments to achieving rapid emissions reductions can be overcome through the non-state governance alternatives has been a central theme of social science debates about climate change for some time. The zero-sum politics of international climate regimes and national policy contexts have been

criticized for their slow progress and narrow view of power relations (e.g. Bailey, 2007; Harris, 2013). In response, research and action has flourished around tackling climate change through sub-national and trans-national arrangements involving multiple governance actors and scales (Bäckstrand, 2010; Biermann and Pattberg, 2008; Bulkeley and Newell, 2010; MacKinnon, 2010). This trend intensified during the period between the failure of the Copenhagen COP in 2009 and the optimism of the recent Paris COP in 2015; giving non-state actors (broadly defined as including civil society and private organisations) a key role in monitoring and influencing multilateral agreements as well as delivering national and transnational climate policy actions (Bäckstrand, 2017).

Hybrid and non-state forms of governance are often described as multi-actor and/or multi-level or multi-scale. These categories draw attention to the variety of actors involved in climate governance and the political-geographic spaces in which they act. As a result, state institutions and spaces of authority (i.e. national borders) are conceptualized as just one component among a network of various policies and partnerships (Lemos and Agrawal, 2006; MacKinnon, 2010; Turmeer et al., 2010). Examples include: European cross-border energy infrastructure and supply chains that involve states, energy companies and citizenries with overlapping jurisdictions (Eberlein, 2008; Goldthau, 2014), European and American city level voluntary agreements on climate change that involve local government institutions but operate transnationally (Broto and Bulkeley, 2013), and global industry initiatives on pricing and reducing carbon emissions through market mechanisms, (which are often

facilitated by states) such as the EU's ETS, the UNFCCC's Clean Development Mechanism, and the UK's Energy Company Obligation (ECO).

Thinking about such climate governance arrangements from a network perspective raises questions about restructuring power relations and seeing actors as horizontally connected instead of situated within hierarchical levels on a scale of political jurisdiction (e.g. from international to national to local) (Bulkeley, 2005; Reed and Bruyneel, 2010; Termeer et al., 2010). For instance, transnational networks of cities and grassroots organisations share resources, information and advocacy agendas that would otherwise not be available through domestic state-based institutions. This can be emancipatory for local actors within laggard countries, enabling them to circumvent restrictive state funding and policies, and to develop their own innovations and collaborations. Such 'interurban networks' are an example of what human geographers refer to as the 'politics of scale' i.e. environmental issues and their social responses that span multiple territories and jurisdictions (Leitner, 2005; Swyngedouw, 2004)

However, theorizing governance networks as horizontal, contingent, innovative and dynamic does not simply dissolve the influence of the state or of structured power relations. Hybrid forms of governance, such as markets or civic spaces where the state still plays a facilitating role or is an active competitor, are the most obvious sites for observing continued government influence. In these contexts more prosaic, and even hegemonic, forms of power should be observed, e.g. in the discourses and practices of seemingly 'non-state' spaces such as grassroots climate movements, community projects and individual behaviour (Dean, 2010; Shove, 2010; Swyngedouw, 2005).

The proliferation of governance networks may represent increased opportunities for innovation and social learning, but they do not necessarily represent a zero-sum reduction in state power (Davies, 2011; Jessop, 2002; 2016). This enduring lesson from governance studies means that the relationship between government climate policies and multi-actor / multi-site governance arrangements needs careful analysis to determine whether they are operating in synergy to accelerate a low-carbon transition and to identify any tensions that are limiting the speed and scale of this progress.

1.1.3.3. Governance and social innovation

Evaluations of the effectiveness of new environmental / climate policies and governance arrangements have found mixed results for cases involving specific instruments, actors and scales e.g. market mechanisms and voluntary agreements that both complement and compete against existing policies (Bailey, 2007; Jordan et al., 2005), public-private partnerships that either reinforce political economic influences or help to diversify climate governance (Bäckstrand, 2008; Pattberg, 2010), and new connections between different cities and agendas in the urban politics of climate change (Bulkeley and Betsill, 2013). At the aggregate level, some key interrelated factors shaping 'good governance' outcomes include: policy integration and coordination, the distribution of agency, monitoring and accountability, perceptions of legitimacy, and civic participation (Bäckstrand, 2008; Fung, 2006; Karlsson-Vinkhuyzen and McGee, 2013; Newig and Fritsch, 2009; Hogg et al., 2012).

Despite mixed results in practice there is renewed optimism within the literature, which is being driven by the continued fragmentation of international governance arrangements (e.g. the UNFCCC shift to INDCs and the developing European Energy

Union) and the increased focus on social drivers of low-carbon innovation and transformation (Avelino et al., 2017; Feola, 2015; Nalau and Handmer, 2015).

For instance, building on Ostrom's (2010; 2012) earlier work on natural resource governance and alternatives to purely state- or market-based responses to climate change, McGinnis (2015) makes a strong case for the added value of having multiple, and overlapping, sites of authority. Advocates of such 'polycentric governance' argue that increased connectivity and dispersed authority provides greater opportunities for social learning, economies of scale and innovations that are necessary for overcoming the inertia of high-carbon social structures and climate change politics (Cole, 2015; Jordan et al., 2015). As per the debates about climate policy innovation discussed above, it is necessary to consider the political factors affecting the development of polycentricity in a given policy area, and the extent to which its emergence and effectiveness can be evaluated (Bernstein and Cashore, 2012; Jordan and Huitema, 2014).

Previous studies of sustainability transitions governance have flagged up a number of social and political issues that can limit the uptake and up-scaling of low-carbon innovations, including: policy uncertainty, economic pressures, and simplistic assumptions about behaviour (Boons et al., 2013; Geels, 2013; Kivimaa and Kern, 2016; Shove, 2010). Recognition of these limitations is a reminder that bottom-up and polycentric forms of governance and social innovations are proliferating but that their impact and longevity is still partly determined by their relationship with broader social structures (Kern, 2015; Raven et al., 2015). In their conceptualization of transformative social innovation, Avelino et al. (2017) note that changes in actor relations and

narratives – such as might be associated with new forms of climate policy and governance – can actually be disempowering or can lead to undesirable outcomes. It is not the existence of multiple governance actors and scales *per se* that matters, it is their strategic mobilization of both material and ideational resources for increasing authority and legitimacy in order to overcome entrenched power relations and to plug the ‘action gap’ on climate change (Bushell et al., 2017; Fligstein and McAdam, 2011).

The climate governance literature in general, and in particular the area concerned with sustainability transitions, has been criticized for a lack of theoretical rigor when it comes to politics and power (e.g. Okereke et al., 2009; Smith and Stirling, 2010). In response, scholars have reached out to human geography, political science, and policy studies to incorporate considerations of, for example: scale, territory, institutions, agency, power relations, and ideas (Avelino and Rotmans, 2009; Bulkeley, 2005; Coenen and Truffer, 2012; Geels, 2014; Meadowcroft, 2011; Reed and Bruyneel, 2010). Two areas of this interdisciplinary endeavour that are especially relevant for understanding the political economy and governance of climate change in the UK are: the role of the state and the role of ideas. They can be successfully explored through analysis of the political and policy structures set out by governments as well as the discursive interactions of governance actors who operate within, and beyond, this context (Hajer, 2009; Methmann et al., 2013; Van Lieshout et al., 2014). By drawing on analytical frameworks that focus on discourse, power and agency this thesis seeks to strengthen the social and political dimensions of the climate governance literature.

1.1.3.4. Rationale for the thesis

Historically, the UK state has been characterized by centralized political institutions and policymaking practices, but since the advent of globalization and neoliberalism successive administrations have actively pursued a small-state agenda in many areas of government. By diminishing responsibilities for, and involvement in, certain aspects of social life the UK state has cut costs and bureaucracy but this retrenchment may lead to questions being raised about government authority and legitimacy. As new forms of climate policy and governance emerge, questions of democracy, power, and effectiveness need to be addressed. For instance: does government policymaking support innovative approaches to governance, how are power relations between government and non-government actors altered, and what effect do these have on the transformational potential of low-carbon initiatives?

Climate governance arrangements often involve multiple actors and sites of authority as they target greenhouse gas emissions that are embedded in so many aspects of social life. By situating the UK case study within this polycentric context it will be possible to identify governance innovations without losing sight of the continued influence of state institutions and government policies. International relations involving the UNFCCC and the EU as well as domestic activities involving devolved authorities, private enterprise and local communities are all in dialogue with the UK's climate policy framework and community. Analysing these relationships, in a neoliberal and climate leadership country context, will reveal the extent to which innovative governance arrangements can emerge – and have an impact – during turbulent political and economic times.

1.1.4. Summary

Each of the above areas of academic literature offers useful concepts, frameworks and prescriptions for understanding and governing social responses to climate change. There are overlaps between them (e.g. systems thinking and the importance of institutions) as well as blind spots (e.g. understanding ideational factors and the distribution of agency across networks). In sum, this thesis sets out to examine the cross cutting socio-political dimensions that are under-theorised and under-studied in each of these literatures, thereby advancing their epistemic foundations and encouraging an interdisciplinary dialogue between them. In addressing these climate-specific areas of social science, wider social theories and contemporary debates will also be touched upon. In particular, contributions are made to the long-running analysis of structure-agency dynamics as well as interpretivist conceptualisations of power and politics. Empirically, the position of the nation state in globalised, fragmented and polycentric governance arrangements is examined, offering valuable insights to political science researchers and stakeholders involved in governing fundamental changes in contemporary society. The next section spells out the research design and methodology deployed in pursuit of these contributions.

1.2. Aim, objectives and questions

The overarching aim of this thesis is to advance a social scientific understanding of how low-carbon transitions are governed, focusing in particular on the capacity of national government institutions and policies to navigate periods of political and economic turbulence. Distilled from the academic and empirical issues described above, the two main objectives that will achieve this aim are: 1) to push existing research on the governance of transitions towards more political and power-oriented approaches, and

2) to evidence the added value of such approaches by applying them to an exemplary case of ambitious, but faltering, national government leadership on climate change. These objectives are operationalized in the form of four specific research questions (with corresponding chapters in the thesis), each offering interdisciplinary theoretical advances and novel empirical contributions (see figure 1.6):

1. To what extent does the current systems-based approach to describing and prescribing low-carbon transitions adequately address social and political dimensions, and how can social theory enhance this work?
2. What are the fundamental ideas underpinning climate change governance in the UK and how are they articulated and institutionalized over time?
3. How do political and economic pressures interact with ideas and interests to produce changes in climate and low-carbon energy policies?
4. Can the limitations to advancing state-based climate policy be overcome by a more polycentric approach?

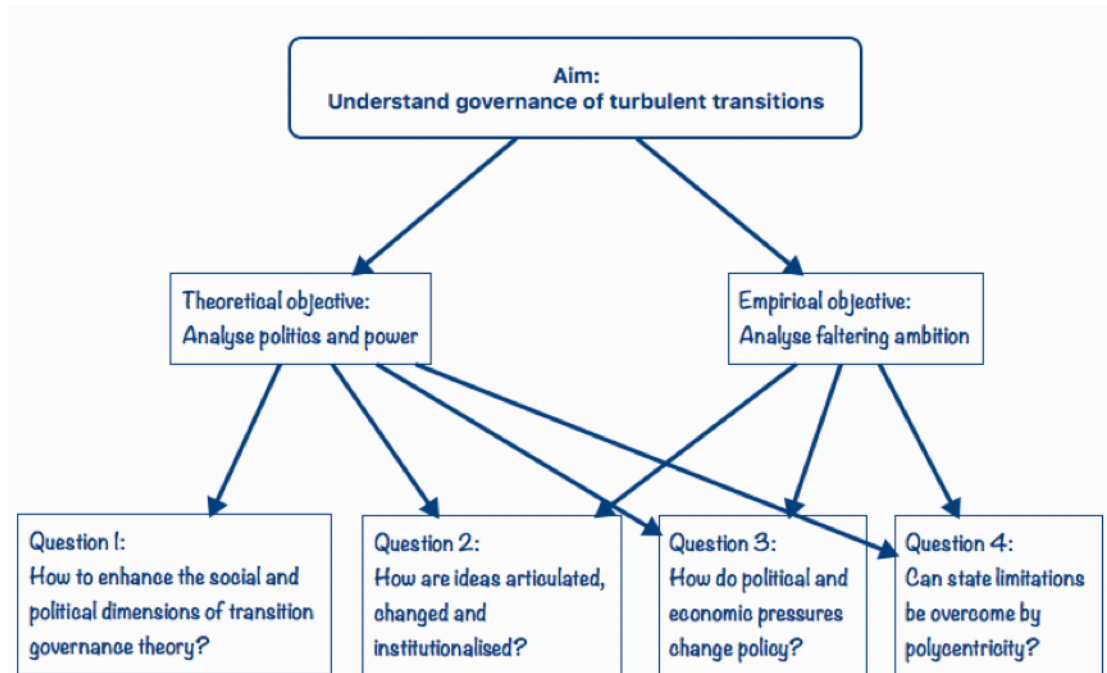


Figure 1.6: Linkages between research aims, objectives and questions.

1.3. Research design

1.3.1. Philosophy of science

Successive waves of critique of the natural scientific paradigm – particularly its assumption that truths about reality can be observed objectively and are thus independent of subjective influences – have led to fierce debates about what constitutes an appropriate philosophy of (social) science. Acknowledging many of these long running debates, Critical Realism seeks to bridge the philosophical chasm that separates the positivism of natural science from the constructionism of critical social science. In short, it does this by accepting that there are multiple theories (epistemological relativism) about the same world (ontological realism), which are not merely different for the sake of being different but which offer more or less significant descriptions i.e. there is a rationale for choosing one explanation or methodology over

another (Archer et al., 1998; Danermark et al., 2001). Informing the design of this thesis, a critical realist philosophy of science demands that the research addresses both objective and subjective components of climate change politics, and that it does so by combining theoretical flexibility with a clear justification for endorsing explanations of the interplay between social structures and human agency (Jessop, 2005).

The dialectical relationship between ontology and epistemology is central to critical realism (Bhaskar and Norrie, 1998). This reflects idea of a 'double hermeneutic' coined by Giddens (1984), wherein social research co-evolves with the very thing it is researching. In practice this means that what can be known and expressed about the world is always mediated by the participant's and researcher's particular history and context i.e. knowledge about society is made up of objective and subjective components (Jessop, 2005; Yanow, 2000). As such, a certain amount of self-reflexivity is required on the part of the researcher.

For this thesis, critical realism demands a methodology and analysis that takes account of verifiable empirical facts, such as climate change, greenhouse gas emissions, economic calculations and policy decisions as well as the accounts and interpretations of individuals involved in articulating, enacting and mediating these realities. A qualitative case study is well suited to such an endeavour (see section 1.3.2. for a full justification) and has a rich multi-disciplinary history of application within the broad school of critical realism (Easton, 2010).

In terms of the social theories and analytical frameworks deployed, the thesis deliberately tends towards more interpretivist forms in order 1) to supplement the

predominance of empiricist studies within this field (academic justification), and 2) to address the inherently personal dimensions of understanding socio-political responses to climate change (empirical and methodological justification). Heeding Healy's (2017) call to avoid the 'nuance trap' prevalent in contemporary social theory, the use of multiple theories is not presented as valuable in and of itself (e.g. in the name of ever-increasing heterogeneity and detail) but as a means towards 'useful' theoretical and empirical contributions (e.g. addressing questions of theoretical parsimony and future empirical research priorities). In sum, following the philosophy of critical realism and the relativist pragmatism of Morton (2013) and Rorty (1999), this research rejects the pursuit of a 'meta-language' or 'truth' in social science. Instead it offers a demonstration of, and reflections on, the ability of multiple discourses to inform the unavoidably political discussion of how to research and influence effective governance towards a climate compatible future.

1.3.2. Methodology

1.3.2.1. *Ensuring qualitative quality*

Arguably, many environmental social science and policy decision-making processes are marked by a methodological conservatism that focuses narrowly on quantitative and experimental designs (Denzin and Giardina, 2008). This is particularly true of the political sciences, where econometrics and positivist methods of policy analysis are often perceived to carry most epistemological value and potential for impact (see: Pawson, 2006; Sabatier and Weible, 2014; Winter, 2000). It is also true of policy practice, where the UK Government's Magenta Book offers guidance on the best

methods for evaluating policies, classifying non-experimental designs as ‘weak’ or ‘risky’ (see: Campbell and Harper, 2012).

However, there is also a strong tradition of qualitative work in this field, which argues that text-based analysis of public and private statements and dialogues is equally important to the study of socio-political processes (Béland and Cox, 2010; Davoudi et al., 2015). In the context of responding to climate change, such qualitative methods are appropriate for studying the politics of climate policy and governance because they explore the way individuals think and talk and act (discursive practice) and thus reveal their values, beliefs, worldviews and strategic attempts to influence other people and the policymaking process (Beamer, 2002; Fischer, 2003; Methmann et al., 2013; Veltri et al., 2014). Such qualitative insights are seen as understudied yet essential to understanding how contentious social transformations towards a low carbon future will be achieved (Feola, 2015; O’Brien and Sygna, 2013).

Further strengthening the methodological case for the quality and resonance of qualitative research, Tracy (2010) synthesises a broad spectrum of markers to produce eight universal criteria, which can be met using different principles, techniques and methods. Examples of how this thesis meets each criterion are as follows:

- 1. Worthy topic** – the politics of climate change and energy in the UK is relevant to many stakeholders, and is timely and significant given the urgency of mitigating dangerous impacts from global warming and given recent political and economics trends that make this difficult e.g. nationalism and austerity.

2. **Rich rigor** – the thesis draws on multiple theoretical frameworks to inform analysis of an expansive and rich data set relating to complex social and political phenomena over an eight-year period.
3. **Sincerity** – methodological decisions and limitations are made clear throughout and reflections on researcher positionality are also included.
4. **Credibility** – thick descriptions of UK politics and policy details are provided throughout, including explanations of tacit knowledge, and the evidence base includes multiple stakeholder voices and data sources to ensure triangulation of findings.
5. **Resonance** – findings regarding the individual level (e.g. values and strategies) and the social level (e.g. power relations and structures) are presented in a critical way to stimulate discussion of transferable insights and enduring naturalistic generalisations about the politics of social change.
6. **Significant contribution** – the use of multiple analytical frameworks produces significant multi-disciplinary theoretical contributions and heuristic recommendations for thinking about social responses to climate change; the focus on strategic action and agency provides practical contributions for future policy and governance.
7. **Ethical** – procedural and situational ethics are considered throughout the thesis, particularly where individuals' identities and their expressed views may be politically sensitive e.g. in interviews with senior decision-makers and during stakeholder workshop discussions.
8. **Meaningful coherence** – the thesis meets its stated overarching aim by using methods appropriate to the analysis of socio-political processes, by clearly

connecting research questions to findings in each chapter, and by synthesizing these findings in the discussion chapter to draw out key themes and connect them with relevant areas of literature.

1.3.2.2. Case study design and the UK climate policy area

The use of case studies in social science research, and particularly by critical realist and interpretivist scholars, is widespread and can be justified on various methodological and pragmatic grounds (Byrne and Ragin, 2009; Easton, 2010; Flyvbjerg, 2006; Yin, 2013). For instance, combining both rationales, Flyvbjerg (2001; 2006) champions pragmatic knowledge production through case study research, or what he calls 'phronetic' social science. Essentially, he argues for the 'primacy of context' in social research, situating all interpretations, analysis and conclusions in their specific context (effectively rejecting the natural science edict that theories should be built on first principles). This approach doesn't negate generalisations; but it seeks to advance knowledge through the power of example rather than the power of universals.

This line of reasoning sits well with the relativist epistemology of critical realism described above, and has informed the selection of the UK as an exemplary case study of a turbulent climate transition. Using the terminology of Yin (2013), this thesis presents a 'holistic' case study of UK climate politics at the aggregate level but does so by drawing on 'embedded' case studies (e.g. examples of specific climate policy and governance arrangements) in each of the three empirical chapters. The exact contours of these embedded cases are described in each chapter. At the aggregate level, the case study focuses on national level governmental practices, but even this involves overlapping political and legal scales and jurisdictions (e.g. UNFCCC, EU, devolved and

local authorities). Incorporating evidence from these multiple contexts provides a picture of the contemporary nation-state as non-reified and porous – i.e. one site of the construction of climate politics among many – and thus avoids the risk of perpetuating a methodological nationalism (Chernilo, 2008).

Noting the methodological limitations of using a hierarchical conceptualization of political scale (Brenner, 2001), this thesis avoids the temptation to split the case study into discrete levels. Accordingly, the particular assemblages of policies and stakeholders studied herein are viewed as networks of practices and actors, whose borders are overlapping and ever changing but are temporarily defined by the researcher through a process of snowballing and discovery in the field (see: Gobo, 2008). Such an approach fits with a realist methodology of qualitative case selection and sampling (Emmel, 2013) and resonates with the relational social theory and network governance literature to which the thesis seeks to make a contribution (e.g. Bäckstrand, 2010; Bulkeley, 2005; Chernilo, 2008).

1.3.2.3. *Data collection and triangulation*

Three different sources of qualitative data were used to provide the empirical foundations for the thesis: written records, interviews and workshop discussions. Written records were gathered in their original format, whereas interviews were recorded and then transcribed verbatim by the researcher, workshop discussions were transcribed shorthand by three observers (the researcher plus two co-organisers) and then compiled. Specific sampling criteria and strategies are described in each chapter, but in general the methodological rationale was theoretical (to build hypotheses) and purposive (to bound the research subject) (see Emmel, 2013).

Throughout the research, the overarching rationale for gathering documents was to use them as a form of triangulation, corroborating verbal accounts and informing abductive reasoning throughout iterative waves of data collection and analysis (See: Charmaz, 2014; Emmel, 2013; Manzano, 2016; Wetherell, 2001). Thus, strict criteria were not set; rather the researcher's knowledge of the subject (e.g. policies) and of sources' reputations (e.g. political stances) was used to mediate data gathering (for a methodological discussion of this see: Yanow, 2000). Wherever these texts have directly informed the analysis they have been cited in full in the references section of each article and chapter.

For example, government policy documents such as consultations, proposals and legislation provided detailed information about instrument design and governance. Reports by semi-independent organisations such as the CCC or select committees provided more critical in-house evaluations of government activities as well as a host of secondary data sources that could be followed up. Regarding the discursive construction of climate politics and policy, public statements by key stakeholders such as policymakers, business leaders, scientific experts and political commentators were analysed. Media reporting of key debates and decisions was also considered, drawing on specialist climate change sources such as Carbon Brief and mass media sources such as tabloid and broadsheet newspapers.

Interviews with elite actors and those involved in the broad climate policy community are a vital way of accessing the beliefs, values and perceptions of individuals, and uncovering how these ideational elements have influenced outputs and strategic actions (Beamer, 2002). Again, an iterative process of recruitment was undertaken,

relying to a large extent on recommendations from previous interviewees that may have skewed the sample but was controlled for by using a 'critical snowballing' method (see: Noy, 2008).

A total of 55 interviews were conducted with 48 individuals from across the climate policy community (descriptions are provided in each empirical chapter). Given the large number and range of stakeholders in the climate policy area, the voices included in this thesis are representative rather than exhaustive (Yanow, 2000). For example, interviews were carried out with government actors to discuss policymaking, with NGOs to discuss consultations and lobbying, with climate and energy sector specialists to discuss the low-carbon economy, with senior academics and commentators to discuss changes over time, and with media organisations and journalists to discuss narrative strategies. Interviewees were also recruited through their participation in a series of stakeholder workshops.

Climate policy stakeholders from a range of sectors – similar to those outlined above – were invited to take part in three workshops (n=28, 27, and 15) facilitated by the researcher on behalf of the ESRC's Centre for Climate Change Economics and Policy and DECC and DEFRA. The overarching purpose of the workshop discussions and activities was for stakeholders to deliberate the social dimensions of climate transitions and to discuss the possible innovations in policy and governance. Participants were free to share information under the Chatham House Rule, which allowed the content to be used as data for the thesis but not be directly attributed to any individual or organisation. Discussion facilitation was light-touch and was carried out by the researcher and two colleagues from DECC, with the intention of eliciting

information that could help answer research question four (see figure 1.6). The political, power and professional dynamics among attendees and facilitators during such deliberative exercises are unavoidable and difficult to control for, but was incorporated into the analysis where possible (Fischer, 2003). This issue of participant-researcher positionality is discussed further in the next section.

1.3.3. Positionality and ethics

The researcher's own identity, positionality with regards to participants, and methods of interaction in the research context are all unavoidable aspects of qualitative interpersonal research (Marshall and Rossman, 2014). Considering these factors is especially important in interpretive research, where interview dialogues are a process of eliciting and even co-producing a particular account of social reality (e.g. about climate policy) (Manzano, 2016; Yanow, 2000). As data collection was carried out in distinct waves over a period of three years, it was possible to reflect on my engagements with participants over time (Pillow, 2003). Throughout the research all data collection and handling processes were governed by a strict code of conduct approved by the University of Leeds Ethics Committee.

Firstly, my own prior knowledge and assumptions about the UK case are evident in the choice and phrasing of the research aims, objectives, and questions. As outlined in sections 1.1.1. to 1.1.4., much theoretical and empirical literature suggests that governments will find it extremely difficult to intervene in society to produce transformational and rapid changes. It is this assumption, not a partisan conviction about the particulars of the UK context, which informed my research design. Having never been a member of a political party or an employee of government I was able to

approach the topic of governmental capacity with a certain level of (political) ideological detachment. Formal assessment after 12 months, and 10 supervision meetings per annum, provided further scrutiny of the research design and practices to ensure academic rigor and to avoid personal bias.

Secondly, with regards to recruiting and conducting interviews, this position of 'outsider' was simultaneously limiting and helpful (see: Dwyer and Buckle, 2009). Most interviewees were members of specialist professions, often with high profile public reputations. This instantly positioned me at a critical distance, often being perceived (and treated) with suspicion or guardedness. By guaranteeing anonymity to participants I was able to provide a safe space for expressing personal opinions and also to utilise a snowball method of recruitment – allowing participants to breach their own anonymity to provide introductions if they chose to do so. As part of the recruitment process interviewees were provided with a brief overview of the research aims and details about data handling (see appendix A).

My own position as a critical and questioning researcher, presumably perceived as having a normative interest in seeing successful climate policy and governance, also encouraged interviewees to offer personal, not just party line or professional, interpretations. The interviews took place in a variety of locations and followed a different format each time depending on the interviewee's expertise (see appendix B for an example of the interview topic guide). Some were conducted remotely via telephone or Skype, which did not pose any additional ethical considerations but did limit my ability to make in-situ observations and build rapport (King and Horrocks, 2010). Face to face interviews took place in a variety of locations including private

offices and public spaces, each raising a different set of power dynamics and interpersonal issues (see: Elwood and Martin, 2000).

Lastly, the three stakeholder workshops all took place at the offices of DECC, involving large and small group discussions as well as presentations and output building exercises. Throughout this process, two members of CCCEP (including myself) and two members of DECC assumed the role of facilitators. Thus, it was possible for me to shape the agenda and broad discussion topics to ensure my research questions were being addressed, whilst excluding myself from the substantive discussions themselves. This positioned me in an awkward space somewhere between outsider and insider (Dwyer and Buckle, 2009), and also encouraged me to engage in 'uncomfortable reflexivity' whereby I was forced to consider the extent to which my own research objectives and participation were shaping each iteration of the workshop series e.g. as compared to the objectives of the co-organisers and participants (Pillow, 2010). Because of the co-production aims of the workshops (see appendix C for an example of the brief given to participants), they are best described as participatory action research as opposed to ethnographic observation of policymaking (Kindon et al., 2009).

1.4. Thesis overview and key contributions

The thesis contains a number of theoretical and empirical contributions, relating to the two main research objectives (figure 1.6), which are distributed across the remaining five chapters. Chapter 2 begins with a critical review of prevailing theories of climate transitions. Chapters 3, 4, and 5 provide the empirical case study work, detailing the turbulent politics and policy of climate change in the UK between 2006 and 2016.

Chapter 6 draws together the key findings of the preceding chapters, synthesizing them into recommendations and implications for research and practice.

Chapter 2 sets the conceptual scene for the thesis by raising the critical question of how societies can achieve a transformational response to climate change. It answers research question 1 by highlighting the inherent limitations to the currently dominant systems thinking approach of theorizing and governing climate transitions. This recent academic debate is advanced by drawing on the political geography term of 'assemblage' to replace the ontology of systems with one of spatially diffused and contingent networks, and the sociological notion of 'social fields' to show how institutional entrepreneurs within these networks draw on influential ideas during times of crisis to drive significant change.

Chapter 3 addresses research question 2, theorizing and empirically demonstrating the influence of ideas and discourses on what was previously perceived to be a consensual and ambitious climate policy institution in the UK. Discursive institutionalism provides the overarching analytical framework for this chapter, but its explanatory power is enhanced through a description of three types of ideational power. This complementary set of concepts is used to illustrate the way policymakers and stakeholders used and altered discourses of climate economics and governance to fit with a broader austerity agenda. Significantly, this chapter suggests that the ideational and discursive foundations of the UK's climate policy is not as strong as it appears on paper and is already being undermined by political and economic pressures.

Chapter 4 picks up on the previous chapter's concerns about retrenchment and provides a more empirically oriented examination of climate policy, specifically

emissions reductions targets and low-carbon energy supply. It explores the arguments around the economic case for these policies, using documentary analysis, media coverage, and interviews to show how different actors perceive them as more or less proportionate (research question 3). These arguments typically evoke economic language (e.g. policy bubbles and over-investment) to legitimize and professionalise the discourse, but doing so covers up for some politically motivated decisions around the time of an election and on certain contentious agendas such as shale gas and nuclear energy.

Chapter 5 is concerned with the structure-agency dialectic and the way government institutions and actors are positioned in the (post-)austerity policy landscape. Stakeholder workshops and interviews are used to explore the climate policy community's strategies and responses to the previously identified barriers. Using polycentric governance as an ideal-type framework, this chapter points to examples of non-central-government actors in driving governance and policy innovation. This finding echoes much of the optimism of the environmental governance literature, but it does so cautiously and with new evidence to show that the government power relations and rationales continue to be influential (research question 4).

Chapter 6 briefly restates the answers to all four research questions before drawing them together to outline their key theoretical and empirical contributions i.e. meeting the two research aims. These are synthesized into two overarching themes, each with a number of implications for academic research and policy practices. One theme refers to the inherent limitations to state-led social change, reconfirming previous findings about the difficulty of mainstreaming climate goals into government but also raising

new concerns about the tendency towards incrementalism and a growing gap between rhetoric and action. The other theme refers to the way low carbon futures are described, contested and constructed through social and political processes. Most significantly, the findings of this thesis demonstrate the need for greater attention to such discursive practices and the way they can worsen or ameliorate periods of difficult transition. The chapter and thesis conclude with a set of reflections on the research process and the value of its outcomes for future researchers and policymakers in the UK and beyond.

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2. Transformational responses to climate change: beyond a systems perspective of social change in mitigation and adaptation

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Abstract

There is a growing imperative for responses to climate change to go beyond incremental adjustments, aiming instead for society-wide transformation. In this context, socio-technical (ST) transitions and social-ecological (SE) resilience are two prominent normative agendas. Reviewing these literatures reveals how both share a complex-systems epistemology with inherent limitations, often producing managerial governance recommendations and foregrounding material over social drivers of change. Further interdisciplinary dialogue with social theory is essential if these frameworks are to become more theoretically robust and capable of informing effective, let alone transformational, climate change governance. To illustrate this potential, ideas from Deleuze and Guattari's political writing as well as other approaches that utilize the notion of social fields (as opposed to socio- systems) are combined to more fully theorize the origins and enactment of social change. First, the logic of systems is replaced with the contingency of assemblages to reveal how

pluralism, not elitism, can produce more ambitious and politicized visions of the future. In particular this view encourages us to see social and ecological tensions as opportunities for thinking and acting differently rather than as mere technical problems to be solved. Secondly, the setting of social fields is introduced to situate and explain the power of ideas and the role of agency in times of uncertainty. The potential of such insights is already visible in some strands of climate change mitigation and adaptation research, but more needs to be done to advance this field and to bring it into dialogue with the mainstream systems based literature.

2.1. Introduction

The policy implications of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2014b) (IPCC) are both deep and wide ranging. In particular, the contribution of Working Group II (IPCC, 2014a) calls for timely and significant society-wide transformational change. Such an undertaking will need to secure broad scientific, political and civic input and support in order to maximize the diversity of, and buy-in for, multiple pathways of change toward a climate compatible future. Whether through the IPCC or any other social institution, the way climate and society relations are conceptualized greatly influences the way their co-evolution is interpreted and responded to (Hulme, 2010). Thus, when such large-scale and deliberate transformations of society are invoked, questions of representation, ethics and sustainability immediately arise (O'Brien, 2012, Feola, 2015). Whose envisioned future are we pursuing and along which pathways? Who bears the cost of the transformation and who reaps the benefits? What weighting is given to environmental, social and economic priorities? Interdisciplinary social science that draws on insights from social, political, economic and behavioural research is well placed to help answer such questions (Feola, 2015, ISSC/UNESCO, 2013, Sovacool, 2014, Stirling, 2011).

Within the climate change literature transformational responses to environmental change are generally defined by their scale, novelty and/or spatial reach compared to incremental strategies (Burch et al., 2014, Kates et al., 2012, Park et al., 2012). Such significant levels of change that affect fundamental aspects of society are likely to involve multiple social processes. Based on reviews of the global environmental change literature these processes can be grouped into a typology of: *practical*

innovations in technology, management strategies and behaviour, *political* contests between incumbents and challengers over the rules of the game (i.e. how society functions) and *personal* explorations of individual and collective beliefs, values and worldviews (Feola, 2015, O'Brien and Sygna, 2013, Shove and Walker, 2010). One of the greatest challenges for environmental social science is to address these interrelated aspects of social change in a balanced and interwoven way.

Climate change mitigation – the act of reducing anthropogenic greenhouse gas emissions – is often characterized as a social and technological problem with social and technological solutions e.g. involving over-consumption and polluting infrastructure that can be directly remedied through behaviour change and low-carbon technology. Accordingly, the Socio-Technical (ST) systems framework explores the interrelated social and technological processes through which sustainability innovations emerge and are consolidated (Geels, 2004, Haxeltine et al., 2013). Climate change adaptation – the act of responding to anticipated and present impacts of climate change – has been guided more by Social-Ecological (SE) systems research that emphasizes the interdependence of society and ecosystems, stressing that successful responses to a changing climate will require high levels of adaptive capacity (Adger et al., 2011, Folke et al., 2005). As these frameworks share a common foundation in 'complex systems thinking', there have been attempts to draw theoretical and applied lessons between the two (Fischer-Kowalski and Rotmans, 2009, Foxon et al., 2009, Park et al., 2012). However, conceptual blind spots remain (most notably around issues of power and politics), suggesting that the systems epistemology itself may well be the barrier to a fuller understanding of social change. Ultimately both frameworks could benefit from extra-disciplinary considerations reaching beyond the boundaries of systems thinking

to engage with more explicitly sociological and political modes of thought (Markard et al., 2012, Meadowcroft, 2011, Scrase and Smith, 2009, Smith and Stirling, 2010). Reviewing and expanding on these claims, this article presents two examples of such interdisciplinary endeavours that could inform transformational climate change research and practice.

2.2. Socio-Technical transitions and climate change mitigation

The notion of a ST system emerged from the technology-oriented field of innovation studies. Through a series of perspective widening turns, the influence of social institutions and practices were also integrated. Much of this influence coincided with the emergence of Science and Technology Studies, which problematized linear understandings of scientific and technological innovation by drawing attention to the values, intentions, meaning-making and subversive involvement of humans at all stages of research and practice (Geels, 2004, Smith et al., 2010). Examples ranged from the small scale to the large; solar panels being used to dry laundry or mosquito nets used for fishing through to low-carbon energy options that either decentralize or consolidate existing supply chains and their associated web of power relations. Social theory too benefited from a closer focus on human and non-human (technological/ecological) relations by breaking down such conceptual dichotomies to reveal their effect on socially embedded processes of domination and power (Latour, 1990, Latour, 2009). The extent to which this radical work has fed into ST systems research varies greatly across the literature but overall is minimal. At its most social the ST system is an interdisciplinary construct encapsulating the prevailing *modus operandi* of a given (sector of) society and its embedded technological artefacts.

Typically, it is toward the normative goal of sustainability that this work points, prescribing transition pathways towards new and more desirable relationships between society and technology. More historical ST research has addressed technological development over longer periods of time, drawing useful insights about the co-evolution of their attendant social institutions (Bijker, 1997, Geels, 2005, Sovacool, 2009). This work has been a timely reminder for innovation studies and sustainability transitions enthusiasts to heed the power of entrenched interests and ideas (Kern, 2011) but it features less prominently in the climate change area of this field.

Much of the ST transitions literature presents a multi-level perspective of change. Therein, desirable change towards sustainability is understood to result from the modulation of three simultaneous scalar pressures: instability within, and competition among, ST regimes (meso level), successful innovations from smaller niches (micro level) and changes in the broader social and material landscape (macro level)(Geels, 2004, Geels and Schot, 2007). Whilst this may sound inclusive, the main focus is on practical issues (e.g. behaviour change, technology, management strategies) with only limited consideration of the institutional context and even less sensitivity to the interpretations, values and intentions of actors. With regards to climate change mitigation, ST transitions seek potential social (e.g. low-carbon lifestyle choices) and technical (e.g. deploying low-carbon technology) 'solutions', often presenting them as desirable recommendations for any given sector or strata of society (Bergman and Eyre, 2011, Foxon, 2011, Heiskanen et al., 2010, Moloney et al., 2010). Granted, flexibility in implementation is advised but the socio-cultural context and political

implications of adopting certain solutions over others is rarely considered in great depth.

The potentially technocratic narrative of a ST transition leaves little room for exploring more personal and political drivers of change i.e. the complex nature of agency (Jørgensen, 2012, Rickards et al., 2014, Shove, 2010, Shove and Walker, 2010), contestation (Manuel - Navarrete, 2010, Scrase and Smith, 2009, Swyngedouw, 2013) and discursive diversity (Bailey and Wilson, 2009, Stirling, 2011). Whilst some ST research, such as the historical strand cited above, does include political institutional and actor-oriented elements, attempts to include them in contemporary climate change research is hindered by a pervasive tendency toward reductive methodologies that quantify, model and control their effects (Ruth et al., 2011, Wangel, 2011). The mediating role of these dynamic social factors on the very practical innovations described in most ST studies is often under-acknowledged. Thus, it may be this very blind spot that prevents applied ST transitions initiatives from achieving the transformational changes they seek and which are demanded of them by the urgency of mitigating dangerous climate change (Avelino and Rotmans, 2009, Geels, 2014, Kern and Smith, 2008). Consequently, the potential of adopting concepts and/or theorizing in conjunction with non-system based perspectives has been recognized (Geels, 2011). Initial responses from ST scholars have suggested fruitful theoretical developments (Avelino and Rotmans, 2009, Geels, 2011) leading to several meta-reviews that call for a much more politicized and interdisciplinary research agenda (Markard et al., 2012, Meadowcroft, 2011, Smith and Stirling, 2010, Stirling, 2014, van den Bergh et al., 2011).

2.2.1. Transition management

The shortcomings of a predominantly behavioural and technical view of social change are pertinent to the part of ST systems literature that deals with governance, also known as Transition Management (TM). Following the multi-level narrative outlined above, TM seeks to simultaneously destabilize the existing regime whilst fostering, and up scaling, niche level innovation (Smith and Stirling, 2010). The very idea of governing or purposively managing change in complex systems would seem paradoxical to first generation systems theorists who adopted the term 'complex' precisely to describe the unpredictable and nonlinear nature of cause and effect in certain systems (Ropohl, 1999). Despite their apolitical overtones, processes such as emergence, co-evolution and self-organization have been built into the lexicon of ST governance (Grin et al., 2010, Loorbach, 2010). For example, the undesirable attributes of a given system (e.g. high levels of emissions from the transport sector) are targeted through changes to the constituent elements (e.g. transportation technology) and their functions (e.g. non-essential and inexpensive aviation). Combing this strategy with principles from the wider governance literature TM seeks to produce fundamental change in the attributes and functions of ST systems through the following levers:

- Strategic – envisioning of futures, pathways and long-term goals
- Tactical – setting agendas through negotiating and coalition building
- Operational – experimenting with and implementing projects
- Reflexive – monitoring, evaluating and learning from feedback

Whilst this governance toolkit is based on the theoretical foundations of a complex systems view of the world that is favoured by environmental social sciences and other

fields working on 'wicked problems' its practical applications run into significant problems. This is not because ST systems are inevitably unpredictable or random but because they are subject to a range of socio-political processes that are largely absent from a systems epistemology. In other words, the institutionalised ideas and power relations which provoke/mediate/resist social change are grossly under-appreciated by a governance style that breaks society down into broadly consensual, experimental and self-organising systems.

This appears particularly problematic in governance contexts with weak accountability (e.g. fossil fuel extraction in un-democratic countries), where political institutions are entrenched in a dominant logic (e.g. economic growth at all costs) and wherever hegemonic power is exercised (e.g. global capitalism). It is acknowledged even in TM itself that 'only a relatively small number of actors will be involved in strategic and tactical activities' (Grin et al 2010, p156), suggesting that already influential actors are most likely to secure a presence at the crucial envisioning stage. Who defines the parameters and pathways of the transition is a fundamental yet under-explored question. As a result, some TM initiatives may not be achieving their desired transformational ends because the steering committee is made up of dominant members of society who have a vested interest in retaining or only partially reforming the status quo (Kern and Smith, 2008). Further, should a momentum for change begin to accelerate too quickly, then these actors are in a position to protect their own interests – possibly at the expense of the already marginalised (Eames and Hunt, 2013). However, it would not suffice to merely replace those responsible for steering the transition with the marginalised and disaffected. Common to both scenarios is the problem of a relatively small number of actors without either the will or the power to

unite and govern something as fragmented and diverse as human society toward one consensual vision of a sustainable future.

This particular limitation stems in part from the system perspective's use of the ecological concept of isomorphism (Holling, 2001) – the idea that systems have a tendency to develop a similarity in structure or shape as they evolve. This is illustrated succinctly by the ST transitions narrative of a more sustainable niche 'up scaling' i.e. converting and absorbing resistance as it develops until a critical mass is reached and the whole system tips toward this new configuration. Two key assumptions underpinning this view of social change are objectionable. First, whilst it may sound like a story of bottom-up innovation, and triumph, the practice of TM described above depends on benevolent top-down intervention and guidance. It is up to a privileged few to select, incubate and then mainstream their preferred low-carbon technologies and behaviours. Secondly, TM generally rejects the possibility of abrupt and disjointed change. Its narrow view of power as an entrenched and static force to be chipped away at leads to the counter-intuitive principle of radical change in incremental steps expressed by the mantra of 'more evolution than revolution' (Rotmans et al., 2001). It is a short step from here to the assumption that fundamental change can only avoid causing catastrophic collapse or inducing insurmountable resistance in an incumbent regime if it emerges through an isomorphic process choreographed by an elite vanguard.

Such managerialist forms of governance overlook the way existing power relations can be reproduced through the very political institutions and social arrangements responsible for pursuing sustainability (Scrase and Smith, 2009). This failure to

acknowledge the variety of discursive and ideational motives behind decision-making at multiple levels by multiple actors downplays the daily struggle of strategists and practitioners to either accelerate or resist transformational change (Bailey and Wilson, 2009, Wesselink et al., 2011, Rickards et al., 2014). It is worth noting here that this democratic tension – which is a recurring theme within the field of sustainable development – is by no means peculiar to TM. As the imperative for wide-spread social action on sustainability grows it is vital that accountability and democratic process is not simply assumed, made implicit or even put on hold (Hendriks, 2009) but is instead ‘opened up’ (Stirling, 2011).

Partly due to these shortcomings many climate change mitigation initiatives guided by elite driven variations of TM will continue to fall short of the transformational imperative for rapid and drastic emissions reductions. For instance, in many high-emitting countries, long-term policy goals (such as the UK’s 80% reduction in emissions by 2050) are at odds with short-term political cycles (Voß et al., 2009). Not only is there an incentive for policymakers to delay strong action until after they are re-elected or are no longer in power (Howlett, 2014) but there is ample opportunity for doing so through institutionalized political processes (reviews, debates, vetoes etc.) that are difficult to circumvent (Munck af Rosenschöld et al., 2014). Here we can expect to see more conservative climate policymaking e.g. labelling existing actions as pro-climate rather than novel or innovative actions capable of accelerating low-carbon trajectories (Howlett, 2014, Jordan and Huitema, 2014, Upham et al., 2014).

Despite the seemingly global allure of transition discourses, TM may be equally problematic if applied by emerging-emitters and low-income countries where its

implicit assumption – or outright ignorance – of democratic procedure could be easily exploited by ruling elites and unaccountable institutions (Escobar, 2015, Lawhon and Murphy, 2012). Ultimately the ST systems framework favours a process of innovation based on consensus over more contentious politics and pluralistic pathways (Bailey and Wilson, 2009, McFarlane, 2009, Stirling, 2011). Describing, as well as prescribing, society-wide transformations capable of unprecedented emissions reductions will require a much greater awareness of how competing worldviews and political processes govern the pursuit of sustainability transitions.

2.3. Social-ecological resilience and climate change adaptation

Placing society within, alongside or before its natural environment entails different ontological and epistemological commitments that can lead to very different forms of politics and governance (Fischer-Kowalski and Rotmans, 2009, Latour, 2009, Nordhaus and Shellenberger, 2007). The 1960s and 70s were a key era for the idea of ecological limits to economic growth and the emergence of a holistic complex systems approach to studying society-environment interactions (Nordhaus and Shellenberger, 2007, Røpke, 2004). The study of Social-Ecological (SE) systems places the interdependence of societies and ecosystems in the spotlight; it is broadly applied in the (social) environmental sciences and has a great deal to say about process of change. Drawing heavily on systems theory and ecology, the influential book *Panarchy* (Gunderson and Holling, 2001) developed an adaptive cycle conceptualization of change, arguing that social systems, in conjunction with the ecosystems they depend on, can maintain their vital functions through cycles of creative destruction and recourse to multiple states of

equilibrium. According to this view, the direction of travel in times of change is determined by the presence and interaction of three attributes:

- Potential – utilizing sources of capital for strategic action
- Connectivity – regulating practices and mediating shocks
- Resilience – maintaining vital functions through recourse to multiple states

In the context of adapting to the impacts of climate change this theoretical framework has been criticized for lacking empirical validity and for paying insufficient attention to human livelihoods and their institutionalized contexts (Berman et al., 2012, Plummer and Armitage, 2007). Its applications appear almost exclusively concerned with management strategies and contain minimal consideration of how these are situated within wider political structures or how they might be interpreted – and thus responded to in discourse and practice – by actors with differing values and worldviews (Berkes and Jolly, 2002, Folke, 2006, Nelson et al., 2007). These limitations become more profound as climatic uncertainty increases across time and space, putting pressure on SE systems to be prepared for the worst (Vermeulen et al., 2013). In these instances, where pre-emptive and transformational action is called for, a much more politicized theory of change will need to be evoked (Kates et al., 2012). Questions around why certain SE system states appear more viable than others cannot be adequately answered using the descriptive terminology of multiple equilibrium and creative destruction. As with ST transitions, what is missing from the SE system theory of change is a dynamic understanding of power, i.e. how and why do these system attributes and processes serve the interests of some whilst inhibiting those of others?

2.3.1. Adaptive co-management of resources

Following the adaptive cycle theory, SE systems research often advocates a form of multi-actor governance using networks to increase resource pools, connectivity and opportunities for social learning (Folke et al., 2005). Based on studies of natural resource management practices, this process of ‘adaptive co-management’ pursues SE resilience through polycentric, participatory and accountable processes – thereby achieving a diversity of input, good compatibility between knowledge and context and a safeguard against overlooking issues of social justice (Armitage et al., 2008, Lebel et al., 2006). However, as with TM, in practice this approach faces significant barriers, not least because the theoretical assumptions and practical traditions upon which it is based were developed for small-scale resource management without the multi-level complexity of globalized social and political institutions. Reflexivity and learning through experimentation are laudable – though never purely technical – governance principles but generalizing lessons and prescribing ideal type processes should be done with caution.

Numerous attempts to impose ‘good governance’ on the way societies adapt to ecological variability have suffered from an under-appreciation of power relations and cultural difference, or, in other words, from institutional incompatibility (Foxon et al., 2009, Lebel et al., 2006, Smith and Stirling, 2010). For instance, when international institutions such as the UNFCCC or the World Bank propose various market-driven adaptation initiatives such as payments for ecosystem services or natural disaster insurance schemes, they rely on the smooth translation of a set of neoclassical economic assumptions that are often fundamentally at odds with the socio-cultural norms of their intended destination (Methmann et al., 2013, Okereke et al., 2009,

Schipper, 2006). Whilst these assumptions may be deeply embedded within the functioning of advanced liberal democracies, it is not so the world over. Fully recognizing and expressing the social, cultural and political peculiarities of other societies – who often happen to be the ones most at risk of dangerous climate change impacts – is a task that may well be beyond the aggregated discourses of mainstream international forms of climate governance (Escobar, 2015, Okereke et al., 2009, Swyngedouw, 2013), especially those that perceive environmental problems through a decontextualized SE systems lens.

Climate change adaptation research that does not solely rely on a SE system perspective has engaged with some of these issues e.g. culture, perception and behaviour (Adger et al., 2009, Grothmann and Patt, 2005, Lorenzoni et al., 2007). Insights from this work, particularly around power and agency, can be productively incorporated into the SE systems perspective. However, as with many interdisciplinary dialogues there are epistemological and normative limitations. For example, the notion of an institutional entrepreneur – which has striking similarities to the niche innovators found in ST transitions – has gained conceptual currency in SE systems research. This idea builds in part on Folke et al. (2005) in emphasizing social learning and leadership in adaptive governance but also in part as a response to the criticisms levelled against climate policies that cast individuals as mere respondents to, rather than carriers of, transformational change (Shove, 2010, Stirling, 2011). Seen as the harbingers of disruptive innovation, these individuals can guide systems in the desired direction of adaptation depending on their levels of resources, power and positioning within a network (Westley et al., 2011, Westley et al., 2013). However, as Rickards et al. (2014) illustrate, even senior decision makers who support strong action on climate change

are constrained by their social milieu, often to the extent that transformational society-wide change is moot. One encouraging aspect of this research is the acknowledgement of actors' capacities for agitation i.e. for proactively opening windows of opportunity to drive social and political change (Blyth, 2002, Westley et al., 2013). Bringing the discourses, practices, strategies and (most of all) the interactions of various influential actors (e.g. social movement leaders, boundary organizations, local activists, social entrepreneurs and policymakers) into sharper focus may reveal undercurrents of discontent and conduits for innovation.

Many climate change adaptation initiatives based on the SE systems perspective aim to increase a society's levels of potential, connectivity and especially resilience. Yet, to derive a policy or governance mandate from the assumption that resilience in the short-term leads to adaptation in the long-term runs directly into criticisms of reactionary conservatism, deterministic thinking and political naivety (Rose, 2011). For instance, the capacity to maintain the vital functions of a given social system may not always be exercised in a progressive or desirable manner, particularly from the viewpoint of the oppressed and marginalized who would rather see more radical change. In this form, resilience may be seen as an apology for incrementalism similar to that of the isomorphism of TM where restorative stability is preferred to disruptive alternatives. For this reason human geographers and other scholars working on international development and security have been particularly critical of the rise of resilience as a new interdisciplinary norm. Some see this conservative form of resilience as depoliticizing climate change and reinforcing a neoliberal form of governing that is responsible for escalating socio-economic inequality and vulnerability (Evans and Reid, 2014, Joseph, 2013, Swyngedouw, 2010, Walker and Cooper, 2011).

In response to such rebuttals, the transformational potential of the concept has become increasingly discussed and much empirical work has been done to track exactly how SE systems enact and achieve their resilience in times of crisis and evolution. For instance, in relation to climate change adaptation, Pelling (2010, p79) proposes the following typology:

- Resilience – Functional persistence in a changing environment. Change in technology, management practice and organization.
- Transition – Realize the full potential through the exercise of rights within the established regime. Change in practices of governance to secure procedural justice; this can in turn lead to incremental change in the governance system.
- Transformation – Reconfigure the structures of development. Change overarching political-economy regime.

As societal responses to climate change move toward the transformational end of this continuum, issues of justice, legitimacy, authority and representation will need to be foregrounded (Kates et al., 2012, Pelling, 2010). However, this may prove impossible – both in theory and in practice – from within the confines of a SE systems discourse that defines resilience as an apolitical property, characteristic or function. If transformational social change is to be achieved in an empowering and pro-poor way then a more politicized view of climate change adaptation is needed to expose, problematize and resist the on-going reproduction of harmful power relations (Béné et al., 2014, Evans and Reid, 2014, Walker and Cooper, 2011). However it should be noted that this is not to suggest that transformation itself should become another new uncritical normative goal – every norm should have its critique. As some research has

shown, stability and security may sometimes be preferable in order to avoid maladaptation to climate change (Fazey et al., 2009, Wise et al., 2014). Ultimately, responding to climate change should be seen not as a technical problem to be managed away but as an *opportunity* to radically rethink and rebuild social, ecological and economic relations (Manuel - Navarrete, 2010).

2.3.2. Politics and power in systems: furthering an interdisciplinary research agenda

The above review has outlined considerable gaps in the explanatory power of ST and SE frameworks, especially when applied to the challenge of society-wide transformational change. In particular, the enabling/constraining effects of political structures and socially embedded power relations are under-theorized. Without examining the mediating role of politics and power in times of uncertainty and change these perspectives will only offer partial explanations for why truly transformational responses to climate change are still so rare. Before illustrating how social theory may improve our understanding of the origins of transformational agendas and their agitation for expression, a brief survey of existing interdisciplinary work in this vein is presented.

In addition to highlighting the hegemony of neoliberal ideas about unrestricted markets and individualism (Joseph, 2013, Methmann et al., 2013, Swyngedouw, 2013) critics of the mainstream climate change and systems research agenda have suggested importing concepts from other disciplines as well as combining them with completely different perspectives. For instance, in order to get at the 'politics behind policy', to (re) politicize TM and adaptive governance, Meadowcroft (2011) and Kern (2011)

suggest turning to political science for guidance in three crucial areas of analysis: interests, institutions and ideas. Resonating with the work of O'Brien and Sygna (2013) and Shove and Walker (2010) on practical, political and personal aspects of responding to global environmental change, this way of dividing up (but not disconnecting) a given context of climate change mitigation or adaptation immediately opens socially-oriented lines of questioning: whose interests do practical changes in technology and behaviour serve, how are political institutions constraining or enabling transformations in society, and which ideas are shaping the process of change and inspiring personal engagement?

In addition, Scrase and Smith (2009) and Manuel - Navarrete (2010) offer a fairly blunt and politically realist view; without a fundamental redistribution of power and resources the diaspora of existing niche level innovations and social movements pursuing a low-carbon future will never flourish. However, the types of power (instrumental, discursive, material etc.) that are to be addressed will vary depending on researchers' and practitioners' epistemologies. Pertinent to all of these suggestions is the thorny issue of cost and benefit distribution, especially given the high demand on political capital/feasibility entailed in any transformational change (Smith and Stirling, 2010). The need to be explicit and transparent when discussing and calculating distributive processes and outcomes is of central concern to climate change and social change researchers alike. This is just one reminder of the need to reinterpret how and why technical information about ST and SE systems is being presented as a rationale for pursuing reformist rather than radical responses to climate change.

Addressing some of these issues common to both systems theory and social science more broadly requires good interdisciplinary research. As Bailey & Wilson (2009) note, much work on ST transitions and SE resilience does not actually theorize. Instead it presents a framework that tries to identify and describe system processes through a techno-centric or eco-centric lens, neglecting a host of social theory insights and predictions about human agency and power in times of change. But they also point out that this need not be a permanent limitation; it may in fact enable creative dialogue. Previous interdisciplinary interventions have explored the applicability of different power concepts within a transitions framework (Avelino and Rotmans, 2009), opened a dialogue between ST and SE systems (Foxon et al., 2009, Park et al., 2012, Fischer-Kowalski and Rotmans, 2009), and sought to deepen the description of social processes (Rauschmayer et al., 2015, Armitage et al., 2012). However, in varying degrees, conceptual blind spots (e.g. ideas and agency) remain, as does a problematic tendency towards technical rather than political forms of governance.

Several literature reviews have noted this limitation and proposed a more politicized direction for research (Lawhon and Murphy, 2012, Markard et al., 2012, Meadowcroft, 2011). This cross-fertilization has expanded the scope and ambition of some applied transitions work (Haxeltine et al., 2013) but its influence on the theoretical foundations of systems theory – as applied to sustainability and climate change – has been limited (Geels, 2011, Geels, 2014). Despite these efforts, there may still be fundamental limitations to adopting a systems based view of social change. Social processes such as interpersonal relations, ideas, discourse and strategic action are capable of generating and enacting transformational change but they cannot be implicitly assumed or partially and clumsily bolted on to what is at heart a functionalist

epistemology. A more comprehensive engagement with concepts from social theory can help to critically examine these processes as well as demonstrate their influential role in shaping social responses to climate change.

2.4. The seeds of change

The writings of Gilles Deleuze and Felix Guattari contain numerous concepts of relevance to ecological thought and environmental politics (Buchanan and Thoburn, 2008, Deleuze, 1994, Guattari, 2005, Herzogenrath, 2009). Collaborating after the 1968 social movements in Paris, they combined philosophy and psychology to propose an approach to political activism that emphasised subjects over systems i.e. agency over structure (Goodchild, 1996). Their work shares some ontological and epistemological assumptions with complex systems thinking, inasmuch as they view society as made up of networked connections among actors evolving in unpredictable non-linear ways. However, by describing this as a spatially and temporally contingent 'assemblage' rather than as a definable system they emphasised the creative potential of ever-changing, and often conflicting, relations between actors (human and non-human alike). Accordingly, the discord and instability of micropolitics as opposed to the consensus and isomorphism of management are seen as the most potent opportunities for innovation and change (Scott-Cato and Hillier, 2010).

In practice, this position supports recent calls for more pluralistic and positive environmental politics that can bring conflicting worldviews together in search of an adequate response to the threats of global climate change (Escobar, 2015, Nordhaus and Shellenberger, 2007, Stirling, 2011). However, inclusivity alone is not enough, as the repeated shortcomings of international climate negotiations attest. Genuinely

participatory and novel interactions will have to take place in less aggregated arenas i.e. not just multi-actor governance dancing to the tune of top-down prescriptions or the seemingly unassailable logic of globalized economic markets (Manuel - Navarrete, 2010). Social, cultural and political *différence* ought to be celebrated for its provocations (differing) not its legitimizing (deferring) effects. As political theories of learning suggest, in the context of environmental policy we can expect macropolitical structures (e.g. institutions and paradigms) to produce incremental or 'of a kind' change (Bailey and Wilson, 2009, Munck af Rosenschöld et al., 2014) and the micropolitical (e.g. personal networks and social movements) to produce radically alternative discourses and practices (Bailey and Wilson, 2009, Folke et al., 2005, Pelling, 2010).

To illustrate, the governments and industries of most wealthy countries – and the international institutions they dominate – have predominantly sought to reform rather than rethink the social and economic arrangements responsible for anthropogenic climate change e.g. through ecological modernization and green capitalism. Yet, however hegemonic such discourses of global capitalism may seem there are always cracks in the system to be found and exploited. Contradicting Lukes' (1974) notion of a totalizing cognitive form of power, Deleuze and Guattari remind us of the creative potential of inter-subjectivity (Goodchild, 1996), of the destabilizing effect of actors' expressive and material capacities when they come together and collide with each other and with the status quo. Whether in the economic degrowth road to emissions reductions or the post-development approach to climate change adaptation, there are numerous transformational discourses and practices that reject the very foundations of more reformist agendas (Escobar, 2015).

So what does all this add to the ST and SE narratives of change? One major advantage is that it affords actors a latent capacity – or agency potential – that is obscured by the systems perspectives i.e. a potential to be and to act in a multiplicity of ways in relation to other actors or systems and across time and space. It thereby makes the *contingency* rather than the *functionality* of systems more analytically important (DeLanda, 2006) or, in simpler words, *who* and *why* rather than the *how* and *when*. In practice, this prompts us to look more closely at a given individual's or a society's low-carbon initiatives; are they temporary commitments? Are they contradicting their espoused values? Or are these efforts potentially transformative inasmuch as they seek to replace the framing of industrial growth with one of human-environment wellbeing?

Similarly, as vulnerable societies seek to build resilience and pre-emptively adapt to climate change, are they prioritizing economic functions, communal ways of life or ecosystem integrity? Which actors and institutions are responsible for governing the transformation and why might they seek to steer it in a certain direction? Answering such questions will require consideration of different actors' ideas and interests but also the socio-cultural peculiarities of their interactions with one another. Without such micropolitical detail, descriptions of social change will always tend toward the aggregate, eliding the daily creative conflict of actors, networks and worldviews in favour of broad conclusions about structure, management and hegemony. Perhaps the biggest challenge this poses to ST and SE frameworks is the need to look beyond the system. Dissolving the discrete levels and borders of the multi-level perspective or the SE system might open up their actors and institutions to potentially transformational engagement with fundamentally alien discourses and practices.

Beyond the tangible benefit of bringing forth novel responses to climate change – which should not be understated given the current reformist agenda’s protracted failure and the growing appetite for transformational alternatives – this perspective may also provide concrete lessons for improving mitigation and adaptation outcomes. For example, energy and climate change researchers mobilizing this sort of conceptual lens have produced interesting readings of supply-demand instability (Bennett, 2005, Strengers et al., 2014) as well as insights into the political-ethical issues of energy distribution and justice (Eames and Hunt, 2013, Walker and Day, 2013). In both instances disruptive actors problematize the technical assumptions of low-carbon transition narratives, offering vital lessons about unintended consequences, the mutability of technology and the nuances of the social context. Similarly, in terms of public engagement with the environmental policy process, differences in rationales (e.g. instrumental, legalistic, technocratic or subversive) abound due to the way participation is defined and enacted in different political institutional contexts (Wesselink et al., 2011). On the one hand these potentially conflicting discursive practices may produce creative friction and radical alternatives but they also pose serious problems to the successful functioning of climate policy and governance.

Vital to all of these accounts is the possibility for more relational and interpretivist descriptions of power to be made available (Allen, 2008, McFarlane, 2009). Such approaches are arguably well suited to the pursuit of transformational outcomes that necessarily involve changes in worldviews, values and beliefs (Avelino and Rotmans, 2009, Manuel - Navarrete, 2010, Smith et al., 2005). As Jørgensen (2012) and Shove (2010) both point out, such a detailed and ideational view of agency is largely omitted by the structural emphasis of systems frameworks. This oversight will need to be

remedied, particularly as more complex and networked forms of climate change governance (e.g. transnational low-carbon cities initiatives and multi-regional ecosystem management) continue to proliferate, placing greater stress on social institutions to accommodate and articulate the desired outcomes of very different types of actors (Hoffmann, 2011, Jordan, 2008, Okereke et al., 2009). Paying attention to these dynamics may facilitate novel responses to climate change. It may enable more reflexive and inclusive forms of governance but it may also throw light on the fundamental incompatibility or limited reach of generalized mitigation and adaptation initiatives.

2.5. Social fields

If the notion of micropolitics encourages us to consider the origins of social change, then we still need to explore how it gets enacted. For social theories explicitly concerned with the creative dualism of structure and agency, transformational strategies are usually described as being both constrained and enabled by the existing rules of the game, but also as having the capacity to shape the structures of the social fields in which they are enacted (Bourdieu, 1977, Bourdieu, 1993, Fligstein and McAdam, 2012, Giddens, 1984). Fligstein and McAdam (2012) describe these social fields as 'socially constructed arenas within which actors with varying resource endowments vie for advantage' (p10) and where there are 'shared (which is not to say consensual) understandings about the purpose of the field, relationships to others in the field (including who has power and why), and the rules governing legitimate action' (p9, parentheses in original). Crucially the role of agency is foregrounded in a way that links actors' intentions and influence to the personal – or ideational – realm.

To some extent the ST and SE frameworks have incorporated similar insights from institutionalist theory, addressing agency-structure dynamics in their analyses through the concepts of path dependency and vested interests. However, this has mostly produced research on instances of continuity or processes of long-term change (Geels, 2004, Hoffman and Ventresca, 2002, Thornton et al., 2012), neglecting the more sociological strands of this discipline that account for values, worldviews, discourses and power relations in times of change (Blyth, 2002, Cleaver, 2002, Vatn, 2005). The important role of institutions or social fields in steering responses to climate change and environmental crises cannot be understated. For instance, much research on adaptation has learnt from the well-rehearsed critiques of international development by acknowledging the dangers of overriding or ignoring locally situated practices associated with public goods, biodiversity and social action (Berman et al., 2012, Young, 2002, Hoffman and Ventresca, 2002, Paavola et al., 2009). This is precisely why we need to pay greater attention to the struggles to resist, rethink and replace those institutions that continue to fail to articulate the plural values and priorities of society.

Characterizing climate change as an amplifier of existing social, economic and ecological problematics can be particularly instructive here. Rather than a stand-alone problem with a technical solution, mitigation and adaptation imperatives combine with the already present agitations of marginalized groups to call into question the current rules of the game, presenting a highly visible opportunity to negotiate alternatives (Hulme, 2010). In social movements this is often referred to as an episode of contention (Fligstein and McAdam, 2012) and in political science as a window of opportunity (Zahariadis, 2007). What both point to is the influential power of ideas and agency in questioning and reshaping a social field (Blyth, 2002). More precisely it is

their power to problematize; the moment when social ills are diagnosed and remedies prescribed through recourse to scientific, economic, moral and/or political discourses (Rabinow and Rose, 2003).

Such moments can be pivotal as they are never politically neutral or technically impartial and can have long lasting consequences. For instance, defining greenhouse gases as a market failure that could be internalized has produced dysfunctional emissions trading schemes that favour already powerful industrial actors and continue to fall short of their own modest objective to put a meaningful price on pollution. So too with adaptation, seeing vulnerability as simply an information/expertise deficit produces knowledge and technology transfer initiatives that may be incompatible with, or even harmful to, their recipients' ways of life.

For actors concerned with countering these top-down discourses it is not sufficient just to have access to resources (e.g. varieties of capital; economic, social, political), it is their entrepreneurial and innovative utilization – creating uncertainty and offering compelling critiques and alternatives – that matters (Paavola and Adger, 2005, Phillips and Tracey, 2007). Some strands of SE resilience research have begun to include such considerations in their framework via the notion of transformational agency (Westley et al., 2013); something that is carried by certain individuals involved in adaptive ecosystem management. The scope for developing this work is promising and certainly reaches beyond localized natural resource management practices. Examples where this line of research has proved insightful include: climate policymaking that favours low-carbon energy (Hess, 2013), innovative policy processes (Upham et al., 2014) and integration of climate goals into economic trade rules (Evans and Kay, 2008). Vitality,

and in correspondence to the above section on the seeds of change, this focus on the interpretive aspects of agency-structure dynamics before, during and after moments of crisis has helped to explain how seemingly marginal ideas can gain influence within and across multiple social fields.

In social fields where shared interests and understandings exist between actors there is more at stake than mere instrumental power or rational competition. There exists a microcosm of cognitive and communicative relations, a multiplicity of values and the potential for creative, but also troublesome, conflict. If these sociological and ideational dimensions are made explicit – e.g. through more representative and deliberative forms of democratic governance (Dryzek, 2010, Fischer, 2003) – then our understanding of how they affect transformational climate change mitigation and adaptation may be improved and they may be harnessed toward producing more significant outcomes (Dryzek and Lo, 2014, Few et al., 2007, Fisher, 2010). Assessing the influence of cognitive-communicative exchanges between certain actors, particularly during periods of uncertainty and crisis, has certainly enriched our understanding of how political institutions change or persist (Lorenzoni and Benson, 2014, Schmidt, 2010), but what is required now is an expansion of this type of research, to address more informal and sprawling social fields. The borders of social fields are permeable and overlapping, capable of crossing multiple levels, territories and temporalities (especially where climate change is concerned). This flexibility is both a challenge to practitioners and scholars to remain attuned to their dynamic relational qualities and an opportunity for those same qualities to produce and enact genuinely transformational change.

2.6. Conclusion

Transformational social change can be said to involve a broad set of interrelated processes that are practical, political and personal in nature. In the context of climate change mitigation and adaptation two prominent agendas (ST transitions and SE resilience) both utilize a systems perspective to address some of these issues. However, certain conceptual blind spots (particularly regarding politics, power, agency and ideas) have not only limited the scope of their analyses but have also led to problematic governance prescriptions. Whilst some strands of TM and adaptive co-management do acknowledge the existence of competing visions for a climate compatible future, in general there is a tendency to try to control this potentially creative force through a process of isomorphism, managerialist steering and consensus building. Reflexivity and social learning is encouraged by both approaches but little is said of how ideas and influences mediate this process and to what extent this reinforces an incremental rather than transformational trajectory. Such an approach will not only favour technical and behavioural solutions to climate change but it may do so in a politically naïve way that struggles to challenge the dominant ideas and institutional inertia of societies that have high/rising emissions and large swathes of vulnerable communities.

In response, we may turn to social theories – where power, politics and social relations are of central concern – for insights and provocations. If ST and SE systems are to become more productive interdisciplinary frameworks capable of politically contextualized climate governance prescriptions then they will need more socially oriented theories of change. First, focusing on the contingent relations between various actors (human and nonhuman) and their assemblages (e.g. heavy industry or a

local community) instantly opens up possibilities for more radical innovation and adaptability beyond the discursive confines of a functionalist system perspective. Second, the interpretive and strategic actions of influential actors before, during and after moments of crisis and agitation need to be made explicit. Tracking these processes across space and time exposes both the creative potential of social interactions and the institutionalized rules of the game that enable or constrain them. Immediately, critical questions emerge around why some mitigation and adaptation actions are successful or not and to what extent they are capable of driving transformational change. Or in other words, whose vision of a climate compatible future is being pursued and along which pathways.

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3. Unravelling the United Kingdom's climate policy consensus: the power of ideas, discourse and institutions

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Abstract

As climate change policies and governance initiatives struggle to produce the transformational social changes required, the search for stand out case studies continues. Many have pointed to the period between 2005 and 2008 in the United Kingdom as a promising example of national level innovation. With strong cross-party consensus and a first-of-its-kind legislation the UK established itself as a climate policy leader. However, early warning signs suggest that this institutionalised position is far from secure. Through a novel application of discursive institutionalism this article presents a detailed analysis of the role of ideas in unravelling this ambition under the Conservative-Liberal coalition administration (2010-2015). Discursive interactions among policymakers and other political actors were dominated by ideas about governmental responsibility and economic austerity, establishing an atmosphere of climate policy scepticism and restraint. By situating this conspicuous and influential process of bricolage within its institutional context, the importance of how policymakers think and communicate about climate change is made apparent. The power of ideas to influence policy is further demonstrated *through* their cognitive and

normative persuasiveness, by imposing *over* and excluding alternatives, and *in* their institutional positioning. It can be concluded that despite innovative legislation, institution building and strategic coordination between different types of governance actors the ideational foundations of ambitious climate change politics in the UK have been undermined.

3.1. Introduction

Global environmental issues such as anthropogenic climate change continue to be a significant political agenda at multiple levels, not least for nation states. As inter-, multi- and trans-national environmental governance initiatives proliferate, the domestic politics of climate change leaders (and laggards) has become of wide interest (Andresen and Agrawala, 2002; Fankhauser et al., 2015; Liefferink et al., 2009; Schreurs and Tiberghien, 2007). In 2008, the United Kingdom (UK) Government passed the Climate Change Act (CCA), a first-of-its-kind legislation legally binding the UK to an ambitious greenhouse gas emission reduction target of 80% below 1990 levels by 2050. The implications were significant, institutionalising climate change as a political issue within the UK but also diffusing its ambition and policy framework to other contexts (Gummer, 2014; Hill, 2009; cf. Pielke Jr, 2009).

The political and institutional circumstances surrounding UK climate politics and the CCA have since received a great deal of attention (Bowen and Rydge, 2011; Carter, 2014; Carter and Jacobs, 2014; Lockwood, 2013; Lorenzoni and Benson, 2014). This article presents a critical and detailed analysis of changes in the way climate change is thought about and discussed since that heyday. Between 2010 and 2015 a Conservative-Liberal coalition government was responsible for continuing this ambitious climate policy agenda within the context of a global and national economic recession. Given the tendency of policymakers to backtrack, or stall, on previous commitments during difficult political and economic periods (Bauer et al., 2012; Howlett, 2014) this is a timely moment to ask: what happens to the underlying ideas and does it matter?

The Stern Review's (Stern, 2007) presentation of early climate change action as economically rational was pivotal in the UK case (Carter and Jacobs, 2014). Also, the idea of five-yearly carbon budgets to keep successive governments on track, and accountable, to the 2050 target was important (Bows et al., 2006). Discourses of low-carbon business opportunities, correcting previous policy failures and a moral sense of urgency all helped to secure support from private actors, policymakers and civil society respectively (Lorenzoni and Benson, 2014). Some of these ideas and discourses were formally institutionalised in a new government Department for Energy and Climate Change (DECC) and a semi-independent Committee on Climate Change (CCC). As a result, energy and climate goals became entangled through an increasingly complex mix of instruments, discourses and strategies designed to simultaneously achieve low-carbon, secure and affordable energy – known as the 'trilemma' (Kern et al., 2014; Rogers-Hayden et al., 2011).

Despite the formal nature of this institutionalisation, doubts about its longevity have been raised (Lockwood, 2013), especially as the 'competitive consensus' among political actors supporting it quickly fell away after the 2010 national election (Carter, 2014). In response to these warnings, and also to calls from climate policy innovation scholars for more research into post-adoption complexities (Jordan and Huitema, 2014), this article tracks the nature and impact of subsequent changes in the ideas and discourses of UK climate politics.

In section 2 the merits of a constructivist approach to studying political ideas and institutions are outlined. Section 3 summarises the methodology and case study materials. Section 4 shows how economic rationality and the normative positioning of

government remained important ideas but that their initial emphasis on early action and leadership faltered under the strain of austerity. In light of these findings section 5 raises concerns about a consensus approach to climate change politics and explores the political institutional context in more detail. Section 6 concludes with reflections on the analytical framework's contribution to the study of ideas in policy and the UK case study's relevance for climate change politics and governance in other contexts.

3.2. Ideas are more than just another variable

Political science, policy analysis and governance studies have all increasingly sought to account for the importance of ideas and discourse in shaping political processes (Fischer, 2003; Gofas and Hay, 2010; Hajer and Versteeg, 2005; Hajer and Wagenaar, 2003; Kütting and Lipschutz, 2012; Yanow, 2000). The influence of this constructivist turn can be seen in prominent theories of the policy process where only a handful of staunchly empiricist approaches continue to ignore or black box issues of subjectivity (Cairney, 2011; Sabatier, 2007). Reactionary attempts have been made to incorporate ideas as one more controllable variable within a positivist philosophy of science (regarding policy see: Pawson, 2006) so as to 'not have to swallow the contaminated epistemological water of postmodernism in order to enjoy the heady ontological wine of constructivism' (Keohane, 2000: 129). However, far from treating ideas as free-floating epiphenomena, many constructivists have explicitly linked them to traditional political entities such as institutions, interests and policy change (Béland and Cox, 2010; Hajer, 1996).

The limitations of only partially considering ideas is apparent in some of the research on environmental policy innovations and institutions mentioned above. For example, Patashnik (2008) and Pierson (2004) both subsume the role of ideas under an explanation of politics as path-dependent, thereby failing to fully grasp their diversity and potential for driving change. However, these political realist accounts tell us little about the ideational and discursive processes through which these actors interact and through which climate policies are enabled or undermined. To illustrate, Lorenzoni and Benson (2014) compare such an approach with the more constructivist discursive institutionalism (DI) framework, demonstrating the latter's ability to explain the influence of climate economics ideas and the discursive interactions among civil society, politicians and business leaders that produced near unanimous support for the CCA.

This article extends the application of a constructivist approach, and DI in particular, to present a comprehensive account of how ideas and discourse have continued to shape UK climate politics. Accordingly ideas and discourse are treated as particular forms of power and political processes differentiated from, but interrelated with, other forms such as laws, institutions and structures. Within the language of DI, Carstensen and Schmidt (2015: 4) define ideational power as 'the capacity of actors (whether individual or collective) to influence actors' normative and cognitive beliefs'. This is done through three observable processes: the persuasion to accept and adopt certain views (*power through ideas*), the imposition of ideas and exclusion of alternatives (*power over ideas*), and the production of subject positions as well as the constraining of what can be legitimately considered (*power in ideas*) (ibid.). Given this analytical

depth the intention is not to simply claim that ‘idea A caused policy B’ but to offer a more qualitative account of how ideational elements affect the way actors interpret, influence and enact climate policy.

3.2.1. Rethinking institutionalised ideas

Adopting a broadly Habermasian understanding of discourse as communicative action (Habermas et al., 1990) DI focuses on the interactions between actors and the ideas they carry, thereby reducing the emphasis on entrenched formal structures found in other schools of institutionalist thought. This sensitivity to interpersonal dynamics makes it a suitable framework for analysing the post-adoption politics of the CCA, where policymakers and other actors began to negotiate their preferred pathways towards implementation. It is in these personal and micropolitical exchanges that climate policy ideas are re-formed, supporting or disrupting the achievement of long-term targets.

Following Schmidt (2008, 2010) the analytical components of DI can be clearly defined to produce a framework incorporating ideas, discourses and institutions (see table 3.1). Ideas fall across three levels ranging from implicit values (*philosophy*) to general assumptions or principles (*program*) and specific solutions (*policy*)². For example, hidden social norms as well as more explicit assumptions about the scientific, economic or cultural nature of climate change are all as important as the practical actions of risk assessments and carbon budgeting. Further, two types of overarching

² This typology echoes Hall’s (1993) corresponding three orders of policy change but is deliberately more expansive, incorporating normative and non-scientific ideas in its description of what constitutes the institutionalisation of a policy arrangement.

ideas are particularly adept at tying together these three levels: *normative* ideas that provide prescriptions by linking values to appropriate courses of action and *cognitive* ideas that guide analysis by appealing to prevalent logics and interests.

Table 3.1: DI concept definitions and examples of their applicability to the case study

	Concept	Definition	Application
Ideas	Level	<i>Philosophy</i> – rarely explicit or contested ideas, values, principles and knowledge.	Links between (political) ideology and climate change.
		<i>Program</i> – assumptions and organising principles that define the problem and its solutions.	Debates within government about how to define and respond to climate change.
		<i>Policy</i> – specific solutions to specific problems.	The CCA, carbon budgets and related policies.
	Type	<i>Normative</i> – connect the three levels by referring to values and appropriateness.	How UK climate politics challenges or conforms to social expectations.
<i>Cognitive</i> – connect the three levels by appealing to prevalent logic and interests.		The rationalities of science, economics, politics, culture etc.	
Discourses	Representation	Via multiple <i>forms</i> – narratives, myths, frames, collective memories, stories, scripts, scenarios, images etc.	How climate change is presented in the UK and how this shapes the message.
	Interaction	<i>Coordination</i> – among policy actors to: create, elaborate and justify.	The mediating role of entrepreneurs and the allegiances of different actors.
		<i>Communication</i> – among political actors to: present, deliberate and legitimize.	Strategies, media coverage, public engagement and the transmission of messages about climate change.
Institutions	Form	<i>Simple</i> – unified governance.	Climate policymaking at Parliament and its style of engagement with other actors throughout the process.
		<i>Compound</i> – dispersed governance.	
	Specifics	Convincing messages follow expected patterns, are logical and are pitched at the right audiences in the right ideational setting.	How climate ideas and discourses differ within government and how they interact with their institutional setting.

Put simply, discourse refers to the ‘exchange of ideas’ among actors (Schmidt, 2011: 56). These interactions take a variety of *forms* (e.g. myths, stories, and scenarios) but their common goal is to represent ideas. There are two types of discursive interaction: *coordination* among actors responsible for developing policy and *communication* between these actors and other, less centrally placed, political stakeholders. The

relative importance and influence of these types of discourse is partially determined by the institutional context. In a *simple*, or unified, polity communicative discourse will be most prominent, as policy actors make decisions centrally and then seek to justify them whereas in a *compound*, or dispersed, contexts coordinative discourse is more pronounced as multiple actors are involved throughout the policy process. Lastly, it is assumed that the particulars of the institutional context (e.g. expected logics, patterns and audiences) need to be adequately addressed if these ideas and discourses are to be influential.

Having been applied in numerous policy areas at national and international levels DI has become established alongside, but also differentiated itself from, rational-actor, historical and sociological variants of institutionalism (see: Bell, 2012; Peters, 2011; Schmidt, 2010). Perhaps the most obvious and popularising difference is its emphasis on change rather than stability. By stressing the dynamic, as opposed to deterministic, nature of institutions, DI has leant itself almost exclusively to studies of moments of change (cf. Hope and Raudla, 2012). Ironically, unless more longitudinal studies are undertaken, this may serve to reinforce the view of the policy process as sequential and equilibrium seeking i.e. there is stability, then a radical change that is studied in detail, then a return to stability.

In order to increase the DI framework's sensitivity to incremental changes, the notion of ideational bricolage as theorised by Carstensen (2011) can be instructive. Herein ideas are understood as being comprised of *a web or related elements of meaning* whose presence, linkages, and relative importance are prone to change over time. These mutations are incremental enough to be overlooked, or even deliberately

downplayed, but their cumulative effect and influence on policy can be significant (ibid). By combining this with Schmidt's conceptualisation of ideas and institutions it becomes possible to see how the different elements of meaning contained within normative and cognitive ideas are situated and evolving across three levels.

In figure 3.1 overarching cognitive/normative ideas are represented as being comprised of smaller ideas spanning the three levels. Reinterpreting these as a web of elements of meaning enables a detailed description of their linkages and stability/changes. For example, over time from t1 to t2, a given element may stay the same (e1), its relative prominence may change (e2 shrinks), or it may be completely replaced by an alternative (e3 becomes e4). Mapping this web onto the three levels of DI offers a useful typology for defining the elements of meaning and showing their distribution.

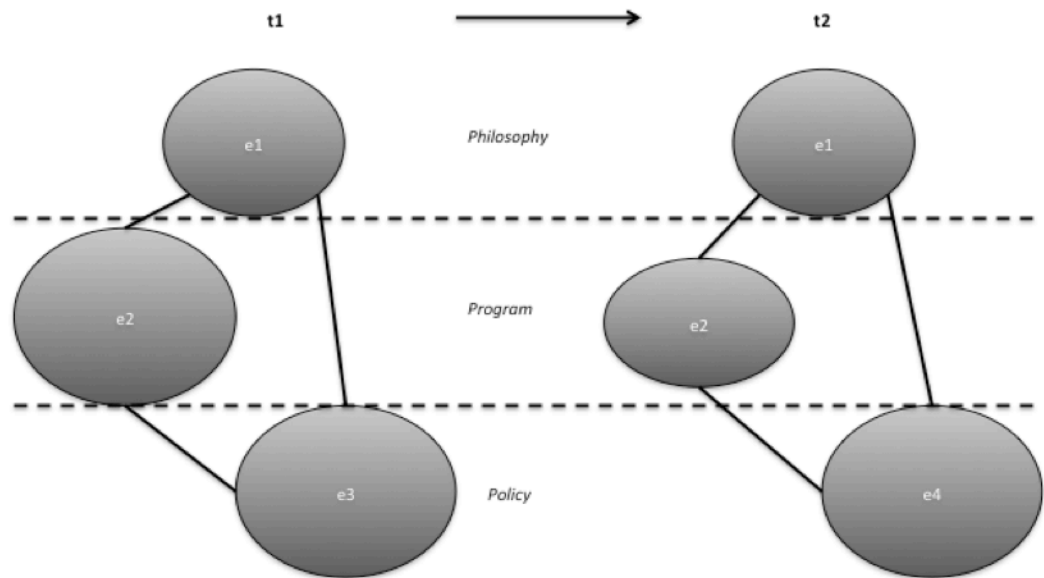


Figure 3.1: A representation of ideas as a changing web of related elements of meaning, situated across the three levels of DI. Adapted from Carstensen (2011).

3.3. Methods

Discourse analysis was carried out on transcripts of semi-structured interviews carried out between May and September 2015. In order to address the research questions most efficiently interviewees were selected for their close proximity to UK climate policymaking and politics circa 2008-2015. In line with the DI framework, interviewees were purposively selected for their status as either policy actors (involved in designing and planning policies) or general political actors (involved in deliberating and legitimising policies). Following Yanow (2000), individuals from different types of

organisations regularly involved in climate policy and politics were recruited to ensure a representative range of perspectives (see table 3.2). Interviews with such policy elites are a useful and valid tool for analysing otherwise hard to reach aspects of the political process such as decision makers' beliefs and values (Beamer, 2002). Given the exclusive nature of such networks a critical snowball recruitment method (Noy, 2008) was used, relying on the notion of 'reputation' to recruit key individuals (Farquharson, 2005). To avoid reverting to a narrow definition of reputation as merely authoritative, interviewees were also asked to consider 'thought leaders', prominent non-state actors, and individuals with insightful positions.

Transcripts were analysed for evidence of types of ideas, accounts of discursive interactions and descriptions of institutional contexts. This approach was applied to the interviewees' explicit accounts as well as to their more implicit assumptions and indirect utterances (e.g. underlying philosophical principles and assumptions). In other words, texts were analysed for both their content and function as meaning-making discourses. The same analytical approach was applied to relevant publically available documentary data sources (e.g. policy documents, government reports, public statements, and media articles), thereby enabling a triangulation of the findings. Although the emphasis of DI and this article is on interactions between actors and, thus, on verbal accounts, documents were particularly illustrative with regards to communicative discourses. Here texts were primarily treated as discursive practices intended to present and legitimise certain ideas about climate change.

Table 3.2: Description of Interviewees

Organisation type	Role	Code	Total
Policy actors			
Central Government	Politicians, advisers and committee members involved in climate change, energy and economics	PM	7
Civil service	Senior strategists and policy officials involved in international and domestic climate change, energy and economics	CS	4
Political actors			
Non-Governmental Organisations (pressure groups)	Senior analysts and knowledge brokers representing stakeholders in climate change action and international development	NGO	3
Media	Senior editors and journalists covering climate change, energy and the environment	EJ	3
Think tank	Senior advisers, consultants and knowledge brokers involved in climate change, politics and energy	TT	3
Private sector	Consultants working with private and public sectors on climate change and energy	PS	2
Academia	Senior academics researching climate change, energy and politics and energy policy in Europe	A	3
Subtotal:			25

3.4. A shift in the institutionalisation of climate change ideas

Prior to the general election in 2010 climate change had rapidly risen in political salience internationally and in the UK. Described as a ‘punctuated equilibrium’, this attention to environmental politics and the risk of dangerous impacts from climate change highlighted the inadequacy of existing policies to reduce greenhouse gas emissions (Carter and Jacobs, 2014; Lorenzoni and Benson, 2014). Spurred on by private sector endorsement of the business case for a low-carbon economy and a vociferous civil society campaign, UK politicians were engaged in a ‘competitive consensus’ to adopt a world-leading climate policy framework in 2008 (Carter, 2014).

However, as the recession dragged on and political attention turned away from climate change – especially after the 2010 election – the cost of implementing climate policies became a contentious issue (Carter, 2014; Ares, 2011). As Lockwood (2013) has suggested, the political sustainability of the CCA began to look less assured. Changes to the types of ideas and discourses associated with climate policy between 2010 and 2015 are a key indicator of this uncertainty and its effects on future efforts to reduce emissions.

3.4.1. Elements of meaning across three levels

3.4.1.1. *Philosophy*

Given the dominance of neoliberalism and deregulation in UK politics it is perhaps unsurprising that the philosophical level of ideas was populated with concerns about the failure of a centralised form of government to address the physical and social reality of climate change. Whilst not shared by all, these concerns were part of a wider modernist trust in the potential of technological innovation and economic liberalism to provide solutions. Similarly, the failure of any mainstream political ideology to convincingly relate to, and articulate, the social complexity of climate change was also mentioned. For example, one interviewee noted reluctance among the political élite to confront ‘the confusing and incoherent fragments of postmodern politics’ (CS1), suggesting that most intuitively attempt to depoliticise climate change whenever possible.

Overall, the majority of ideas identified were programmatic, with some being linked to specific policy solutions such as setting carbon budgets and conducting risk assessments. Broadly speaking they followed a logic of either 1) climate change is X

and therefore governing it requires Y or 2) climate policies are bad/good for the economy. Already this suggests a predominance of scientific and economic, rather than social or cultural, rationalities for addressing climate change. At a general level this is an example of *power in ideas*, or the institutionalisation of certain ways of thinking that requires policymakers to base decisions on certain forms of evidence.

3.4.1.2. Program

Based on a belief in neoclassical rational-actor principles the first set of ideas often defined climate change as the archetypal ‘tragedy of the commons’ writ large. Assumptions about the need for top-down targets and principles of good governance were quick to follow. Whilst common, this view was often accompanied by a resigned acceptance that there has been a loss of political appetite for state intervention. For instance, climate policymakers felt their range of options to be significantly curtailed by the newly introduced Better Regulations Framework (BIS, 2013); another example of the exclusionary power of ideas. This new guidance applied to all government officials and institutionalised a ‘one-in two-out’ rule based on an ‘incredibly narrow minded view of regulation as a purely negative burden’ (PM5). In practice this meant flagship climate regulations and taxes were significantly weakened, as in the cases of the Emissions Performance Standard for fossil fuel power generators which ‘was completely neutered’ (PS1) during its development, and also the Carbon Price Support policy which was frozen within a year of being introduced (HMRC, 2014).

Second, the economics of climate change remained a provider of best practice principles for climate policy. Central to this set of ideas is the cost-benefit ratio argument made by the Stern Review, stressing the cost effectiveness of early

mitigation action (Stern, 2007). Among policymakers a shorthand heuristic for these ideas was the principle of ‘maximum return on investment’, which was favourably seen as helping government to function more like a business and as wholly sensible given the adage that government never has enough money to do everything it wants to. By late 2014 the long-term relationship between the economy and climate change had not been invalidated but had been replaced by the more politically salient short-term relationship between the economy and re-election.

3.4.1.3. Policy

Relying mostly on economic assumptions many climate policymakers, including ministers at DECC and the Department for Business, Innovation and Skills (BIS) continued to try and bolster this early action imperative – citing positive feedbacks, investor confidence and infrastructure development as part of a long-term plan – but ultimately the short-term demands of saving public money eclipsed them. The overbearing presence of austerity even led policymakers to actively avoid some solutions; being told directly that ‘if it costs money it isn’t going to happen’ (PM1). More than just the *coercive power over ideas* embodied in the Treasury’s ability to veto policy suggestions, the austerity agenda created a restrictive atmosphere within which policymakers pre-emptively excluded certain ideas based on an internalised assumption that only efficiency gains and ‘doing more with less’ types of policies would be deemed viable. Whilst the range of specific solutions for reducing emissions was dwindling, policymakers were able to point towards carbon budgets and risk assessments as evidence of their continued – albeit strategic or even symbolic – actions on tackling climate change.

3.4.2. Weaving a convincing web of meanings

3.4.2.1. *Losing the normative mandate to lead*

Around the time of the CCA (2005-2008) a strong normative position for the UK as a climate leader emerged. This was based on a moral imperative to act urgently in the face of dangerous climate impacts and to reap the benefits of correcting hitherto failed policies (Lorenzoni and Benson, 2014). Since then, these elements of meaning have significantly diminished and been joined by others to produce a shift in the overarching normative idea about the government's role in tackling climate change (see figure 3.2).

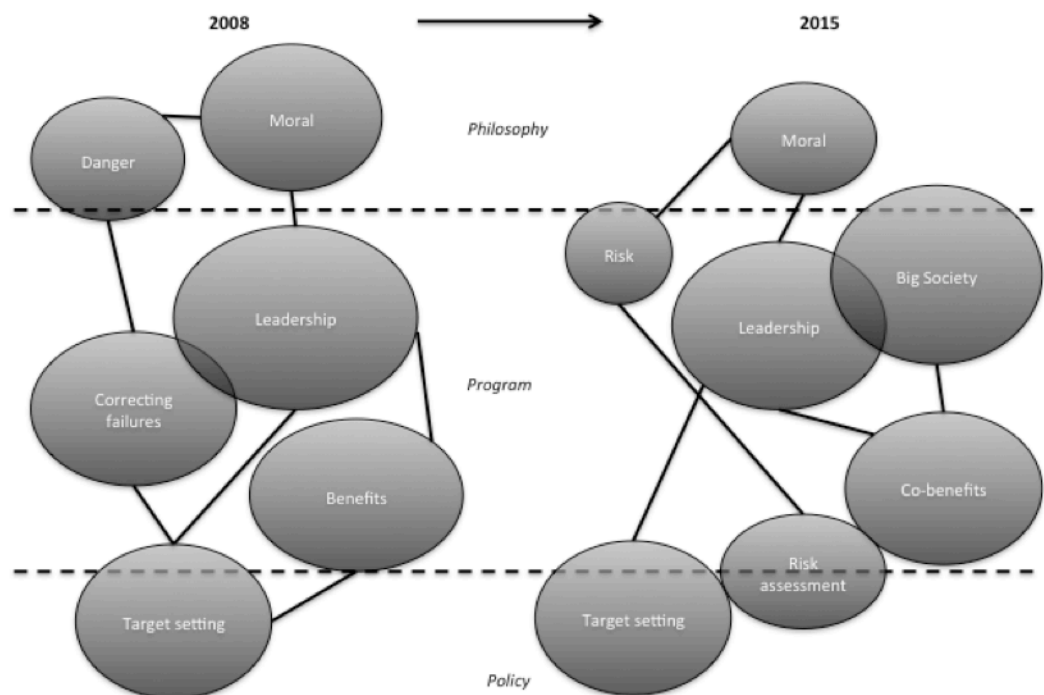


Figure 3.2: Changes in prominence of, and links between, elements of the normative idea of UK climate governance.

As predicted by Carter (2014), the sense of urgency and momentum associated with the Big Ask civil society campaign and the competitive consensus among politicians dissipated after the 2010 national election. The prominence of morally based ideas also shrank due to previously abstract notions of dangerous impacts being redefined as specific manageable risks (see figure 3.2) via the UK Climate Change Risk Assessment programme and policies (DEFRA, 2012). However, thanks to deep-seated democratic values of governmental duty and accountability this norm didn't dissipate entirely. The idea of target setting also remained, enabling politicians to point to the flagship CCA policy and carbon budgets when challenged with critiques or when positioning the UK as a climate leader on the international stage.

Two new additions to the milieu of meanings fundamentally altered the way the idea of leadership was expressed. As climate change's political salience waned the meaning of leadership became more about acting responsibly than seeking out first-mover opportunities. As a result, the direct benefits of mitigation and adaptation were no longer enough to justify action, there needed to be co-benefits too. One policy actor recalled:

'We couldn't just do it [climate change] for the sake of it; we had to make up an argument as well.' (PM5)

Further, whatever the size of the mandate to act on climate change, its appropriate expression needed to be as decentralised as possible. This was exemplified by the Coalition's Big Society agenda (Cabinet Office, 2010), which extolled the innovative problem-solving potential of shared responsibility and non-state actor empowerment. Previously civil society and industry had vociferously pressurised government to lead

but the roles had been reversed and they were now being asked what they were going to do.

3.4.2.2. Whose numbers count most?

Economics continued to be the most prevalent cognitive idea through which to grapple with the complexity of the climate-society relationship. For instance, in successive reports and recommendations to Parliament the Committee on Climate Change (e.g. 2008, 2010, 2013) deployed economic analyses to directly appeal to: the perceived long-term vision of politicians seeking to leave a legacy, publics concerned with infrastructure investment, and low-carbon enterprises looking for a stable business trajectory. However, through the adjustment of metrics and assumptions economic logic can be coherently applied in support of very different policy recommendations. This is an epistemological situation that policymakers were acutely aware of and which was built into their political strategies:

'You've got three departments [DECC, BIS, Treasury] all doing analysis on the same questions just because they don't trust each other. For example, the Treasury focused more on short-term values and so off-shore wind was hated whereas DECC saw it as a gamble for the future.' (PM4)

As austerity loomed large, economic discourses began to paint a different picture to the one presented by the Stern Review. Concerns were raised about reducing public spending, protecting energy intensive industries and maintaining competitiveness with the rest of Europe. In 2013/14 arguments around reviewing the fourth Carbon Budget presented a visible example of these competing rationales. A chorus of support to be as ambitious as economically possible swept through the first three carbon budgets (in 2008) but, in contrast, adopting the fourth (in 2011) required direct intervention from

the Prime Minister and the addition of several caveats including a chance to review and revise it. Although it was ultimately upheld this challenge to the validity of the fourth carbon budget, and the CCC's advice more generally, set a precedent for future caveats and reviews of ambition.

From the policymakers' perspective (self-labelled as pragmatic), pursuing long-term climate goals and low-carbon investment was overtaken by the imminent and interdependent need to repair the economy and get re-elected. In political terms this led to prioritising the interests of consumers/voters over those of the low-carbon sector e.g. reducing energy prices by cutting subsidy levies. In simple economic terms the discount rate proposed by Stern for calculating cost-benefit ratios into the future was rapidly adjusted to favour the present. Or, to put it another way, the political economy of climate change ideas went from prioritising long-term diffused benefits to being primarily about short-term concentrated costs (see figure 3.3).

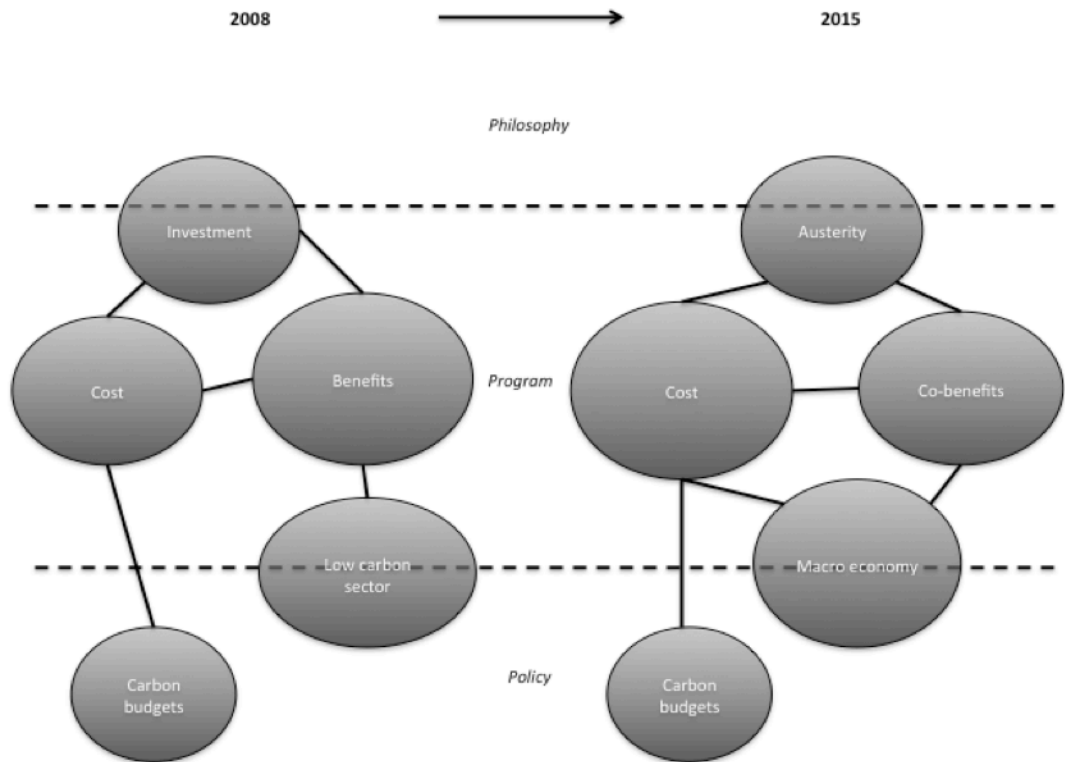


Figure 3.3: Changes in prominence of, and links between, elements of the cognitive idea of climate change economics.

3.4.2.3. Normative and cognitive cross-over and other ideas

Overall the various elements of meaning spanned all three levels of ideas in much the way that Schmidt (2010) anticipated; that is, with very little explicit reference to philosophical level values (e.g. political philosophy or ideology), and an abundance of programmatic level organising principles (e.g. leadership, target setting, markets and subsidies). It is also important to note that developments in the cognitive and normative ideas described above did not happen in isolation from alternatives or from each other. For instance, arguably accelerating the decline of a government leadership norm was the resurgence of the powerful cognitive idea of scepticism. Although climate science scepticism had become a marginalised position, the more moderate

and politically acceptable position of ‘climate luke warmism’ emerged i.e. accepting the science but doubting the likelihood of severe impacts. When coupled with the belief that government intervention is inefficient in areas of unpredictability or long-term planning, this amounted to a form of ‘climate policy scepticism’. Further, the notion of co-benefits appears in both types of ideas suggesting it to be a pertinent and malleable element; for instance several policy and political actors saw it as vital for keeping climate goals on the government’s agenda and as the only possible way to secure political and economic resources during the recession.

3.4.3. Turning down the volume on climate change discourse

Despite speaking with a range of different actors, ideas about climate change appeared in a limited number of discursive forms. In the policy sphere, meteorological and economic scenario modelling was treated as the foundation of climate change knowledge. Repetitive policy scripts about tackling the energy trilemma and abating risk were then used to explain what was being done. Even among wider political actors and stakeholders these forms were the most prominent. In addition, there were some polarised protagonist/antagonist driven narratives recurring in the media that functioned more as awareness raising devices than as a means of elaborating or deliberating responses to climate change. Given the evidence base and its focus on public policy (where scientific and economic evidence-based justifications and good versus bad plotlines are known to resonate loudest), this narrow range of discursive representations is perhaps unsurprising.

3.4.3.1. A consensus built on shallow foundations

The day-to-day political interactions within, and along the fringes of, government are such that a summary of these discursive practices can only ever be a partial snapshot. As has been shown, discourses of climate governance and economics were continuously present, although not necessarily stable. They often produced boundary work³ (e.g. annual reports, scenario models and framework policies) to help coordinate different types of actors around a particular set of ideas. A mixture of ideational coherence, strategic enactment and institutional context mediated their ability to coordinate actors around specific ideas. Table 3.3 lists some examples of the discourses used by interviewees to elaborate and justify their preferred policy options as well as the institutional context in which they were deployed and debated with various actors. Whilst they are not exhaustive or entirely representative, these examples do provide insights into common themes and the importance of institutional venues and the ideas that permeate their boundaries.

³ Based on Gieryn's (1983) original description of the way knowledge can be used to demarcate areas of expertise for ideological reasons.

Table 3.3: Discursive interactions and their institutional context

Discourses	Contexts
<p>High-level commitments to climate change such as target setting were generally supported but detailed and potentially divisive decisions were seen as the responsibility of more decentralised processes and actors.</p>	<p>Central Government</p>
<p>Positive and long-term economics backed up policy decisions and linked them to high-level targets but this was hampered due to inconsistency caused by competing policy goals and Coalition politics.</p>	<p>DECC policy</p>
<p>The economics of emissions reductions and the science of climate risks were the foundations for long-term planning but were incongruent with dominant ideas about neoliberal governance and austerity.</p>	<p>CCC consultations</p>
<p>Austerity, small government, and climate science luke warmism produced an atmosphere of climate policy scepticism.</p>	<p>Treasury negotiations</p>
<p>Leadership through cross-party consensus building and appealing to positive investment storylines.</p>	<p>NGO and think tank engagement</p>
<p>Uncertainty was a central theme for both low carbon and industrial actors as they appealed to policymakers for consistent economic signals and policies.</p>	<p>Private sector statements</p>

Notwithstanding more detailed disagreements, the CCC and DECC consistently aligned behind an overarching discourse of positive climate economics and necessary government involvement. Generally, support for this position from politicians was unreliable. Cabinet ministers and party leaders were keen to engage in high-level rhetoric e.g. approving the fourth carbon budget and signing a 'joint pledge' during the 2015 election to remain committed to tackling climate change. However, they were not so forthcoming on specific climate policy solutions that could drive a rapid low-carbon transition such as a power sector decarbonisation target or investing in domestic energy efficiency. In the case of the latter, underperforming policies (e.g. the Green Deal) resulted in a big setback to the UK's attainment of long-term emissions reductions (CCC, 2014).

Both of the CCC Chairmen (Lord Turner, previously Director General of the Chamber of British Industry and then Lord Deben, previously Chairman of the Conservative Party) were able to keep potentially hostile business leaders and Conservative politicians on side. Similarly, the two Secretaries of State at DECC (Chris Huhne and then Ed Davey) fought effectively to make the economic case for climate change a visible priority and enlisted the help of other departments to mainstream climate goals across government (e.g. working with BIS to establish the Green Investment Bank). Despite these coordinative efforts, the persuasive power of climate change economics was limited. For instance, a significant countervailing pressure came from the Treasury who took an increasingly hostile stance toward climate policies, occasionally aligning with anti-regulation politicians and high carbon industry actors. This coordination was built around a salient counter-discourse of climate policy as expensive but also politically

dispensable – succinctly expressed in the Prime Minister’s often quoted dictum to ‘get rid of the green crap’ (Schofield, 2013).

Here the importance of institutional constraint/enabling is particularly clear. First, DECC struggled to reconcile internal inconsistencies to do with both policy (trilemma goals) and politics (as a Liberal Democrat led department in a Conservative majority coalition). Second, the CCC was formally mandated to provide advice based on scientific and economic rationalities only. Whilst their reports were well received by most, they were restricted in their ability to engage in overtly political, and therefore potentially more effective, coordinative discourses. And thirdly the Treasury, due to its institutional position as fiscal overseer and the pervasive discourse of reducing public spending, was able to occupy a contrary position vis-à-vis ambitious climate policy without fear of being isolated or losing influence. As one interviewee quipped:

‘If you work for the Treasury it is your job to be disliked so we should be reasonably understanding, but they have been increasingly overreaching.’
(TT5)

3.4.3.2. Telling a compelling non-story

It is important to note that the communicative interactions analysed here took place among actors with a special interest in climate change but who felt that it commanded little attention or value in wider society. In fact, many actors – including central government and media – defined climate change as a ‘non-story’ and made a strategic decision not to make it a central theme. This is a clear example of one idea’s *power over* the alternative view that climate change could be an important political issue. Not only did this limit the overall amount of communicative discourse but it also steered

what little there was towards a particular view of climate change as just another issue among many rather than as something cross-cutting and fundamental.

Six communicative discourses and the way they were deliberated and legitimised certain climate programs or policies were identified (see table 3.4). Again, governance and economic ideas were prominent throughout. Emerging out of this assortment were two competing meta-discourses: 1) the UK is leading on climate change through a long-term and positive economic plan, contra 2) disagreement over energy and budget priorities is undermining the UK's response to climate change.

Table 3.4: Communicative discourses and the climate related ideas they express

Discourse	Summary
UK as leader	Government has a responsibility to pursue first mover advantages and influence other actors to address public good problems such as climate change.
Long-term plan	Target setting and the flexible use of policy levers can cope with the uncertainties of climate change and are necessary for dealing with the long-term impacts that reach beyond political cycles.
Positive economics	Climate change is an investment opportunity that brings co-benefits and political capital.
Dissensus	The complexity of climate change demands more rigorous political debate and a decentralised, market-driven approach to governance.
Energy transition	Subsidies and energy market signals can address climate goals but only if consumers are protected from significant costs and supplies remain secure.
Budgeting	Reducing public expenditure is a top priority therefore climate policies should be discussed in terms of efficiency and return on investment.

The UK's leadership role in climate change governance lost its public appeal quickly after 2008, retaining relevance only for a fairly narrow set of actors engaged in

international climate negotiations at the United Nations Framework Convention on Climate Change (UNFCCC). A telling sign of its diminished influence was the relative absence of climate change from the electoral campaigns in 2015, especially given their coincidence with a milestone UNFCCC conference of the parties in Paris (COP21). In fact, by signing a joint pledge, party leaders were able to gloss over the fact that recent policy changes had knocked the UK off course to achieving its longer-term targets (CCC, 2014).

Long-term planning and positive climate economics were central pillars of DECC's communication strategy and were spelled out narratively through the language of carbon budgets, transition pathways and renewable energy roadmaps (e.g. 2009, 2011a, 2011b). However, policymakers reported getting little traction beyond the usual low-carbon sector firms and environmental NGOs. Controlling the policy message is a vital form of *power over ideas* for central government but one that was largely unsuccessful in this case. Instead, aided by messages from the Treasury, some media organisations and climate policy sceptics reinforced a simplified economy-environment trade-off characterisation in order to cast doubt on the government's capacity to stay the course as a climate leader during constrained economic times.

Open calls from policymakers for a complete rethink of the UK's leadership position and the CCA were few and far between (see speeches by: Osborne, 2011; Patterson, 2014). Indeed, post-legislative scrutiny conducted in 2013 (DECC, 2013) broadly reaffirmed the government's commitment to its level of ambition. However, a more measured but no less damaging discursive challenge to the 2008 consensus did gain ground. Climate policy sceptics within government were quick to amplify

disagreements with the help of mass media's tendency to condense complex issues into combative shorthand storylines e.g. by leaking letters showing disagreement between ministers over the fourth carbon budget (Stratton, 2011). Similarly, a complex set of policy instruments had been developed to reflect the energy trilemma's goals but much communicative discourse ignored these details, focusing instead on net public expenditure and green levies, thereby pitting DECC against the Treasury, consumers against environmentalists and politicians against their (constituents') least favourite energy sources.

3.4.4. Institutional complexity and logical inconsistency

The political institutions responsible for climate policy and governance also interacted with these shifts in ideas and discourses. The UK parliamentary system has been described as a 'simple' polity, meaning that the unified administration requires a relatively small amount of coordinative interactions to reach a decision before putting most effort into communicating their justifications to the wider public and stakeholders (Schmidt, 2010). Yet, several findings from this study suggest this description to be inaccurate. First, the devolved administrations of Wales, Scotland and Northern Ireland, as well as sub-national city regions, have varying degrees of autonomy over their climate change programs and policies, often outperforming and contradicting those espoused in England. Secondly, inter-departmental factions were exacerbated by the need to integrate climate goals and by Conservative-Liberal coalition dynamics. Thus the coordinative activities and evidence gathering, or environmental policy boundary work (Guston, 2001), of Junior Ministers, Select Committees, All Party Parliamentary Groups and Special Advisers increased

significantly. Lastly, there were complementary trends towards multi-actor governance, open policymaking and the mediatisation of politics (Hajer, 2009). Together they demanded more pluralistic coordination around climate change issues and undermined the authority of didactic state driven messages. Taken together, such discord calls into question past claims about the institutionalisation of climate change in the UK:

'We have some climate legislation and a lot of climate related policy zooming around that Westminster bubble. But I don't think the UK has ever had a position on climate change. I don't think we have a polity in the sense of a public conversation that is a true reflection of our society. There is the Westminster bubble, which has rather hijacked the public conversation, but I wouldn't call that a polity.' (CS1)

Furthering this line of critique, there were concerns about the inability of various political and governance institutions' ability to adequately express, let alone respond to, the social complexities of climate change. The ideas of 2005-2008 about cross-sector and cross-party consensus in pursuit of ambitious climate goals proved, over time, to be incompatible with several entrenched institutional logics. In policy terms, the logic of neoliberalism continued to snub regulatory options while at the same time the logic of 'the Treasury View' – an example of *power in ideas* institutionalised since the 1930s recession, asserting that government spending offers no net benefit to economic activity in times of austerity – restricted any fiscal options regardless of how generously climate economists discounted the future. In political terms, the cognitive power of heuristic – as opposed to holistic – thinking in government quickly returned climate change to its position as a background and non-voter issue, unless linked to

some polarizing disagreement. In this context consensus without competition is tantamount to depoliticisation, as one climate policymaker recalled:

'If you are not seen to be having a fight about something then it is not seen as being politically significant. We got some attention around the Spending Review but interest in the run of the mill [climate policy] pieces was already waning when we came in [in 2010].' (PM5)

3.5. Discussion: the power of ideas and their impact on climate politics

More than just identifying and describing various ideas about climate change, the findings presented here have detailed their linkages, relative prominence and alterations over time. The generalised norm of government responsibility for acting on climate change remained but was diminished, losing the positive leadership emphasis and failing to connect convincingly to political philosophies or to specific policies (figure 3.2). As the 2015 general election grew nearer, climate economics ideas shifted from investment and benefits to austerity and costs, replacing policy prescriptions for low-carbon sector prioritisation with wider economic co-benefits (figure 3.3).

The power of ideas, as theorised by Carstensen and Schmidt (2015) was also clearly evident throughout. Coordinative interactions among policy actors relied on the persuasive *power through ideas* of economics, with institutionalised government divisions and austerity ultimately overriding climate policy commitments. Two types of *power over ideas* were apparent in the communicative interactions of actors: the exclusion of climate change as a central political story and the inability of central government to control, and thus impose, coherent climate policy messages. Lastly, the

institutionalised *power in ideas* of economic rationality was further strengthened by the recession, leaving the Treasury and neoliberal governance advocates in a strong position to veto many climate policy ideas.

As economic recession and the election cycle wore on politicians appeared to revert to the meta-preference of 're-election at all costs' that Bauer and Knill (2012) warn about in their work on policy dismantling. Combining these findings with the observed trends in public and media engagement with climate change in the UK and around the world (Boykoff et al., 2015) has confirmed Lockwood's suspicion that despite occasional peaks (e.g. the Big Ask campaign in 2008) there is insufficient pressure from voters to ensure politicians will shoulder the responsibility for addressing climate change as a stand-alone public good. Given this, it is perhaps not surprising then that environmental NGOs expended great effort in coordinating a joint pledge from the three main party leaders (Green Alliance, 2015) that simply restated previous commitments.

Whilst this strategy of cross-party consensus building may be based on theoretical (Giddens, 2009; Voß et al., 2009) and experiential (Carter, 2014) foundations, there is reason to suggest that it may not always be the most effective. Several interviewees expressed dismay at the lack of ambition and its inadvertent reinforcement of the idea of climate change as a 'non-story' even during an election campaign period. However, this is not to suggest that the other extreme of polarised climate politics would be any more effective – witness the slow progress on climate change of successive administrations in the United States – but that a certain degree of contestation is necessary to limit the scope for dismantling or inaction. A more moderate and

pragmatic strategy of exercising *power over* policymakers by highlighting slow progress at a time of high accountability and visibility may be effective here. Despite the previous success of this strategy in 2008, few audible voices referred to evidence that policy changes under the Coalition Government were undermining longer-term emissions reductions (CCC, 2014).

The cognitive idea of climate change economics moved in the opposite direction with regards to politicisation. The positioning of its component meanings changed very little (see figure 3.3) but the switching from investment to austerity as an underlying principle and the associated shift of emphasis from benefits to costs threatened the validity of certain policy ideas e.g. green energy subsidies and the levying powers of DECC. The impact of these tensions on climate policymaking was significant; reductions in the generosity of renewable energy subsidies were made in 2011 and Parliament contradicted CCC advice about setting a decarbonisation target for the power sector in 2013. The review of the fourth carbon budget evidence base in 2014 was an example of policymakers outwardly questioning the wisdom of the CCC, both in terms of its programmatic assumptions and policy solutions. A precedent has thus been set for Parliament to revisit its carbon budget commitments on economic competition grounds, potentially jeopardising future setting and achievement of interim targets. Overall, it appears the battle to persuade through the power of economic ideas was won by those presenting a view of climate policy as too costly and thus incompatible with deficit reduction and, by extension, re-election.

The case study findings are a reminder of the ideational influence of economics as a rationale for governing (see: Flyvbjerg, 2001). Its cognitive role was particularly

important throughout the policy process (e.g. for visioning a future low-carbon economy and guiding decision making based on the principle of maximum return on investment) and the institutional positioning of economists (e.g. Treasury control over DECC's levying activity and the appointment of economically-oriented leaders at DECC and the CCC). This 'political influence of economics' (Hirschman and Berman, 2014) is not inherently counterproductive to climate change action – as the Stern Review proved in 2008 – but it does limit the range of policy solutions that can be considered. This latter point raises concerns about the increasingly technocratic nature of climate and energy policy in the UK, especially regarding its negative effect on the political capacity of policymakers (Kuzemko, 2015).

3.6. Conclusion

Starting from the assumption that a prolonged economic recession would challenge the foundations of the UK's ambitious plans to tackle climate change, this article set out to explore the ideational, discursive and institutional dynamics through which this might be observed. Combining DI with a relational definition of ideas illustrated how, through discursive interactions, the ideas underpinning institutionalized policy arrangements can be re-configured. The impact of these changes on the policy process can be described as *power through, over and in* ideas. To summarise the UK case in these terms: austerity economics proved most persuasive among policymakers, the non-story status of climate change kept it away from the (potentially creative) frictions of politics, and institutional constraints ensured any attempt to increase climate policy ambitions were delegitimised. Thus, it has been shown that ideas continue to matter after the adoption of innovative policies and that the discursive interactions and

ideational bricolage through which they evolve can be analysed to reveal exactly when and how they matter.

Overall, the UK Government's role in tackling climate change transformed from innovative leadership to decentralised responsibility, questioning (and also rejecting) new state driven targets for reducing emissions in favour of multi-sector driven alternatives. The economics of climate change continued to be a prominent cognitive idea tying together norms, principles and specific solutions. However, its previous rationale for early action was challenged by a shift in emphasis from investment to austerity i.e. from benefit to cost. Together these reformulated ideas were represented through increasingly popular discourses of macro-economic prudence and climate policy scepticism. In addition to amplifying divisions among political actors these changes reinforced simplified media narratives and stalled the progress of climate policymaking through restrictions on both thoughts and resources.

Contrary to the image of UK climate politics as safely institutionalised by cross-party agreement and flagship legislation, the 2010 to 2015 period was marked by an increasing dissensus. Some direct impacts on policy were apparent (e.g. in cuts to department budgets, to renewable energy subsidies and to domestic energy efficiency schemes) although these were obscured under the general banner of austerity rather than as an effect of the UK abandoning its position as a climate leader. This is perhaps the most worrying implication of the findings, especially for other countries seeking to emulate the UK's climate policy framework and consensual political strategy. Strong disagreement among policymakers as well as a growing shortfall in the required policies to meet long-term targets were partially hidden from critique. Thus, target

setting and rhetorical commitments may provide political cover for inadequate policy action on the ground. At the UNFCCC COP21 in Paris in 2015 the UK, and many other countries, presented themselves as leading the fight against climate change, however the gap between targets and implementation at the national level has been quietly growing.

3.7. References

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4. Blowing policy bubbles: rethinking emissions targets and low-carbon energy policies in the UK

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Abstract

The issue of proportionality is central to climate policy debates about setting targets for the reduction of greenhouse gas emissions and the development of low-carbon energy. In effect, these debates centre on whether the perceived social costs outweigh the benefits of policies and whether this may lead to over-investment or ‘policy bubbles’. Political attention, agenda setting and policy image are all crucial drivers of ambitious policy formation, as seen in the case of the United Kingdom's (UK) Climate Change Act (2008). However, as political salience waned and economic depression dragged on, the cost of long-term climate targets have been reconsidered. Based on documentary analysis and 33 interviews with central political actors, this article presents a detailed account of how economic arguments have been used to reinterpret and challenge policies, using the heuristics of ‘over-investment’ and ‘policy bubbles’. Ultimately, arguments about proportionality hinge on which costs and benefits are considered. In the UK, economic and technical framings are typically prioritised, but these do not explain contradictory and politically motivated policy decisions. We discuss these dynamics within the context of maturing renewable

energy technologies, high energy prices and the UK's cross-party consensus approach to climate politics.

'I don't think there are many people, even in that policymaking bubble, who have joined the dots. It is terribly convenient that in that bubble there are people who live in permanent conditions of cognitive overload'
(senior government interviewee)

4.1. Introduction

Reducing greenhouse gas emissions to mitigate the effects of climate change demands bold actions from nation states, both collectively and individually. It also demands a high degree of reflexivity, managing policies in response to rapidly changing social and material conditions. Many industrialised countries have pledged 'intended nationally determined contributions' (INDC) and many have developed flagship climate change policies to guide them (Fankhauser, Gennailo & Collins, 2015). But the realisation and political feasibility of these ambitions is far from assured, especially as action becomes more challenging over time (e.g. full decarbonisation of electricity supply), as public and political interest fluctuates, as energy prices rise, and as national economies struggle in the aftermath of the financial crash of 2008/9.

We explore these various factors using the United Kingdom (UK) as a case study, showing that despite world-leading legislation a gap between rhetoric and action has emerged and is in danger of growing. By drawing on ideas of disproportionate policymaking and policy bubbles we show how perceptions of, and discourses about, climate change and low-carbon energy have changed, and the impact this has had on policy outputs. These concepts provide a particularly appropriate heuristic for exploring the ideas and rationales behind the process of policy recalibration. They are

especially pertinent to climate and energy policy, given the predominance of economic framings and also because of their attention to reflexivity in complex long-run policy issues. Adding to existing research on political agenda setting and policy retrenchment, the case study and concepts in this article illustrate the power of economic ideas in reframing strategic policies and justifying the rollback of policy.

4.1.1. UK climate policy: post-innovation problems

In 2008 the United Kingdom passed the Climate Change Act (CCA). This legislation was heralded as a significant step forward for national level climate policy (Carter & Jacobs, 2014; Hill, 2009; Lockwood, 2013; cf. Pielke Jr, 2009). Following Jordan and Huitema (2014), it can be described as an example of policy innovation because, for the first time, a national government had self-imposed legally binding targets for reducing greenhouse gas emissions. In order to oversee progress towards the flagship target of an 80% reduction in emissions by 2050 (compared to 1990 baseline levels) a semi-independent Committee on Climate Change (CCC) was established to propose and monitor interim five-yearly targets ('carbon budgets'). Combined with the newly formed Department for Energy and Climate Change (DECC) the institutional architecture supporting the CCA was thus established.

UK climate policy has since received a lot of attention in academia and beyond, sometimes raising doubts and drawing criticism. For instance, it has been shown that political competition and support for environmental issues from some parts of the incumbent Conservative Party quickly dissipated in the wake of the economic downturn (Carter, 2014). Uncertainty in climate change and low-carbon energy discourses further compounded this loss of momentum (Lockwood, 2013; Lorenzoni &

Benson, 2014). In this article we extend this line of critical enquiry, analysing the way these issues have been expressed in debates about emissions target setting and how they have materialised in the form of policy changes in the low-carbon energy sector.

4.2. Theory

4.2.1. Uncertainty during times of rapid change

Theories of the policy process often stress the importance of timing, especially with regards to the arrival of new ideas and significant changes in direction for policy. Phrases such as ‘window of opportunity’ and ‘punctuated equilibrium’ are used to describe the conditions in which a certain problem, and solution, command the attention of publics and policymakers alike (Jones & Baumgartner, 2012; Sabatier & Weible, 2007; Pralle, 2009). Contained within much of this theory are warnings about information processing errors and the possibility of over-reaction to increased activity in previously inert policy areas (Baumgartner, Jones, & Mortensen, 2007). For instance, policymakers’ bounded rationality (i.e. focusing on a small number of highly salient issues) is known to play a role in sudden momentum overcoming entrenched resistance and forcing rapid policy change (Stirling, 2014). When facing cognitive overload and intense political pressure, policymakers’ may tend towards overconfidence (Maor, 2012). Accordingly, more research into the post-adoption phases of policy innovations has been called for (Jordan & Huitema, 2014), particularly to explore the consequences of over- or under-reactions (Howlett & Kemmerling, 2017; Maor, 2012) and to better understand the subjectivity of rapid policy change (Jones & Baumgartner, 2012).

4.2.2. Discursive framing and agenda setting

Whether a given policy is perceived and described as (dis)proportionate will depend on many things, including the position of the person doing the describing and the point of reference they use to make their claims, e.g. climate risks, other nations' policies or a particular set of costs/benefits. The use of speech acts (or discourse) to define the terms of reference or promote a particular perspective can be understood as an epistemological intention to:

'Transform information into a meaningful whole by interpreting them through other available social, psychological, and cultural concepts, axioms, and principles.' (Fischer, 2003: p144)

In practice this can be a powerful and persuasive tool for those involved in processes of deliberation and political agenda setting (Dryzek & Lo, 2014; Hajer, 1995; Snow, 2004). As such, it is useful for analysing how government actors and other stakeholders seek to emphasise certain characteristics of a problem in order to justify their preferred solution (Fischer, 2003; Blue, 2016). The effects of framing can be seen at the early stages of defining a problem as well as throughout the lifecycle of policies, particularly for long-run issues such as climate change and energy transitions.

Climate change has been described as the archetypal 'wicked problem', for which there can be no 'silver bullet' policy solution (Urry, 2016). Countering the tendency towards despondency that such issues sometimes produce requires sensitivity to the short and long term changes in public discourses, as well as proactive strategies for keeping climate change high on the political agenda (Capstick, Pidgeon & Henwood, 2015; Pralle, 2009). Building on agenda setting theories, Pralle (2009) stresses the

importance of framing solutions to climate change in terms of: avoiding costly impacts, producing economic benefits and stressing its linkages with energy systems.

4.2.3. Rationalising over-reaction

Substantial policy changes are often politically charged and scrutinised. Therefore the way they are perceived and legitimised by various actors is crucial to understanding their political dynamics (Hajer, 2010; Jones & Wolfe, 2015; Sabatier & Weible, 2007). The discursive influence and emotional valence of novel policy ideas is well theorised in the literature (Cox & Béland, 2013; Schmidt, 2010) and may lead to bold commitments requiring significant levels of (potentially idealistic and unfeasible) government action (Maor, 2015). In addition to the afore mentioned information processing errors, Maor, Tosun & Jordan (2017) set out four political rationales for adopting policies that could later come to be seen as an over-reaction:

- To overturn a status quo and redefine the terms of debate in a given policy area
- To seek first-mover advantage for states and sub-national bodies
- To respond to intense public demand for averting a perceived risk
- To pursue national or sub-national goals as part of tackling a global problem

Accordingly, as conditions change and these rationales are no longer pertinent – because they have been met or otherwise negated – politicians and policymakers facing difficult circumstances may question the appropriateness of past decisions by invoking new or different framings and evidence.

By defining over-reaction as ‘producing an inefficient policy that generates greater social costs than benefits’ (Maor, 2012: p232), it is possible to consider both objective and subjective evaluations. Given the number of existing positivist arguments about the proportionality of climate change targets vis-à-vis climate science, this article focuses on the perceptions of policymakers and other stakeholders. These subjective accounts, and the discourses they mobilise, are analysed alongside observable policy outputs to illustrate the extent to which climate and energy policies have been re-interpreted and the way this is borne out in specific decisions e.g. to recalibrate policies.

4.2.4. The rise of policy bubbles

There are various feedback mechanisms through which innovative, long run, or contentious policies can protect their longevity such as creating new vested interests, reallocating resources and producing new information streams (Pierson, 1993). These may be deliberately designed into policies or they may be unintentional (Jordan & Matt, 2014). Either way, it is conceivable that these mechanisms could exacerbate actual, or perceived, costs, thereby creating prolonged over-investment or a ‘policy bubble’ (Maor, 2014; Jones, Thomas III, & Wolfe, 2014). Accordingly, the reflexive capacity of policymakers to check and balance these policies is crucial. This reflexive capacity is partially determined by institutional factors (Howlett & Kemmerling, 2017; Kuzemko, 2015) but also by individuals’ strategic actions e.g. discursive reframing or deliberate inaction (Bauer, Jordan, Green-Pederson & Héritier, 2012; Howlett, 2014).

There are many types of checks and balances for identifying disproportionate policies and recalibrating them, including: target setting, monitoring and evaluation, evidence-

based goals, and reflexive implementation (Hajer, 2010; Howlett, & Lejano, 2012; Hughes, 2012; Voß, Smith & Grin, 2009). However, this is not to suggest that policymaking is entirely rational and neatly professionalised. For example, target setting may be mobilised for political or ideological reasons in order to: impose responsibilities on successor administrations; establish or re-arrange policy areas; strengthen international negotiating positions; or give the impression of doing something without actually increasing implementation (Bauer et al., 2012; Hajer, 2010; Howlett, 2014; Rutter & Knighton, 2012).

In the UK, interim targets and annual reports on emissions were intended to maintain salience, ambition and accountability into the future as implementation became more difficult and costly (Rutter & Knighton, 2012). Yet the efficacy of these mechanisms has already begun to be questioned, especially with regards to ensuring policy stability and investment in low-carbon energy (Lockwood, 2013). By applying the economic heuristic device of a 'policy bubble' to the UK case we can see whether growing concerns about the costs of meeting emissions targets and over-investment in renewable energy are capable of over-riding the positive feedback mechanisms of climate and energy policies.

4.3. Methodology

4.3.1. Research Design

Changes in policy outputs (i.e. strategies, instruments and their settings) provide the basis for the study whilst the discursive activity accompanying them (i.e. their framing by different actors) provides the qualitative depth. Underlying this approach is the

epistemological assumption that what can be known and expressed about the world (e.g. about UK climate policy) is ultimately mediated by the interpreter's particular history and context (Yanow, 2000). This applies to both the expressed views of actors in the texts and interviews we analyse, as well as to the researchers' own representations of these. Thus, we do not claim to be presenting *the* definitive account of climate policy in the UK but rather a particular exploration of policy outputs and how various actors have discursively constructed them. The analysis focuses on climate change mitigation in the form of strategies and targets for reducing greenhouse gas emissions. Given the interrelated nature of energy sources and emissions, both materially and discursively, the low-carbon energy policy area (specifically, supply-side electricity) was scrutinised.

4.3.2. Data collection

Publically available documents were purposively collected and subjected to a critical discourse analysis in order to identify the various framings of policies and to verify the accounts of interviewees by looking for anomalies (Wetherell, 2001). Key texts included: policy documents, party manifestos, expert reports, and media articles. UK media coverage including the keywords 'climate change', 'climate change + general election' and 'renewable energy' was collected using Google Alerts during the 2015 election period. Trends and analysis of frames were crosschecked using data provided by the Media and Climate Change Observatory at the Center for Science and Technology Policy Research, University of Colorado. A single frame was used to code each story, and these were inspired by (and partially adapted) from existing work on climate change media coverage (Boykoff, 2008; O'Neill et al., 2015).

Semi-structured interviews were carried out to complement this with the otherwise undocumented beliefs, values and perceptions of key actors (Beamer, 2002). Interviewees were purposively sampled to include a range of actors who regularly contributed to climate policy between 2006 and 2016, including a mix of retired and currently employed policymakers and therefore a mix of more and less critical perspectives (see table 4).

Table 4: Summary of interviewees

Organisations and roles		Number
Government	MPs, policymakers, advisers and civil servants	17
Non-governmental organisation (NGO)	Policy analysts, knowledge brokers, consultants and campaigners	7
Media	Mass and specialist journalists	3
Energy sector	Consultants, investors and heads of research & development	3
Academia	Professors of climate change and energy	3
		Total: 33

Following a grounded theory approach, these two layers of evidence were collected and analysed iteratively, with emerging themes informing future collection and analysis (Charmaz, 2014). Inevitably, not all policy changes are described in full and the individuals' perspectives included are thus representative rather than exhaustive (Yanow, 2000). This partiality is justified on the grounds that it reflects the overall nature of the climate policy area, in terms of who has the power to shape policy and the communication channels through which they engage with stakeholders and the general public.

4.4. Case study: changing perspectives and policies

4.4.1. National climate politics and emissions target setting

4.4.1.1. The 'dangerous climate change' imperative

Leading up to the passing of the CCA, discourse from the two main political parties took the long view, framing climate change as an inter-generational issue that demanded immediate action. The Labour Prime Minister's speech in 2004 referred to climate change as:

'[A] challenge so far-reaching in its impact and irreversible in its destructive power, that it alters radically human existence' (Blair, 2004).

David Cameron, leader of the opposition Conservative Party, also made it a prominent part of his platform, saying 'the price of inaction gets higher every day' and 'tackling climate change is our social responsibility to the next generation' (BBC, 2006). According to a prominent campaigner, this sense of urgency and cross-party support 'opened a whole load of possibilities that weren't there before' (Rutter et al., 2012: p114). Seizing the opportunity, campaigners coordinated political support for the 80% emissions reduction target, despite the fact that no other country in the world had such an ambitious target or legal framework (Friends of the Earth, 2008).

Pressure also came from the civic and private sectors. A public consultation on the draft Climate Change Bill produced more than 17000 responses from individuals that were 'overwhelmingly supportive' (HM Government, 2007: p10) and the Confederation of British Industry (CBI), stated that 'this bill is a big step forward in combining the two things we really need: long-term clarity on policy direction and flexibility in its delivery' (HM Government 2007 p10). In addition to the business case,

climate modelling by the Intergovernmental Panel on Climate Change (IPCC) provided influential scientific evidence, as the Deputy Director of the CBI, told a policy reunion:

'What really did it, in 2004 and early 2005, was the science. I think your average chief exec of a major company had a feeling in their gut [that] the UN scientists were right' (Rutter et al., 2012 p114)

The legislation was scrutinised by three separate parliamentary committees and although a minority of sceptical voices were heard (see Parliament, 2007), it passed into law in 2008. In this context, only those willing to be cast as outsiders could outwardly oppose the CCA (5 out of 650 MPs abstained or voted against it). For example, a statement from climate-sceptic Member of Parliament (MP) Peter Lilley laments the persuasiveness of the economic argument in these terms:

'Given the public mood [at the time], the Stern Review was adopted as Gospel truth; by politicians - because it endorsed an apparently vote-winning message; by the media - because the global warming story sold newspapers; and by environmentalists - because it validated their agenda.' (Lilley, 2012: p8)

It is much harder to imagine this argument for early investment resonating in quite the same way had it been made after the global economic crash of 2008/9. Certainly from a government Treasury perspective austerity should have put the economy ahead of climate on the political agenda (Ares, 2011). Although not a central theme of election campaigns in 2010, climate change was referred to in party manifestos more

frequently than in 2005 or 2015 (figure 4.1), attesting to the short-lived nature of the competitive consensus.

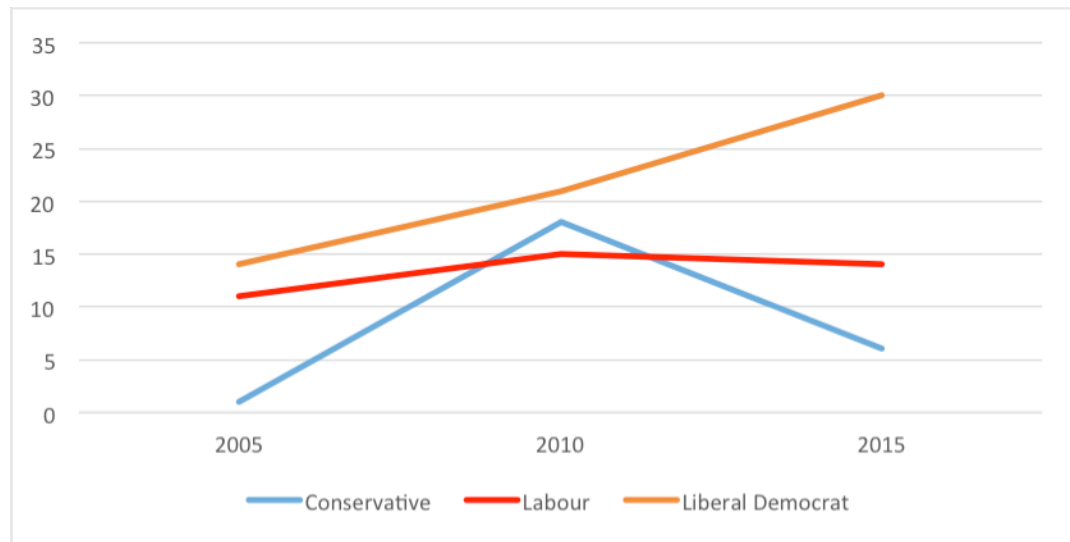


Figure 4.1: Number of references made to climate change in main political party manifestos.

However, even within this apparent consensus there were significantly different interpretations of the associated costs and most desirable policy pathways. Even among departmental ministers only a few individuals were keen to make emissions targets a priority, whilst the rest made up a passive majority described by one senior government colleague as:

‘A quite shallow consensus among a small group of people who wanted to be on the right side of history.’

Another interviewee who worked with MPs on promoting the climate change agenda across government encountered the same discord, characterising the atmosphere in Parliament as ‘one part hostility to nine parts indifference’.

Another telling quote from a civil service policymaker describes the subsequent ideological incongruence faced by Conservative leaders. Pledging strong action on climate change helped to soften the party's image and strengthened David Cameron's platform (Carter, 2014), but it also left them facing potentially unpopular policy options:

'I think No.10 [the Prime Minister's office] were, and still are, committed to tackling climate change in principle but are unprepared to take the difficult decisions. At the high level they are committed but as soon as you get a level down and face policy decisions involving public expenditure, money on bills or regulation which some people might not like... then they don't like the consequences.'

4.4.1.2. Target setting amidst economic turmoil

The five-yearly interim targets were an innovative and important element of the CCA's longevity. In principle the carbon budgets were intended to provide a measurable pathway to the 2050 target, thereby helping to neutralise the antagonisms of political attention cycles that so often hinder long-term policy objectives (Anderson, Bows, & Mander, 2008; Giddens, 2009; Hill, 2009; Voß, Smith, & Grin, 2009). The evidence base for these targets follows the IPCC's modelling of global temperature rises, which underpins the United Nation's (UN) international climate change negotiations to which the UK is a party. However, this needs to be placed within the national social and political context. As the CCC's budget proposals must also consider, in each sector of the economy, 'what can be achieved to reduce emissions at least cost, taking account of available technologies and government policy' (CCC, 2016).

The first three carbon budgets covering five-yearly periods between 2008 and 2022 (23%, 29% and 35% respectively) were legislated simultaneously with the CCA in 2008. The report does not use the term 'proportionate' but synonyms such as 'moderation', 'appropriate', 'feasible' and 'manageable' are present throughout e.g.

'The costs of meeting the 80% target are affordable and should be accepted given the consequences and higher costs of not acting' (CCC 2008: p5)

'Realistically achievable emissions reductions are sufficient to meet the required objective.' (CCC 2008: p17).

An interim assessment report noted that emissions reductions were likely to exceed the targets, partially as a result of the economic downturn (HM Government, 2010). However, it was stated confidently that 'the aim should be to outperform the first budget, and not to use this outperformance to reduce effort in the second budget' (Ares, 2011: p2). This warning against the possibility of interpreting over-performance as justification for policy rollback proved to be astute.

By contrast, the fourth carbon had a much tougher time being legislated in 2011 as concerns over economic competitiveness with the rest of Europe began to outweigh the scientific case. Statements from senior politicians clearly sought to shift attention to short-term costs (Guardian, 2013), suggesting that the CCA had produced an untenable legacy in the current political economic circumstances:

'It was fine to be talking about spending money on climate change in the good times but when energy bills are going up it doesn't seem like good politics.' (Senior Conservative MP quoted in Wright, 2012)

Despite these attempts to reframe long-term climate targets as costly over-reactions, the fourth budget was set in 2011, albeit with the caveat of a review of its proportionality in 2014 (HM Government, 2011). Again, despite sustained arguments from some ministers and lobbying from energy intensive industry, the target was retained (CCC, 2013). This open dissent was presented as economic prudence on the part of the Chancellor of the Exchequer, but several government interviewees close to the internal discussions revealed it was largely a political strategy to differentiate himself from 'green Tories' and to stoke a potential rift among their coalition colleagues in the Liberal Democrat party. Some media coverage of the disagreements portrayed it as a fundamental rethink of the UK's leadership position, but according to a government interviewee responsible for assessing the evidence base this was not the case:

'Obviously there is a push from a small part of the Conservatives to use that as an opportunity to get rid of the 4th budget or the [Climate Change] Act but that was always more of a media story than a reality. Maybe it seems easy to take that tone afterwards but I was there during it and it just wasn't a big deal.'

This example clearly demonstrates how reviews of proportionality may be used not only to keep targets aligned to evidence (i.e. acting as early warning signs for potential policy bubbles), but also employed for political reasons.

4.4.1.3. *The other side of the cross-party coin*

Our account and others have highlighted the apparent waning of a once competitive consensus (Carter, 2014), but with a landmark UN climate change conference in Paris following soon after the 2015 UK general election there was potential for a resurgence onto the political agenda. However, the incoming minister of DECC set the tone by speaking of ‘inheriting a department where policy costs on [household energy] bills had spiralled’, explicitly reframing the UK’s global contribution as ‘providing a compelling example of how to cut carbon while controlling costs’ (Rudd, 2015). Although one of our non-governmental interviewees who attended the UN conference spoke positively of the role senior DECC officials and the minister played, others (media and other areas of government) felt this agenda only resonated with a minority of policymakers and interest groups. They consistently bemoaned the lack of public or political salience of climate change, particularly where policy details were complex and uninspiring, for example:

‘In communications terms it [climate change] was probably one of the most difficult things. It’s not tangible, it’s not easy to grasp. I have to sell stories; there isn’t a bloody story!’ (Government communications official)

Ultimately, climate change and the environment were crowded out of the electoral campaigns in 2015 as attention focused on the economy and immigration and the Liberal Democrats – who continued to prioritise the climate change agenda (figure 4.1) – were unequivocally side-lined (Simms, 2015; media interviewees). In the run-up to the 2015 national election, a group of environmental NGOs brokered a joint pledge

from the leaders of the three main political parties to reaffirm their commitment to the climate agenda (Green Alliance, 2015). Although this was intended to strengthen the image of climate policy and to avoid politicisation, some of our interviewees expressed misgivings, e.g.:

'I do think in a sense it took the heat off – they could all just sign it and they weren't asked to follow it up in a particularly strong way. So in a sense it felt like the pledge existed in its own little reality somewhere separate and had absolutely no useful impingement or relationship with the rest of the election campaign. So I think ultimately it let them off the hook actually' (Opposition Member of Parliament)

Ultimately, the pledge contributed to a lack of public deliberation. Within the election period media coverage we analysed, articles specifically linking UK politics and climate change were relatively sparse (30 out of 240), despite wider interest in the UN climate conference ('world politics' frame in figure 4.2). There were a similar number of stories focusing on the 'settled/contested science' as on the link between climate change and 'UK politics' or election 'campaigns'. Thus, we see evidence of two possible effects of cross-party politics (inducing and neutralising competition in 2008 and 2015 respectively). Interestingly, in both cases, a flagship national level commitment was adopted and rhetorically lauded, obscuring more detailed disagreements among policymakers about the potential costs of implementation.

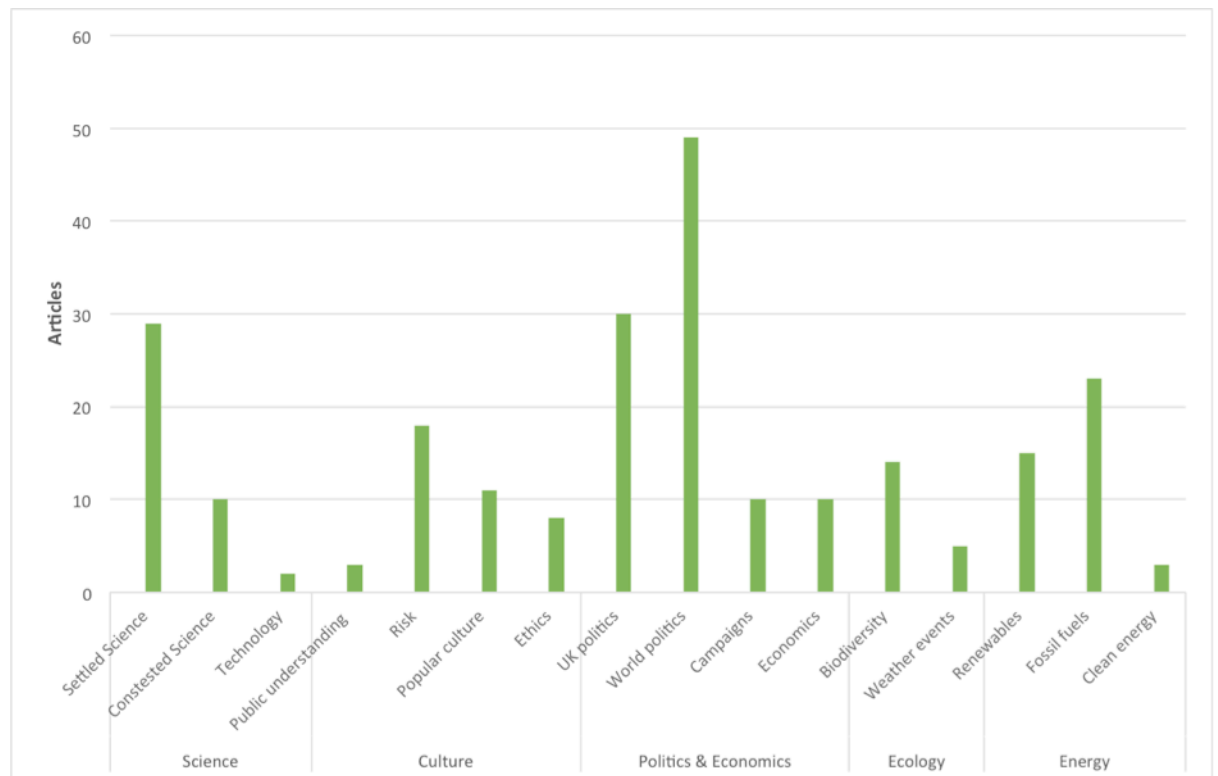


Figure 4.2: Frame analysis of UK national media coverage of climate change

29.03.2015-07.05.2015 (election campaign period)

4.4.2. Low-carbon energy: from clean energy transformation to least cost transition

Broadly corresponding to the UK's Carbon Plan (DECC, 2011a), the low-carbon energy policies concentrated on in this article relate to supply-side issues only, focusing primarily on renewable sources but also addressing the role of nuclear and shale gas. The only binding target in this policy area was courtesy of the European Renewable Energy Directive (EC, 2009) that required the UK to supply 15% of its energy needs (disaggregated into electricity, heat, and transport) from renewable sources by 2020.

Regarding electricity, concerted lobbying from NGOs and numerous MPs built on the carbon budgets and the 'UK leadership' discourse to argue for a full decarbonisation target (BBC, 2013; Friends of the Earth, 2012). Contrary to advice from the CCC, the

Government rejected the target on the grounds that it ‘would not be in the best interests of consumers’ who would pay for the policies through inflated bills (LSE, 2013). Many in the private sector saw this as a clear signal that renewables would no longer be prioritised ahead of shale gas or nuclear (private sector interviews; Murray, 2013). A leaked letter from the Chancellor confirmed the Treasury’s desire to move away from focussing on renewables to promote a pro-gas narrative due to the public appeal of perceived energy security and cheaper bills resulting from indigenous supplies (Guardian, 2012).

This shift came at a time when rising energy prices for households were becoming a salient issue, prompting energy companies and Conservative politicians to blame the cost of renewable energy subsidies that are levied via consumer bills. The then Prime Minister David Cameron allegedly demanded that policymakers ‘get rid of the green crap’ (a comment referred to by government, NGO and media interviewees). Moreover, the Secretary of State for Energy and Climate Change, Amber Rudd, reportedly wrote to the energy companies asking them to lower their bills (NGO interviewee). Although the cost of living crisis was (and still is) very real for many, blaming renewables for exacerbating this through high energy prices was misleading, as one energy expert explained:

‘If you take a look at the data for consumer expendable incomes, it’s been the sharpest squeeze for ages. That’s why the bills stuff was so toxic and challenging. Even though when you look at the breakdown, [renewable] energy policy is still such a minor component of the bill.’

The chairman of the CCC also pointed this out in a recent interview (Hickman, 2015). Here, again, the power of discourse and simplified media coverage in constructing the perceived costs of these policies is apparent.

More generally, economic framing in the decarbonisation debates concentrated attention on the cost-effectiveness of target setting in principle. Whilst not explicitly attacking their levels this, implicitly raised concerns about the appropriateness of setting carbon budgets. One senior policymaker explained that the word 'target' had become 'politically toxic'. A political rationale for this became clear in late 2015 when a leaked letter from the Secretary of State for Energy and Climate Change revealed the Government's own analysis predicted they would miss the 2020 European target for renewable energy. This resulted in accusations from environmental NGOs of misleading rhetoric and increased media coverage of how recent policy changes had hit the renewables sector (Tickell, 2015; Benton, Francis & Mount, 2016).

4.4.2.1. Policy goals and strategies

In pursuit of the above emissions and energy source targets, the 2009 UK Renewable Energy Strategy (DECC, 2009) presented an optimistic view, justifying costs by referring to the Stern Review's (Stern, 2007) well-rehearsed argument of 'early action costs less in the long run' and also by highlighting multiple benefits such as community energy resilience and fuel poverty reduction (DECC, 2009: 183-187). In 2011 this strategy was replaced by The UK Renewable Energy Roadmap (DECC, 2011b: 6), which focuses instead on the technologies 'that have the greatest potential to help the UK meet the 2020 target in a cost effective and sustainable way'. Eliding many social costs and benefits the new Roadmap emphasises aggregate value for money, repeatedly

stressing the superior cost-efficiency virtues of market competition as a means of delivering policies (DECC, 2011b: pp10-11).

This neoliberal logic also underpins much of the Government's 2013 Energy Act. Discursively combining three main objectives (emissions reductions, affordability and security) into a 'trilemma', the long-term move towards low-carbon electricity was caveated with short-term concerns about cost and supply. In particular, part of the Energy Act introduced an electricity market reform (EMR) targeting low-carbon supply, based on the premise that increased competition would solve the trilemma most efficiently. As the Government's report on implementing the EMR illustrates:

'Our long-term vision for the electricity market is for a decreasing role for the Government over time, and to transition to a market where low-carbon technologies can compete fairly on price.' (DECC, 2014: p13)

4.4.2.2. Policy instruments

Although the overall number of low-carbon energy policy instruments increased between 2006 and 2016, successive governments tried to contain their costs and complexity. In terms of instruments, the pre-existing Renewables Obligation (RO), which mandated energy providers to source an increasing percentage of their supply from renewable sources, was joined by two new instruments for subsidising small-scale and non-electric forms of renewable energy: feed-in tariffs (FiT) and the Renewable Heat Incentive (RHI) respectively. Part of the rationale behind the Energy Act in 2013 was to simplify this policy landscape, so the RO (which had already gone through many recalibrations) was replaced by an auctioning system called Contracts for Difference (CfD). Under the RO, which closes in 2017, government determined the

relative value of different sources of renewable energy through a banded certificates scheme. The CfD are specifically designed to create competition between low-carbon sources of electricity, awarding subsidies to the lowest bidders in an auction and eventually fading out technology specific auctions to create a 'free market'. Two government officials responsible for designing and implementing the new policy offered further justifications for this change:

'The renewable energy industry is ready to be weaned off guaranteed subsidies and can stand to lose a few projects.'

'There are so many projects in the pipeline that developers will bid low just to get them off their books.'

Either way, the prevailing view within government was that the previous policy trajectory would result in consumers paying more than they needed to through subsidy levies on household bills, especially as the renewables sector became more established. In other words it was seen as a growing policy bubble that needed to be checked.

This issue became highly politicised by regular price increases and energy companies being accused of profiteering by then Opposition leader Ed Miliband, who promised a 20 month price freeze on domestic energy and stricter regulations. The impact of renewables subsidies on bills was amplified by traditionally climate-sceptic media outlets using headlines such as: 'Green taxes will hike up energy bills by almost £300 by 2020' (Ingham, 2013) and 'Family energy bills to be £70 higher than ministers

claimed ... despite millions lavished of green energy schemes' (McTague and Spencer, 2014).

4.4.2.3. Instrument settings and scope

Reducing cost over the long-term has been built into the design of renewable energy subsidies, ostensibly to reflect changes in production costs and profitability as technology improves, i.e. to halt over-investment or policy bubbles. However, as we have seen, this type of reflexive policy alteration can also be used for political reasons. In 2009 a banding system was introduced into the RO to incentivise the development of emerging (e.g. tidal) rather than more established (e.g. on-shore wind) technologies. Similar steps were taken to reduce the generosity of the new FiT instrument, e.g. introducing a gradual depreciation timeline for overly successful solar PV (DECC, 2012; Parkes, 2012), as well as some immediate tariff reductions and a cap on overall spending (DECC, 2015a). The case of solar PV is particularly illustrative of the risk of over-investment. Due to rapid deployment and improvements in technology efficiency, more electricity was being produced (and purchased through the FiT) than anticipated. Combined with a low wholesale electricity price this meant that subsidy rates were disproportionately high, benefiting the solar PV industry and small-scale panel owners, but inflating the cost to consumers over the long-term (DECC, 2015a).

Whilst the discourse of curbing costs was easily made during a time of high retail energy prices and stagnant wages, it also: foreclosed public discussion of the net benefits these investments bring about; misconstrued the way subsidies are linked to wholesale electricity prices; and masked a set of political motivations for cutting policies (according to central government, private sector and academic interviewees).

Whenever over-investment is suspected and policies are changed, there will always be winners and losers with differing perspectives of what constitutes an appropriate level of cost. The political nature of these changes complicates things for policy experts. As one government official responsible for consulting with stakeholders put it:

'The problem is trying to differentiate what is just moaning by people who are losing some of their rents, compared to genuine complaints from people who are concerned about us not reaching our targets.'

Changes in the calibration of policy instruments also altered their targeting of technologies, some of which directly contradict Government claims about cost and their ideological position of not 'picking winners'. The first of these is a bespoke CfD awarded to a new nuclear project without any competition, on the grounds that it is low-carbon (if not renewable) and necessary for security of supply (DECC, 2012b). Putting arguments about the political desirability of nuclear contra renewables to one side (for a full account see: Sovacool and Watts, 2009; Stirling, 2014), the cost per megawatt hour (£92.50) of the nuclear CfD was more than the average onshore wind (£82) and solar PV (£68) around the same time and was locked-in for an unprecedented 35-year lifespan (DECC, 2015b).

At the same time, an even more overtly political decision was taken by the incoming Conservative government in 2015 to halt the construction of any new onshore wind farms, despite it being one of the most cost-efficient sources of renewable energy. From a low-carbon investment perspective, the Treasury's decision in 2015 to apply a carbon tax to renewable energy suppliers' electricity consumption also seems somewhat counter-intuitive. This decision was predicted to shift at least £450million

from renewable industry pockets to Government coffers annually, and was likened to ‘making apple juice pay an alcohol tax’ (Cameron, 2015) illustrating, as one environmental NGO interviewee put it:

‘...just how much value the Treasury and George Osborne [Chancellor] put on carbon, which is effectively zero.’

4.5. Discussion

Direct attempts by politicians to re-interpret the CCA, or its existing carbon budgets, as an over-reaction were uncommon. This is potentially surprising given that the various political rationales for pursuing highly ambitious policy commitments – such as redefining the terms of debate; seeking first-mover advantage; responding to intense public-demand; and achieving national or sub-national goals by responding to a global problem (Maor et al., 2017) – had all been negated to a greater or lesser extent. However, our analysis showed that new policies, such as the fourth carbon budget and an electricity decarbonisation target, were attacked precisely on (their lack of) these grounds. More generally, the amount of political attention given to climate change decreased within government (evidenced in interviews and manifestos), and also in national press coverage (Capstick et al., 2015).

At first glance, the UK’s low-carbon energy policy area appears to have expanded to accommodate the complexity and evolution of the sector. New strategies have been published, along with new policy instruments, to support renewable energy development. However, on closer inspection, significant steps have been taken to scale back the generosity of subsidies. Policymakers and media reports have described

them as a poor deal for consumers, or in other words as a growing policy bubble that needed to be checked. These changes appear to have been driven by a short-term cost cutting agenda – linked to the political salience of high consumer bills at a time of low real-terms wages – rather than by reforming their long-term efficacy (Parkes, 2012; Wood & Dow, 2011; Woodman & Mitchell, 2011). Tellingly, the discursive framing moved away from an ambitious renewables-led transformation towards a ‘needs must’ mix of options including nuclear and shale gas (Corner et al., 2011). Such pragmatic sounding arguments for a flexible portfolio of cost-effective options sound economically rational, but they also mask the political nature of ‘picking winners’ e.g. Conservatives appealing to their core constituencies and business allies by blocking on-shore wind development and investing in new nuclear (Stirling, 2014).

Returning to concerns about weak institutionalisation and the battle between vested/new interests (Pierson, 1993; Lockwood, 2013), our findings confirm the suspicion that the UK’s current climate policy feedback mechanisms may be insufficient. For example, the positive effects of using energy and economic framings (outlined by Pralle 2009) were turned on their head. Interim emissions targets and a political consensus on the need to respond to warnings from climate scientists (two other recommended strategies) also struggled to prevent the salience of climate change from waning. Further research is needed to explore why climate policymakers in general, and the renewables sector in particular, may struggle to resist rollback. For instance: why was so little made of the political nature of policy recalibration (Howlett & Kemmerling, 2017); and to what extent is the influence of economic ideas such as

'over-investment' and 'policy bubbles' exaggerated by austerity and ideological commitments to market-based governance (Maor, 2014; Schmidt, 2010)?

Furthermore, our findings revealed a degree of hesitancy among senior decision-makers to prioritise climate change (noted elsewhere by Rickards, Wiseman & Kashima, 2014; Howlett, 2014), and also highlighted the inconsistency of policy decisions regarding low-carbon energy (e.g. bespoke deals for nuclear and shale gas at a time when incentives for renewables were being cut). Although the climate policy community lamented these details, wider media and political discourses presented a broad-brush picture of sustained climate leadership at the international level coupled with economic prudence in the national energy sector. Thus, cross-party consensus strategies and climate leadership framings may be vital for early policy development and providing strategic direction, but as time goes on they need to be accompanied by close scrutiny of on-the-ground actions. Recent developments in the UK suggest a continuation of this tension, as the fifth carbon budget has been passed, but DECC has been disbanded and subsumed into a new department with a much greater emphasis on energy and industrial strategy.

4.6. Conclusion

Beginning from a position of high salience, government innovation, and self-identified leadership in 2006, UK climate and low-carbon energy policy in 2016 appears to be faltering. Prolonged economic depression and a shift in political power both played a part. During this period the costs associated with climate and low-carbon energy

policies were magnified, leading to doubts about whether scientifically justifiable targets are economically and politically viable.

In particular, the low-carbon energy policy area has changed to reflect this, with policymakers turning to non-renewable sources and repeatedly cutting subsidy levels for certain technologies. The official justification was to avoid over-investment in renewables, and whilst there is some economic merit to this argument it only tells part of the story, especially if considered in the context of other policy decisions e.g. new nuclear costs, the on-shore wind ban and an oxymoronic carbon tax for renewable energy. Although national level targets appear to be being met, and set, into the future (despite the increasingly difficult nature of the policies and social changes they imply) there is a danger that this will lead to a widening gap between rhetoric and action.

Beyond the UK case, our findings challenge many of the assumptions about an incremental, technical and managerial approach to tackling long-term problems such as climate change through national policymaking. Recognising the possibility of (deliberate or unintentional) over-reactions to salient agendas encourages us to look at policy feedback mechanisms in a more critical light. When politicians talk about the dangers of 'over-investment' – or political scientists of 'policy bubbles' – it implies that policymaking is a purely rational, and reflexive, evidence-based process. However, as our analysis has shown, this is not strictly true. It matters a great deal who is framing a policy, and against what reference point, for whether it is perceived and presented as proportionate. Therefore, these concepts can be seen as useful heuristics for discussing politically motivated attempts to reinterpret policy, as much as for examining the official economic justifications for decisions. Ultimately this article has

offered an important reminder, and case study illustration, of the way flagship policies can begin to rapidly transform sectors of society, but how they can also be pegged back by a shift in priorities from efficacy to (economic) efficiency.

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5. Can national policy blockages accelerate the development of polycentric governance? Evidence from climate change policy in the United Kingdom

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Abstract

Many factors can conspire to limit the scope for national policy development. In this chapter, we consider whether blockages in national policy processes – resulting for example from austerity or small state political philosophies – might be overcome by the development of more polycentric governance arrangements. Drawing on evidence from three stakeholder workshops and fifteen interviews, we address this question by exploring the United Kingdom's recent retrenchment in the area of climate change policy, and the ways in which its policy community have responded. We identify two broad strategies based on polycentric principles: 'working with gatekeepers' to unlock political capital and 'collaborate to innovate' to develop policy outputs. We then empirically examine the advantages that these actions bring, analysing coordination across overlapping sites of authority, such as those associated with international regimes, devolved administrations and civic and private initiatives that operate in

conjunction with, and sometimes independently of, the state. Despite constraining political and economic factors, which are by no means unique to the UK, we find that a polycentric climate policy network can create opportunities for overcoming central government blockages. However, we also argue that the ambiguous role of the state in empowering, but also in constraining, such a network will determine whether a polycentric approach to climate policy and governance is genuinely additional and innovative, or whether it is merely a temporary sticking plaster for the retreat of the state and policy retrenchment during austere times.

5.1. Introduction

In theory, nation states can be attuned to accommodate the demands of long-term inter-woven social and material challenges such as anthropogenic climate change e.g. by building non-partisan coalitions, ensuring independent monitoring and fostering a reflexive policy process (Giddens, 2009; Grin et al., 2010; Latour, 2009; Voß et al., 2009). For example, Barry and Eckersley (2005) provide empirical evidence of effective state-based environmental stewardship involving strong collaboration beyond territorial boundaries, decision-making based on environmental objectives, and integrated environmental impact assessments. In the right circumstances, entrepreneurial individuals can work to promote innovative policies and help institutionalise state leadership (Kingdon, 1984; Lovell, 2009; Mazzucato, 2015). Accordingly, there have been high hopes for, and some empirical evidence of, such leadership in the area of climate change; especially because governments have several rationales for taking action e.g. to protect vulnerable communities and infrastructure, promote inter-generational justice and drive economic competitiveness (Boasson and Wettestad, 2014; Giddens, 2009; Lorenzoni and Benson, 2014; Jordan and Huitema, 2014).

However, policy progress can also be slow and inconsistent in democratic governments for many reasons, including the veto power of senior decision-makers and risk aversion of politicians, whose jobs depend on re-election. This is especially true when high levels of uncertainty and delayed or diffused benefits are involved, which is clearly the case with regards to climate change (Howlett, 2014; Rickards et al., 2014; Russel and Benson, 2014). Further exacerbating this inertia is the constant battle for political

saliency at a time when many different issues are competing for a limited amount of public and political attention. Most theories of public policy treat this political agenda setting as a zero-sum game because of policymakers' bounded rationality and governments' limited capacity, and this often results in contradictory or insecure policy trajectories (Sabatier, 2007). For instance, longitudinal studies have shown that reactionary rollback due to a political swing and gradual retrenchment due to resource constraints are constant threats (Patashnik, 2014; Pierson, 2004).

The recurring theme of de-centralisation is another factor affecting states' governing capacities and the feasibility of certain policies (Treisman, 2007). It is especially relevant for environmental policy where locally sensitive, or 'bottom-up', and 'polycentric' forms of governance are often claimed to be most effective (Andersson and Ostrom, 2008; Ostrom, 2010). Here, scholars highlight the efficacy and cost-saving virtues of delivering environmental policy through civic, private or public partnership forms and across multiple levels and scales (Bäckstrand, 2010; Bulkeley and Newell, 2010; Bulkeley et al., 2012; Lemos and Agrawal, 2006; Newell et al., 2012). It is suggested that these additional opportunities for experimentation, learning, and trust building should be particularly appealing to governments when they face political and economic barriers to unilateral action (Cole, 2015), a claim that this article seeks to test.

At the international level, the polycentric approach (sometimes described as a 'fragmentation') is increasingly evident in political institutions and governance arrangements (Abbott, 2012; Zelli, 2011). For example, the European Union's (EU) principle of 'subsidiarity' – that 'rules out Union intervention when an issue can be

dealt with effectively by Member States at central, regional or local level' (Chateau, 2016: 2) – is intended to encourage self-governance and autonomy. It also characterises the 2015 UNFCCC Paris Agreement, which replaced earlier top-down targets with a bottom-up agreement based on 'intended nationally determined contributions'.

At the national level, the rise of non-state and hybrid forms of governance has involved community projects, private sector voluntary agreements and a variety of market-based mechanisms. They have forced governments to think beyond traditional state-centric policies (Jordan, 2008; Lemos and Agrawal, 2006). The hierarchy and authority of national governments is thus directly challenged by new initiatives spanning multiple scales and territories (Bäckstrand, 2008; Bulkeley, 2005; Termeer et al., 2010). Whether this empowers non-state actors or hollows out the state's responsibilities is a long running debate within the governance literature.

Following these reflections, we start from a view that national government leadership on complex long-term issues such as climate change is likely to encounter difficulties due to the vagaries of political and economic trends. Therefore, we set out to explore whether government engagement with other actors and levels could strengthen a policy area and help overcome some of the blockages in central state institutions. To explore this argument, we first introduce the common conceptualisation of the state as an autonomous unitary actor and the structuralist understandings of its capacities that this gives rise to. Then we describe a more relational understanding based on polycentric governance before empirically exploring its key tenets in the UK case study. The findings advance our understanding of 1) what policy communities can do when

faced with blockages in national policy processes and 2) to what extent non-central government sites of authority can provide effective remedies to these blockages.

5.2. Theory

5.2.1. Climate change and the constraints of state-based governing

Throughout the wide-ranging and long tradition of writings on the nation state, there is a common tendency to conflate the state apparatus with broader, non-governmental, social structures and processes (for an overview see: Chernilo, 2008). Although this ontological expedience has produced some important analyses, e.g. political economy critiques of capitalist states (Jessop, 1990) and various comparative typologies, it has also steered research towards structuralist theories of statecraft at the expense of more agency-oriented readings. Since Giddens (1984) proposed a ‘third way’ to view structure and agency as a dualism, and the forces of globalisation diversified the governance landscape, more relational and deterritorialised theories of the state have gained ground (Brenner et al., 2008; Holton, 2011; Jessop, 2016; Latour, 2009; cf. Davies, 2011).

Yet, despite a widespread retreat of the state and policy retrenchment in many areas – hastened by a preference for market-based mechanisms driven by neoliberal ideology (Harvey, 2005; Cashore, 2002; Okereke, 2007) – national government policies remain an important source of innovation and a promising area of research, especially regarding climate change (Boasson, 2014; Jänicke, 2005; Fankhauser et al., 2015; Jordan and Huitema, 2014; Townshend et al., 2013). In 2014, a total of 804 national climate laws and policies were in existence in the highest emitting industrialised

countries (Nachmany et al., 2014). Many of these countries have decreased their emissions from the 1990 baseline (UNFCC, 2015), although some of this may have happened because of the offshoring of production to industrialising countries (Peters and Hertwich, 2008). Inevitably there are leaders and pioneers, as well as laggards, among these countries whose high outward ambitions depend to a large extent on their inward policy performance and consistency (Lieverink and Wurzel, 2017).

The ability of the leading European countries to advance domestic climate policies and deploy low-carbon investment has certainly been stymied by the financial crisis of 2008 and the slow recovery of national economies (Geels, 2013; Skovgaard, 2014). Such moments of crisis and disruption can lead to significant policy change by prompting critical reflection on the status quo and heightening the demand for a proactive response i.e. creating a window of opportunity for entrepreneurial individuals working within government (Bauer et al., 2012; Kingdon, 1984). Broadly speaking, early opportunities for re-orienting socio-economic systems towards sustainability as a response to the crisis were recognised by many in the climate policy community but ultimately were not achieved because of resistance from vested interests and entrenched economic biases blocking such innovation (Geels, 2013).

Marxist and political economic critiques of capitalist states and societies have long pointed to the fundamental constraints of governing within, or through, the structures of liberal-capitalist democracies (Jessop, 1990). These analyses pay close attention to power imbalances, but in doing so they often posit the state as a unitary actor vis-à-vis non-state actors. This distinction is useful as a purely descriptive tool – and indeed will be used as such in this article – but it is less helpful as an analytical tool for

understanding the dynamic power relations and social processes that take place beyond the confines of central government institutions. These interactions still shape, and are shaped by, public policy and governance. In practice 'the state' is not a distinct actor but rather an assemblage of multiple arenas for governing collective action (DeLanda, 2006; Paavola, 2011). Arguably, what matters for theory and for practice is the number and type of arenas that are engaged in a given policy area i.e. its degree of polycentricity.

Starting from an empirical observation that monocentric forms of climate governance (such as unilateral state action) are fraught with structural biases and impediments to effective policy development, proponents of polycentricity have highlighted the benefits of pursuing an alternative, more pluralistic, approach (Cole, 2011; Harris, 2013; Jordan et al., 2015; Ostrom, 2010; 2012). In essence, they claim that the potential costs of having multiple, often overlapping, domains of governance are outweighed by the potential benefits of experimentation, learning, trust building and context sensitivity (Cole, 2015).

Experimentation and learning have been argued to be able to improve policy; especially in areas of high uncertainty and complexity such as climate change (Pahl-Wostl, 2009; Ostrom, 2010). This flexibility, or adaptive capacity, within a governance arrangement is vital for responding to rapid or unexpected changes in the natural environment (Pahl-Wostl, 2009) as well as in the social, political and economic environment (Voß et al., 2009). Perhaps most relevant for our focus on policy blockages and climate transitions is the claim that trial-and-error development of policies by multiple governance actors can lead to innovation and improved outcomes,

especially if it is accompanied by close monitoring and information sharing (Cole, 2015; De Búrca et al., 2014). Put simply, a polycentric policy arena allows for experimentation with new ideas, whose successes can be used to develop action in other contexts.

Another anticipated positive effect of increased connectivity and learning is to build the levels of trust and co-operation needed to overcome politically entrenched blockages. Resisting criticisms of fragmentation and atomisation, a central tenet of polycentric governance is that the multiple sites of authority remain connected and inter-dependent. Talk does not always lead to action, so systems of reciprocity, reputation and mutual benefit are needed to produce greater levels of actual co-operation; something which has been regularly proven in collective action research (McGinnis, 2011; Ostrom and Walker, 2003). Importantly, this principle applies not just to official party politics and bureaucracies, but to the plethora of ways governance actors communicate about, and through, their policies, actions and beliefs beyond the state (Hajer, 2009). Put simply, a polycentric policy arena encourages greater levels of communication and trust, capable of overcoming stand-offs between different actors.

Building on this body of theory and many years of practical applications and workshops, McGinnis (2015: p5) offers a three-part definition of polycentric governance consisting of:

- (1) Multiple centers of decision-making authority with overlapping jurisdictions*
- (2) which interact through a process of mutual adjustment during which they frequently establish new formal collaborations or informal commitments, and*
- (3) their interactions generate a regularized pattern of overarching social order*

which captures efficiencies of scale at all levels of aggregation, including providing a secure foundation for democratic self-governance.'

The extent to which these structures, processes and outcomes are present will vary from case to case. In fact, it should be noted here that the involvement of multiple (often non-state) actors in policy processes is by no means a novel phenomenon. The point is rather that its prevalence is growing and that its normative claims to greater efficacy need to be examined. To this end, McGinnis postulates a number of systemic issues responsible for policy blockages and the way they might be ameliorated by polycentricity to produce desirable outcomes in a given context (see table 5.1).

Table 5.1: Systemic barriers to polycentric governance and the strategies for, and benefits of, overcoming them (based on McGinnis, 2016: 28)

Systemic Tendencies or Biases	Sources and Reasons	Remedies and Potential Benefits
A. Structural Inequities	Different groups face different costs for collective action, and high costs can be imposed by especially successful groups	Continued access to other channels for mobilization outside existing forms of domination
B. Incremental Bias	Multiple veto points restrict range of feasible mutually beneficial adjustments	Can appeal to authorities at other levels to break an impasse at any single level
C. High Complexity	High participation costs can give current experts a big advantage on others	Since no governance system can be complete, new forms of connections may provide alternative paths to participation
D. Deep Structural Fissures	Each policy domain may be dominated by network of incumbents insulated from outside pressure	Interconnectedness between policy domains will change with new technologies and systemic shocks
E. Coordination Failures	Dilemmas of collective action are especially difficult at high levels of aggregation	Gaps or failures in coordination exposed at one level can inspire efforts of other actors at lower levels, or leadership from above
F. Lack of Normative Clarity	No single goal will be consistently pursued by all actors at all levels	Drawing attention to multiple goals encourages open deliberation and can build legitimacy and cooperation

We will test these potential remedies to systemic policy blockages in our case study, responding to a call from Jordan et al. (2015) for more research into why and how polycentric governance is emerging and the role of states therein. For instance, in the field of climate and energy, Sovacool (2011) has shown that government policymaking and institutions play a key part in the emergence and functioning of these polycentric processes. Our study builds on this work, examining the efforts of a broadly defined

policy community to overcome recent blockages to the development of climate policy in the UK.

5.3. The promise and limitations of UK climate policy

Prior to 2008, the UK Government's climate change policies were faltering and being pursued with minimal coordination across government departments and sectors (Carter and Jacobs, 2014). However, this was not for want of initiatives. Local government, civic and private sector climate governance initiatives were plentiful and have continued to proliferate, sometimes in concert and sometimes in tension with central government (Bulkeley and Kern, 2006; Giddens, 2009). To illustrate, the Nottingham Declaration in 2000 saw local governments and cities make climate change integral to their decision-making and strategies (now with 392 signatories accounting for 90% of British councils). Low-carbon communities and grassroots projects also have a relatively long, if somewhat uncertain, history in the UK (see: Walker, 2011), and the country's economy has achieved an average annual reduction in carbon intensity of 3.5% between 2000-2015 (the highest in Europe) (PWC, 2016). However, the extent to which this activity has been acknowledged, supported or hindered by central government has fluctuated over time.

Bringing together key actors and discourses from these numerous sectors, a period of civil society campaigning, private sector endorsements and political competition between 2006 and 2008 led to the passing of the Climate Change Act (CCA) (Lorenzoni and Benson, 2014). This innovative policy enshrined in legislation a target of an 80% emission reduction from 1990 level by 2050. It also established five-yearly 'carbon

budgets' that would be proposed and monitored by a semi-independent Committee on Climate Change (CCC). A newly created Department for Energy and Climate Change (DECC) ensured that there would be ministers and policy teams dedicated to achieving a low carbon transition in social and energy systems. The Department for Environment, Food and Rural Affairs (DEFRA) remained responsible for climate risk assessments and adaptation, being given new powers to demand reports on progress from certain sectors.

This high level of government activity and political salience continued for some time, despite the onset of the global financial crisis and the failure of the UNFCCC negotiations at Copenhagen in 2009. The first three carbon budgets were passed into law, DECC produced a comprehensive strategy for transforming the energy sector (HM Government, 2009) and DEFRA began compiling a comprehensive Climate Change Risk Assessment (DEFRA, 2012). At this time, incumbent politicians and those seeking election portrayed themselves, and the UK, as leading the fight against climate change. The Conservative-Liberal Coalition elected in 2010 promised to be 'the greenest government ever' (Cameron, 2010). However, early doubts were raised about the cost effectiveness of these policies and the limited influence of the climate policy community (Lockwood, 2013; Pielke Jr, 2009). The waning influence, interest and commitment (see also Carter, 2014) are reminders that flagship strategic policies like the CCA are not enough alone, they need to be followed up with consistent policy development and implementation in multiple sectors in order to deliver the required emissions reductions.

Some of these concerns materialised during the 2010-2015 Conservative-Liberal Coalition and intensified at the start of the 2015- Conservative majority Government. Previously prominent arguments from the CCC, DECC and DEFRA were drowned out by the politics and discourse of austerity, whilst disagreements between departments and ministers made it difficult to build trust or to send consistent policy signals. Senior politicians sought to reign in the UK's leadership position and make any new targets conditional on parity with other European countries (Gillard, 2016). Under the banner of austerity, DECC and DEFRA suffered significant budget cuts, which also limited their capacity to develop policy.

5.4. Methodological considerations

The growing tension between ambitious policy targets and constrained political and economic circumstances informed our case study selection. Many European economies have been slow to recover from the financial crisis of 2008, which has had both political and policy effects. Interestingly in this context, some governments – such as the UK – have continued to position themselves as leaders in investing in a low-carbon economy and intervening to transform the energy system whilst simultaneously prioritising austerity policies and deregulation. By selecting a case study where this tension is particularly pronounced we are able to present findings that advance knowledge through ‘the power of example’ and can inform analyses of other countries and policy areas facing similar challenges (Flyvbjerg, 2008).

We consider that the UK climate policy community – policymakers and non-governmental actors and stakeholders with a vested interest in achieving climate

policy goals – have been actively searching for innovative solutions to overcome the challenges encountered in the key departments in central government. The UK climate policy area can be described and analysed as, to a greater or lesser extent, polycentric: inasmuch as the central government is not a ‘monolithic actor’ and the state constitutes a ‘set of arenas and instruments for collective action’ (Paavola, 2011: 418). This climate policy community involves a mixture of state and non-state actors and venues, resisting the temptation towards methodological nationalism (Chernilo, 2008) to pay close attention to the way their inter-relations produce public policy and climate governance initiatives.

The formulation and implementation of climate policy depends on the input of various civic, private and expert actors to e.g. community energy schemes, supply chain resilience and low-carbon technology (Bulkeley and Kern, 2006). For example, the UK’s membership of the EU (prior to the referendum to leave in June 2016), its devolved authorities (Northern Ireland, Scotland and Wales) and its localism agenda that seeks to empower cities, regions and communities mean there are several venues for decentralised innovation. Many of these venues for climate policy have been active prior to the timeframe that is the focus of this article. As such, it is not our intention to prove a quantifiable step-change towards polycentric policy over time, but to determine the extent to which it provides a solution to the challenges and blockages currently being encountered by policymakers in central government.

Our analysis is primarily based on discussions at three participatory workshops ($n=28$, 27, 15 participants respectively). The participants included government actors from senior, strategic and operational levels, climate change and energy policy experts,

consultants, communications specialists and academics. The workshops were carried out under the Chatham House Rule (Chatham House, 2016) to allow participants to contribute freely rather than as representatives of their organisations. Participants co-produced a set of reflections on the barriers to, and opportunities for, climate policy innovations but all interpretation and analysis of these discussions presented in this article are the responsibility of the authors. Semi-structured interviews were also carried out with 15 key members of climate policy community to explore their strategies and rationales for advancing climate policy. Finally, documentary material such as policy documents, and government and non-government reports was used to triangulate these accounts.

5.5. Analysis

In this section, we briefly present the outcomes of the workshops and interviews that related to the political and economic structural factors affecting UK climate policymakers', as well as their proposed strategic responses. This section is relatively brief, as many of these issues have been raised elsewhere in the literature (Carter and Jacobs, 2014; Gillard, 2016; Lockwood, 2013). Our evidence reconfirms their importance and presents, for the first time, some insights into how policymakers and stakeholders respond during such turbulent times.

We then scrutinise the ways in which polycentricity presents opportunities for policymakers to overcome policy blockages, whilst also considering its limitations. Crucially we see all governance actors as sites of authority in their own right; that is, not as pawns in governmental strategies but as co-producers and (varyingly)

autonomous drivers of climate policy and actions. Their level of authority and agency may be in part determined by their interactions with the state, but it is also drawn from elsewhere and enacted through non-state channels. Therefore our analysis is based on a relational view of agency and power; seeing polycentricity as expressed through socio-political interactions between multiple public (state based), private and civic actor networks.

First, we demonstrate how international linkages can pull in both directions, advancing ambition and undermining it. Second, devolved authorities such as nations and cities can outpace central government but their capacity to do so is shaped by the limits of their self-rule and how effectively they can work with transnational networks and the private sector. Lastly we show the importance of adopting a collaborative (not prescriptive) approach to working with industry and civil society. These findings are summarised in table 5.2.

Table 5.2: Examples of barriers to, and opportunities for, the realisation of polycentric ideals in UK climate policy.

Systemic Tendencies or Biases	Sources and Reasons	Remedies and Potential Benefits
A. Structural Inequities	Homogenous groups with a small focus such as campaigns against wind farms or heavy industry against carbon taxes were more successful at influencing specific policies than heterogeneous groups such as 'environmentalists' who may have differing views on the details of how to achieve broad goals.	Environment and climate coalitions were able to reach beyond site-specific interests to mobilise support from various interest groups and influence from multiple institutions.
B. Incremental Bias	Powerful and numerous veto points within central government such as the Treasury and Cabinet Ministers made radical climate policy decisions unlikely.	Devolved authorities and cities set more ambitious targets and pioneer innovative policies in sectors they have control over.
C. High Complexity	Local governance initiatives such as community energy or low carbon businesses struggled to compete with more established and dominant firms.	City Deals, Local Enterprise Partnerships and trans-national networks all opened up avenues for accessing policy support and new markets.
D. Deep Structural Fissures	Climate policymakers found it difficult to connect with some other policy sectors and departments e.g. education and DCLG.	Communications specialists and think tanks helped connect climate change to other issue areas and centre-right ideologies.
E. Coordination Failures	Lack of coordination between Coalition parties, Cabinet Ministers and central government departments produced mixed messages and uncertainty.	Private sector actors and cities seized the initiative with certain policy ideas; international and trans-national actors pushed for more ambitious targets.
F. Lack of Normative Clarity	The rationale and methods for pursuing of a low-carbon lifestyle differs between community groups and government actors.	Voices from the private and civic sector were sought by policymakers to help develop a shared narrative about the low-carbon transition.

5.5.1. Structural challenges and strategic responses

In the six years following the financial crash of 2008, macro-economic trends such as slow growth of Gross Domestic Product (GDP) and high levels of government debt (Office for Budget Responsibility, 2011; 2012) reinforced the view among some politicians and some sectors of the public that new (and many existing) climate policies could not be afforded. Though these views were not completely hegemonic, their power was remarkable; policymakers often deemed arguments about long-term or non-fiscal benefits of a low-carbon economy untenable *a priori*. One strategic level interviewee captured this succinctly by defining their overarching mandate as working out 'how to do more with less'.

Significant budget cuts were imposed on government departments (notably DECC and DEFRA) and on local governments (HM Treasury, 2015), which had a negative impact on climate policymaking. Such fiscal restraints exacerbated a silo mentality: departments focused their resources on core work and marginal adjustments rather than on crosscutting issues like climate change. DECC's plans were also constrained by a cap on spending (HM Treasury, 2011), resulting in cuts to renewable energy subsidies and policy decisions being forced upon them by the Treasury. Eventually, in 2016, they were subsumed into the Department for Business Innovations and Skills (BEIS).

Perhaps unsurprisingly, we found that policymakers were seeking to increase their engagement with a wider set of actors and institutions beyond central government. Actions fell into two broad strategies, explicitly based on the assumption that overcoming policy blockages would require a polycentric approach. The strategy of

‘working with gatekeepers and champions’ was intended to unlock political capital by developing dialogues and commitments across policy areas and by reframing climate change so that it appealed to centre-right political preferences, climate sceptics, and disengaged senior strategists alike. The strategy of ‘collaborate to innovate’ included more consultations prior to decisions, drawing on *ex post* analysis and expert evidence, localised climate messages to discuss context-sensitive policies, and utilising joint-funding and more applied research and development schemes in the private sector. Many elements of these strategies have been a part of the UK climate policy area for some time, but there was an explicit acknowledgment that increasing these activities was necessary for overcoming current and future constraints, especially as targets and policy decisions were becoming more challenging.

5.5.2. Engaging with multiple sites of authority

5.5.2.1. *The international climate regime and the European Union*

Many interviewees had a positive view of international climate politics, despite sharing reservations about the difficulties of negotiating agreements and producing tangible policy outputs in such a high level arena. As shown above, the UK’s position as an international leader has been an important part of its climate change story. This position was based on the perceived success of domestic legislation, which underpinned subsequent diplomacy and policy diffusion efforts. The Minister for Energy and Climate Change (then Amber Rudd) and DECC’s Director of International Climate Change (then Peter Betts) demonstrated this leverage in Paris in 2015 by steering the final agreement towards a model that resembles the UK’s framework of a long-term target broken down into five-yearly monitoring periods.

Such mutually reinforcing overlaps between national and international governance create pressure on national policy, but their effects are neither immediate nor guaranteed. For instance, the 2015 Paris Agreement on a more stringent target limiting global warming to 1.5 degrees Celsius prompted UK policymakers to promise a new domestic 'net zero' emissions target. Yet the CCC chose not to revise the target, despite concerted pressure from environmental campaigners, on the grounds that it would suffice as an absolute minimum for the UK's contribution to the global target and that domestic policy was already falling short of this (CCC, 2016a). This illustrates the limitation of the CCC's purely advisory mandate and represents a missed opportunity for building reciprocity between policymakers at the two levels.

Similarly, efforts to feed commitments and ideas from the international level into adjacent policy areas such as raising public awareness and climate change education have been very limited, representing another missed opportunity for establishing new connections across sectors and demographics. Despite these shortcomings and the failure of potential polycentric benefits to be secured, most policymakers and non-government organisations remained optimistic about the political value of maintaining a leadership position internationally and the institutional pressure it exerts on domestic actors.

For those seeking global agreements on climate change, the UK's relationship with the EU has moved in an even less positive direction. Negotiating at the UNFCCC as a member of the EU, the UK has traditionally been seen as a leader within the bloc, often pushing for stronger targets and monitoring frameworks. This situation was unsettled in 2016 by a referendum on the UK's membership of the EU resulting in a

vote to leave. After a series of successful negotiations in 2014 to align climate and renewable energy targets, this work was 'largely seen as done' by some policymakers and so co-ordination efforts were relaxed.

By voting to leave the EU the UK closed a significant source of policies (e.g. renewable energy targets) and financing (worth €3.5bn during the period 2014-2020) for climate and energy schemes (Froggatt et al., 2016). Most pertinently from the polycentric perspective, the impending loss of the influence of EU regulations and legal structures represents a significant decrease in the number of mechanisms for monitoring – and thereby encouraging – cooperation on climate goals. Furthermore, the referendum result represents the loss of a vital multi-level governance connection for the UK's devolved authorities and cities that previously benefitted greatly from EU policies, finance and networks.

5.5.2.2. *Ambition, constraints and bottom-up innovation in devolved authorities and cities*

The UK's devolved nations offer clear examples of non-central government actors looking for ways to develop a faltering policy area and encourage experimentation. The Scottish Government's equivalent of the CCA incorporated emissions reductions beyond its per capita share for achieving the UK target, and at a much quicker pace (Scottish Parliament, 2009; CCC, 2016b). In Wales a 3% annual emission reduction target enables a more comprehensive and explicit application to different sectors than the UK's aggregate targets (Welsh Assembly Government, 2010a). Scotland and Wales have also legislated on targets and strategies for meeting all of their electricity and energy needs with renewable and low-carbon sources by 2020 and 2050 respectively (Scottish Government, 2011; Welsh Assembly Government, 2010b); whereas the UK

Parliament rejected such an approach by narrowly voting against an explicit power sector decarbonisation target.

This higher ambition in devolved authorities does filter into specific policy decisions at other levels, sometimes standing in direct contrast to central government. For instance, onshore wind continued to be a priority in Scotland whereas the UK Government gave its Minister the power to veto planning applications in England and Wales. The Welsh Government has less control over large energy infrastructure decisions but has developed plans for a world-first tidal lagoon project in Swansea. It also has a more generous and consistent record of supporting micro-generation energy projects.

Such ambitious and experimental sub-national policies may act as pilots of innovation, to be learnt from and even adopted later by national government. This was the case when Scotland and Wales introduced a plastic bag levy that was later adopted in England after its positive impacts were monitored and evaluated (Welsh Government, 2016; Zero Waste Scotland, 2015). Another example emerged from our workshop discussions, as policymakers sought to draw lessons from the perceived success of Greener Scotland's environment and climate change communication strategy. This was primarily driven by individuals who were part of wider policymaking networks because no formal channels for facilitating such learning within the climate policy area were identified. Confirming the 'more connections, more innovation' hypothesis of polycentric governance, this suggests that learning lessons from experimentation is a valuable addition, but that it may be quicker and more effective when formally supported rather than simply as a by-product of pioneers leading by example.

Sub-national actors may also seek to circumvent their national governments. Scotland has 25% of Europe's offshore wind and tidal potential and has attracted tens of millions of Euros from the EU for renewable energy projects (European Commission, 2014). Wales also drew a financial net benefit from the EU in 2014 (Ifan et al., 2016), much of which has been spent on innovative tidal energy projects and adaptation initiatives in coastal communities. Scotland and Wales are also active in transnational networks of devolved authorities that engage in climate governance initiatives such as the Climate Group's States and Regions Alliance. Recourse to these other levels and channels can help to sidestep the entrenched power relations and impasses of central government policymaking, offering new sources of information, funding and policies.

In England, legislation was introduced to accelerate the devolution of power, giving 'new freedoms and flexibilities to local government' and 'new rights and powers for communities and individuals' (DCLG, 2011: 3). This included provisions giving local government and city councils specific powers such as control over the prioritisation of economic sectors and public spending. Interestingly, these 26 'City Deals' were guided by principles akin to those of polycentricity: creating another site of authority, encouraging collaboration between public and private actors, and seeking efficiencies of scale (HM Government, 2011: 20). The use of such localism discourse suggests the potential virtues of a polycentric approach are being recognised and legitimised in formal policy outputs, although it does not reveal the underlying rationale for their adoption or the details of their enactment.

Several interviewees described the City Deals as a good idea in principle but underperforming in practice. This was largely attributed to the fact that they were

overseen by two departments who were overtly uninterested in climate change, and partly because they came at a time when local government budgets were being heavily cut. City level interviewees corroborated this, reporting difficulties in finding central government support for climate change related initiatives, even when the business case was strong and the social benefits were clear (e.g. energy efficiency investment to reduce emissions and fuel poverty). Devolving responsibilities can thus be described as a move towards self-governance and autonomy but, in the context of a 51% budget cut to the Department for Communities and Local Government between 2010-2015 (HM Treasury, 2015), it can also be described as an example of hollowing out the state.

Several city level actors also underlined that working with central policymakers is not the only option. They highlighted the importance of transnational networks like C40 and the Compact of Mayors in promoting the influence of cities, sharing knowledge, and collaborating on mitigation and adaptation governance. Within the UK, the Core Cities group is one such example, being a successful collaboration between the 10 biggest city economies outside of London. For example, in conjunction with the capital city and private sector energy companies they developed an innovative scheme to reduce emissions from public buildings without needing additional up-front public finance; a clear example of experimental governance succeeding in a policy area blighted by underfunding and inertia.

5.5.2.3. *A problem shared is a problem halved: working with private enterprise and civil society to build a low-carbon coalition*

In workshop discussions and interviews, policymakers expressed a desire to create a sense of 'shared ownership' of the problem of climate change. It was felt that this resonated with the broader neoliberal approach to small-state governance –

exemplified by the Coalition Government's 'Big Society' agenda (Cabinet Office, 2010) – and that it had already proven successful in building co-operation in the run up to the passing of the CCA and the UNFCCC conference in Paris (Jacobs, 2016). Yet, it was acknowledged that 'no single goal would be prioritised by everyone', but that this potential lack of clarity was not something for government to try to control. Rather, it was hoped that by bringing a range of leading voices together a shared narrative would emerge. The expectation was that this would increase the legitimacy and acceptability of future climate policies and governance arrangements, and also put pressure on central government to send consistent messages of support – even during periods of austerity and low political prioritisation of climate change.

Importantly this was not seen solely as an issue of public relations, but one of democratic participation. Many policymakers cited the Government's Open Policymaking initiative as a benchmark, which had provided the tools for including a broad range of expertise and feedback during all stages of the policy process. If successful, this sort of governance arrangement can provide a forum for increased communication and learning between stakeholders without requiring significant additional expenditure or legislation at a time when government is disinclined towards either.

Policymaking collaborations between the state and the private sector have been increasingly popular in the UK and other countries with liberalised markets. Mobilising private capital to produce social and environmental benefits can be effective during times of limited public finances. For example, the Carbon Trust's five-year Offshore Wind Accelerator project combined public finance with considerable investment and

expertise of nine offshore wind companies to reduce costs, furthering the economic competitiveness of this particular renewable energy.

Companies seeking first-mover advantages have also acted independently of the state, drawing on the latest climate science and policy trajectories to develop internal carbon pricing to guide their investment strategies and pledging to become powered entirely by renewable energy. Interviewees felt that there were many such success stories in the UK and even a critical mass of actors committed to tackling climate change despite governments and markets seeming less assured. As an example of this sentiment, they cited the World Economic Forum's open letter to government leaders in 2015 urging stronger climate action. This stemmed from the recognition that more needs to be done to prepare and promote low-carbon business messages in conjunction with governments to overcome apparent contradictions in interest and preferences. Private sector voluntary agreements are often used to pre-emptively stave off government regulation, but they also indicate a willingness to go beyond lagging policies and thus are an opportunity to innovate when public finances and political capital are limited.

The state also plays an important but ambiguous role in shaping civil society climate actions such as community energy and behaviour change schemes. These schemes often focus on energy efficiency measures, renewable energy development and low consumption lifestyles. Public policy and top-down intervention may enhance their success (e.g. by establishing feed-in-tariffs for renewable energy, setting up knowledge sharing networks and providing frameworks for measuring impact) but they are not always dependable revenue streams and their governance rules may even be counterproductive to the aims and functioning of community projects (for UK

examples see: Aiken, 2016; Markantoni, 2016; Walker, 2011). The many examples of failed or faltering community level low-carbon energy schemes serve as a reminder that favourable conditions for polycentric experimentation need to be maintained, and that governments have a continued role to play in this.

More broadly, the high costs of competing in a liberalised market and of meeting regulatory requirements may limit the ability of these civic initiatives to scale up their impact, but several of our interviewees and workshop participants saw their increasing prevalence as a positive sign. Their popularity, cost-efficiency, co-benefits and localised governance structures were all lauded, but ultimately policymakers need to provide more reliable support and to see them as co-producers of an inclusive and pluralistic low-carbon transition, not merely expendable experiments.

5.6. Discussion: polycentricity and the ambiguous role of government

As austerity took hold across Europe in the wake of the 2008 financial crisis, governments seeking to reduce regulation and public spending were able to justify implementing severe cuts. As a result, in the UK, the climate policy community faced significant blockages to policy development (confirming the theoretical and empirical hypotheses of Bauer et al., 2012; Lockwood, 2013; Gillard, 2016). Despite independent progress reports stressing the need to maintain ambition and to increase policy development to meet future targets (CCC, 2014; 2016a), climate change was effectively de-prioritised by central government. Our findings should resonate with other countries and policy areas marked by state retreat or policy retrenchment, and they will certainly be of interest within the UK where limited policymaking resources

continue to be cut (e.g. DECC being subsumed into BEIS) or are being focused on other priorities (e.g. negotiating an exit from the EU).

What can policymakers do when faced with such a predicament and what is their rationale for acting? The UK climate policy community responded to the above challenges by pursuing two broad strategies: 1) appealing to influential individuals and 2) seeking out new collaborations. The assumption that leadership could not come from government alone underpinned these strategies. Another key assumption was that policy innovations would require linking top-down influence with bottom-up creativity. Interviewees reported numerous sites where these strategies play out, such as international institutions, transnational networks, devolved authorities, cities, and private enterprise and community groups. It is in the interactions between these multiple sites of authority that issues of relational power and policy development can be seen.

The case study provides examples of a positive contribution of a broad network of actors to climate policy, which at least partially fulfilled the definition and promises of polycentric governance as laid out by McGinnis (2015), Cole (2015) and Jordan et al. (2015). The network helped produce new formal governance arrangements and informal commitments for tackling climate change across multiple levels, institutions and sectors (e.g. nationally determined contributions, renewable energy targets, voluntary actions among businesses, and pledges between cities and communities). They also produced efficiencies of scale and self-governance e.g. through public-private financing, City Deals, and community energy.

These successes may be in part due to the specifics of the UK case, but broad lessons can still be drawn from these and explored in other contexts of policy blockage. For instance, the relatively long history of non-state climate action in the UK showed the importance of being able to draw on past experience and existing relationships when developing innovations. Further, the widely perceived success of the CCA enabled policymakers to re-direct limited resources towards complementary forms of governance, showing the importance of maintaining political and public support for national level strategies (Cao and Ward, 2017). Extending these arguments, we contend that a polycentric approach will be most effective when it is additional to, not a replacement for, strong central government leadership. Without this overt shared commitment and reciprocity there is a danger that progress will be halted in times of crisis or that contrary policy decisions may appear to have no political cost.

Does all of this polycentric activity achieve tangible results beyond the existing state-based policies such as the CCA and its carbon budgets? Although such policy outcomes are difficult to calculate at the aggregate level of emissions reductions (Hertin et al., 2009), it is possible to argue for three significant advantages for policy processes and outputs. First, by coordinating with other (sometimes more receptive) actors and sectors the wider climate policy community was able to put pressure on central government, or even to circumvent it entirely. Second, these channels also provided extra opportunities for experimentation, learning and diffusion (Loorbach, 2010; Voß et al., 2009), e.g. when devolved authorities outpaced the national level and businesses trialled higher carbon prices. Third, the increased connections between the state and other actors offered the necessary scope to begin to build a shared narrative

for fostering trust and social buy-in necessary to implement ambitious and broadly supported climate policies (Stirling, 2011). Each of these examples illustrates the potential value of relational forms of power and influence within, and beyond, the structures of the nation state.

Although our case study aligned with McGinnis' (2015) tripartite definition of a polycentric system of governance, the exact contours of the UK climate policy area were left deliberately open. Future analyses could examine more tightly defined policy areas or sub-systems of climate policy (e.g. the renewable energy sector or local adaptation) to provide more comparative evidence and clarify certain theoretical and applied issues e.g. the ambiguous role of government and claims of scalar efficiency. On the latter point, proving such an 'economic dividend' would certainly strengthen the case for pursuing greater polycentricity in other fiscally constrained countries and policy areas (Pike et al., 2012).

The ability of other countries and policy communities to replicate the same positive effects seen in the UK case is not necessarily assured. This will likely be affected by many context specific variables e.g. the level of decentralisation, pre-existing actor networks, institutionalised power relations, styles of policymaking, legislative context, and activeness of civic and private sectors. However, it certainly seems plausible that increasing polycentricity is a desirable, and effective, strategy for overcoming national level blockages e.g. recently in the USA, Congress has blocked climate policies but at the state level there are prominent leaders (California) and collaborations (Compact of Mayors).

Our findings showed that policymakers actively tried to enhance their engagement with other sites of authority. At the time, this fit well with the government's 'Big Society' rhetoric, deregulation agenda, and public spending cuts; raising concerns about the potential 'Janus-face' of neoliberal governance as a response to constrained public finances (Davies, 2011; Swyngedouw, 2005). In other words, the turn to non-state actors should not be considered a *de facto* solution to central state inaction (Paavola et al., 2009). Our case study chimes with other critical research that has raised this issue. For instance, devolution of resources to sub-national actors can be insufficient to match their new responsibilities, and the new relationship to the state that it produces can be deliberately managed to favour other (more central) priorities or to spread the blame for policy failures / inaction (Muinzer, 2016; Royles and McEwen, 2015). Similarly, civil society initiatives and local enterprise partnerships are at risk of being instrumentalised by the state, i.e. turned into the subjects, rather than curators, of social change (Aiken, 2016; Davies, 2011; Lever, 2005).

5.7. Conclusion

Long-term policy development and state-based governance may be hampered by multiple factors such as economic and political cycles, as well as by the tendency towards silo thinking and entrenched power relations of central government structures. This is especially true for policy areas marked by uncertainty, vested interests, and complex economic or scientific forecasting that is open to multiple interpretations.

As we have shown in the case of UK climate policy, state leadership through targets and policy frameworks is vital to raise ambition and monitor progress. However, it requires consistent policy development to maintain the trajectory and to deliver tangible interim achievements (i.e. annual emissions reductions). However, economic downturns and changes in political priorities can cause domestic progress to slow and an implementation gap to emerge. Such blockages may also limit the scope for policy innovation and leadership from other actors, raising important questions about governmental constraints on the agency of non-state actors or governance networks.

At such times policymakers may turn to other sites of authority that offer alternative channels of influence and innovation, as well as the potential for achieving efficiencies of scale. Countries with more devolved power structures, and politically engaged private and civic sectors, are well placed to cultivate such polycentric networks. However, our final contention is that the underlying rationale for governments' interactions with these other sites of authority – and the relational power through which this is enacted – is a key determinant of their success. Where other actors are seen as passive recipients of policy decisions they will be given less scope (materially and idealistically) for bottom-up innovation: governments will effectively shift responsibility and blame rather than share ownership and accountability. Where governments invite other actors into the policymaking process at all stages and encourage the autonomy of multiple sites of authority there will be more room for experimentation, economies of scale and, ultimately, the progression of an inclusive low-carbon transition.

5.8. References

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6. Discussion

6.1. Overview

In order to avoid the potentially disastrous impacts of anthropogenic climate change most nations around the world have committed to reducing their greenhouse gas emissions in a timely and effective manner. Such a transition to a low-carbon future entails significant material, organisational and cultural changes across multiple sectors of society e.g. private, public and civic. National governments have an important role to play in articulating and incentivising these changes by setting clear targets and developing the necessary policies and governance arrangements to achieve them (Giddens, 2009). Many countries have begun to do just that, with 93% of the world's greenhouse gas emissions now being accounted for by national frameworks and targets (Nachmany et al., 2015), and the annual emissions inventories of many industrialised countries showing a downward trajectory in recent years (UNFCCC, 2015).

However, keeping such progress on track towards full decarbonisation will get increasingly difficult. After the most technologically feasible and economically attractive actions have been taken, the amount of political and financial capital required for developing and implementing policies will begin to mount. Furthermore, the significant socio-cultural implications of moving to a low-carbon society – such as eating less meat and using public transport – remain under-appreciated in policy, and have thus far proven resistant to light-touch and paternalistic behaviour change initiatives (Shove, 2010; Wellesley et al., 2015). Against this backdrop, several Western European governments face the added challenges of a slow economic recovery after

the 2008 financial crash and a pervasive commitment to neoliberal ideas about minimising state intervention.

By taking the UK as a case study this thesis set out to analyse the impact of these challenges on climate change politics, policy and governance. Arguably the UK, like many other countries, is at a critical juncture with regards to climate change. After setting an ambitious long-term emissions reduction target in 2008, the first two interim targets (23% by 2013 and 29% by 2018) have since been met (CCC, 2014; 2016). However, concerns have been raised about the weight of causal influence of government policies in reaching these achievements (compared to the impacts of the economic recession), particularly regarding their ability to achieve sufficient reductions in the most difficult areas (such as heat and transport) (CCC, 2010; CCC, 2016). Furthermore the two most recent progress reports from the CCC (2016; 2017) point to a growing 'policy gap' between existing instruments and the levels of emissions reductions required to meet upcoming targets. Evidence from this thesis adds a qualitative understanding to recent accounts of how investment in low-carbon sectors of the economy and the development of environmental policies has been stymied in the UK and across Europe by the financial crisis (Burns and Tobin, 2016; Geels, 2013). As a result, governments face two simultaneous dilemmas: first, keeping climate change as a political priority at a time of successive geopolitical crises (e.g. financial instability, mass migration and the UK leaving the EU), and second, developing innovative policies at a time of constrained resources and state retrenchment.

This thesis explored these widely relevant issues underlying such climate politics by asking four specific questions in the UK context. First, to what extent do current

approaches to describing and prescribing low-carbon transitions adequately address their social and political dimensions (chapter 2)? Second, how have the fundamental ideas of climate change politics and economics changed in response to political and economics pressures (chapter 3)? Third, what impact have these changes had on climate and energy policy outputs (chapter 4)? And fourth, where are the current policy and governance innovations coming from and what is government's role therein (chapter 5)?

In chapter 2, the shortcomings of adopting a systems-based ontology when theorising or governing large-scale social transitions were enumerated. It argued that this reinforces a tendency towards incremental change rather than fundamental systemic reform and produces of an elitist rather than pluralist approach to social transitions. In response, it was shown how the seeds of change, and the winds that carry them, could be more fruitfully explored by drawing on social theory concepts of assemblage, intersubjectivity and political agency. This included adopting a relational ontology that emphasises the contingency of existing social relations, as well as bringing attention to the strategic way actors can create, and capitalise on, windows of opportunity for transformational change.

In chapter 3, the malleability of climate change politics and economics was tracked via the discursive interactions of key individuals and coalitions. Three forms of ideational power were visible in the way that these interactions altered the meaning and influence of climate change governance and economics discourses. Ultimately, these changes demonstrated the persistence of certain institutionalised power relations within UK government e.g. senior leadership and the Treasury vis-à-vis environmental

policymakers (DECC / DEFRA) and stakeholders. Loss of political salience and the tendency towards divisive narratives in media reporting on climate change also added to the difficulty. These factors were all partially driven by an intense focus on austerity, which negated calls for increased government spending or intervention and undermined the idea of green economic growth.

Chapter 4 examined the way these discourses and power relations resulted in specific policy outputs. It noted how the predominant use of an economic framing for climate change and low-carbon energy determined what discourse could, and could not, be used to legitimise decisions. Most prominent was the use of a 'policy bubble' heuristic to present ideas about potential over-investment in climate and energy policies. The utility of target setting was explicitly called into question – suggesting it to be unwise due to unpredictability and possible overshoot – thus making setting new carbon budgets and renewable energy targets politically contentious. More concretely, policy support for renewable energy was dismantled on the back of these arguments and the politicisation of high energy costs during a time of austerity. Despite the stated economic rationality for these policy changes, they were directly contradicted by concurrent decisions to invest in new nuclear energy and to place stricter conditions on the development of relatively low-cost on-shore wind farms.

Lastly, in chapter 5, the strategies used by climate policymakers to overcome structural constraints were examined. Macro level factors such as austerity and neoliberalism combined with institutional and situational factors, such as departmental budget cuts and national elections, created a challenging context for climate policymakers. Recourse to non-central government sites of authority offered opportunities for

developing policy and governance innovations, partially fulfilled the promises of the polycentric governance literature. However, their ability to drive policy forward was often limited by the underlying rationale of government engagement with such arrangements and the persistence of uneven power dynamics. Echoing previous research on the (limited) potential of non-state governance, this chapter offered some guarded optimism about the greater levels of authority, ambition and activity in non-central government sites of climate governance networks.

Building on these findings the rest of this discussion chapter identifies, and elaborates on, some crosscutting themes that run throughout the thesis. In each case it states how the contributions have advanced social scientific understanding of climate change politics, policy and governance. Section 6.2. addresses the inherent limitations of state-led transitions, particularly their tendency towards incrementalism and the difficulties of mainstreaming climate goals into the functioning of government. The theoretical implications call for a critical consideration of the role of flagship policies and institutions in securing long-term action, particularly emphasising the need for a better understanding of actors' strategies for strengthening or subverting them over time i.e. through discursive practices. Empirically, the findings warn against the use of overly technical discourses and overly centralised climate policymaking, noting the need for significant changes to longstanding uneven power relations among governance actors in the UK.

Section 6.3. addresses the way different interpretations of the future are mobilised and brought into contact by the politics of climate change, exploring the way different manifestations of agency and power are made visible in the practices of climate policy

and governance. In theoretical terms this highlights the importance of the disruptive potential of overlapping social issues and how they frame climate change action i.e. affording more/less authority to different actors and initiatives. In practice, the increasing ambiguity of the UK government's position, and level of influence, creates uncertainty that needs to be addressed. Interestingly it also creates opportunities for non-state actors to steer the agenda. Lastly, section 6.4. includes some methodological reflections on the thesis and offers recommendations for furthering its line of enquiry, before the final conclusions are summarised in section 6.5.

6.2. Two steps forwards, one step back: why government can't go it alone

If we accept the assertion that a successful and timely low-carbon transition will require nothing short of a transformation of social and material life (IPCC, 2014; Kates et al., 2012; O'Brien and Sygna, 2013), then it would seem inappropriate to assume that any single actor – even one as apparently authoritative and pervasive as the nation state – could be solely responsible for leading such a change. In fact, the idea of a single blueprint or roadmap for any actor(s) to navigate runs counter to the unpredictable nature of transformational change, which ultimately defies attempts to operationally define it (Lonsdale et al., 2015).

As chapter 2 illustrated, much theorising and prescribing of sustainability transitions assumes that the complexity and contestability of large-scale social change can be intentionally 'managed'. Reinforcing deep-seated modernist assumptions about the arrow of time and technological progress, the literature shows a tendency towards

historiography when looking back (e.g. at the development of telecommunications or modes of transport) and towards technological or ecological determinism when looking forwards (e.g. at the promise of geo-engineering or the limitations imposed by environmental planetary boundaries) (Bailey and Wilson, 2009; Parsons and Nalau, 2016). Throughout this thesis it has been argued that more needs to be done to understand and engage with the difficult terrain of co-evolving ideas, power relations and subjectivities that accompany such material changes. Its conclusions raise significant doubts about whether national governments can provide the most appropriate conceptual or institutional tools for such an undertaking.

Even when low-carbon norms emerge and are perceived as commanding widespread political and public appeal (e.g. sustainable development, clean energy transitions and climate resilience), national political institutions often provide limited deliberative space for debating the multiple interpretations of these terms and their consequences. Rather, they tend to jump straight to the task of bringing about their realisation i.e. putting the techno-scientific cart before the socio-political horse (Bevir, 2010; Hiedanpää and Bromley, 2016). Even if the 'dominant' interpretation of these norms was accepted at face value, wherever they imply fundamental change to the status quo then governments will face resistance from a range of actors with vested interests, as well as from social inertia and political and economic pressures.

Chapters 3 and 4 illustrated the negative effects of all of these factors on the political meaning and policy outputs of climate change and renewable energy in the UK. In addition to confirming many political scientists' doubts about radical policymaking in general (Patashnik, 2014; Pierson, 2004), and in the UK in particular (Carter, 2014;

Lockwood, 2013), these chapters revealed the potential for consensus politics and flagship policymaking to cover up for a lack of political resonance and patchy progress on implementation. There is a precedent for governments to engage in such symbolic politics during austere times or when long-term political issues are struggling to retain their salience (Bauer and Knill, 2012; Middlemiss, 2016). This is particularly worrying in the case of climate change because as the 'policy gap' grows (CCC, 2017), the greenhouse gas effect of carbon dioxide emissions intensifies and the requirements placed on future decision makers to act becomes ever greater.

This tendency towards depoliticisation was further compounded by an overreliance on economic discourses for rationalising climate policies, thereby making their legitimacy dependent on a perceived cost-benefit ratio that fluctuates depending on the priorities of the analyst e.g. by applying different discount rates to future economic value (Spash and Gattringer, 2016). Not only does such economisation make (climate and energy) politics seem opaque and technocratic (Kuzemko, 2016; Willis, 2017), it also puts policies at risk of being undermined by the side effects of financialisation and the pressures of macroeconomic trends (Papandreou, 2015; Walker and Cooper, 2011). This phenomenon is certainly not unique to the UK or to climate policy. Economics has become the bedrock of political decision-making in many countries and sectors (Fine and Milonakis, 2009; Sandel, 2013), often making finance departments the most powerful state institutions, as was the case with the UK Treasury to the detriment of traditionally non-financial policy areas such as the environment (Bromley, 2006; Russel and Benson, 2014).

In many instances this economic and neoliberal approach to governing limits the role of the state to that of market facilitator/corrector, encouraging governments to deregulate and to conceptualise public and environmental issues, such as energy and climate change, as requiring market – as opposed to civic or moral – solutions. As the moral philosopher Michael Sandel (2013) has argued, this ‘market mimicking governance’ may be fundamentally inappropriate in the case of the environment, effectively suppressing non-economic framings and solutions to deeply personal and ethical issues.

Although chiefly concerned with international politics and global governance arrangements, fundamental critiques of neoliberal forms of such market fundamentalism point out that nation state policies are shaped – indeed bounded – by the structures of capitalism through which they operate, potentially limiting their ability to transform society towards a low-carbon and equitable future through purely economic means (Brand and Wissen, 2013; Duit, 2014; Newell and Paterson, 1998). This was clearly visible in the UK case study, where ideas of green-growth and a low-carbon economy were rhetorically influential, but their specific policies (such as the Green Investment Bank, carbon taxes and renewable energy subsidies) fell woefully short of expectations and effectively side-lined alternative rationales and policy instruments (for further examples of this in the UK see: Pearce, 2006).

Chapter 5 investigated some of these structural factors, describing the negative impact they had on policymakers’ ability to pursue their goals through the mechanisms of central government. The findings chimed with long-running observations about the way central political institutions in the UK retain veto powers and influence over

smaller departments even during periods of decentralisation and the much touted 'governance turn' (Davidson and Elstub, 2014; Richards and Smith, 2002).

It also resonated with previous studies of climate change political strategies, noting the constructive influence of: pushing for international agreements; highlighting independent progress reports; developing consensual policy options; and mobilising multiple non-climate framings (Compston and Bailey, 2008; Pralle, 2009). Although many in the climate policy community in the UK were still pursuing these strategies, they also raised doubts about their long-term efficacy, especially as more difficult policy decisions began to loom on the horizon. Linking this back to the wider issue of depoliticisation described above, the findings illustrate how climate change can become a consensual and populist issue within mainstream politics (e.g. flagship targets and leadership posturing), with very little government engagement in environmental politics or democratic deliberation of how to transform a socio-political status quo (Swyngedouw, 2010).

Efforts to integrate or mainstream climate goals into the functioning of government have struggled in the UK case. This was largely due to a period of fiscal constraint and low political salience for climate change, meaning most departments were prioritising their core tasks and senior decision makers were not prioritising it. The limited mainstreaming mechanisms that were in place, such as mandatory emissions reporting on policy impact assessments, were eventually scrapped as part of the small state agenda. Like sustainable development and ecological modernisation before it, climate change mitigation in the UK highlighted the need for, but lack of, effective integrated policy responses to complex environmental problems, leaving policy integration

scholars with a feeling of *déjà vu* (Adelle and Russel, 2013; Jordan and Lenschow, 2010). A pertinent example of the lack of progress in this area is the way dedicated environment and climate change departments (DEFRA and DECC respectively) suffered repeated cuts to resources and were unable to coordinate effectively with each other or with other departments. Whether the subsuming of DECC into the new department for Business Energy and Industrial Strategy (BEIS) will advance or hinder the climate mainstreaming agenda remains to be seen.

These findings raise fundamental questions about the ‘institutional fit’ or ‘institutional coherence’ of central governments for the task of governing climate transitions in industrialised capitalist societies (Bromley, 2006; Duit et al., 2016; Paavola et al., 2009). Despite promising examples of environmental and climate leadership from some states (Duit et al., 2016; Liefferink and Wurzel, 2016; Wurzel and Connelly, 2010; Eckersley, 2004; Jänicke, 2005) – including the UK’s own Climate Change Act – these breakthroughs remain susceptible to rollback. This thesis found very little evidence to suggest that the UK, and potentially other centralised liberal democracies, can coordinate their various factions and processes to fully integrate climate goals, or to resist state retrenchment, policy dismantling and the power of vested interests. These findings undermine the idea of an ‘ensuring state’ that is able to provide an authoritative guarantee of action on climate change (Giddens, 2009) and add empirical weight to rising concerns about a potential ‘glass ceiling’ of state-based climate governance in modern democracies (Bäckstrand and Kronsell, 2015).

Taken together, these findings contribute significantly to our understanding of the limitations to state-driven climate transitions. For political scientists concerned with

the functioning of democratic political systems at a time of political disengagement and populism, we can see the danger of a growing disconnect between the high-level rhetoric of climate leadership and personal engagement at the individual level among politicians and the public alike.

Ultimately this is a failure of political philosophy to connect the complicated materiality of the global climate to everyday social realities. Adding to an existing broad level political economy critique of the unsustainability of capitalist systems, the case study showed how limiting a commitment to market-based governance could be in specific policy areas. Lastly, previously identified strategies for advancing climate policy through consensus building and mainstreaming have been stress tested, and found wanting. The climate policy community and researchers will need to develop additional strategies to navigate these turbulent political-economic times and to overcome entrenched institutional barriers within government.

6.2.1. Implications for theory and practice

6.2.1.1. *Political science and policy studies*

- **The existence of flagship climate policies aids, but does not guarantee, long-term action.** Previously identified barriers such as climate science scepticism and zero-sum international negotiations have waned, and the political battleground has shifted from the scale of emissions reductions to how they are to be distributed within countries and sectors. For political science and policy studies, the normative task is to identify the causes of the growing 'policy gap' between targets and emissions accounted for (CCC, 2017) e.g. political and institutional impediments, policy design faults, or public

acceptability. As the costs and benefits of climate policies become increasingly politicised, there needs to be more analyses of the political economy of climate change that take account of how these costs and benefits are discursively constructed. Clearly, as this thesis has reiterated, no stage of the policy process is entirely (economically) rational – or free from politics and power – despite continued attempts to make policymaking appear as such.

- **Institutions remain powerful explanatory factors, but actors' strategic engagement with these structures needs to be better understood.** Many previously effective strategies were still present and being pursued in the UK case, but with mixed results. New international agreements and national targets were being set but consensual politics failed to overcome institutionalised divisions within government. This means that the legal-institutional-governance frameworks of climate policies need to be understood *de jour*, i.e. through the way they are brought to life by actors' strategic interplay. Institutional frameworks and theories of the state could help explain how these strategies are bounded by established structures. More agency-oriented theories (e.g. social fields, and policy implementation and governance studies) would provide insights into the efficacy of strategic actions such as preparing the ground for radical policies and amplifying/undermining their feedback effects. In practice, the strategic and reflexive engagement with institutions is an ambivalent part of politics, which can be used to advance climate policies as well as undermine them. The example given in this thesis of relocating responsibility for climate change from one department to another

illustrates this nicely; showing how it initially catalysed action in 2008 and then potentially paralysed it in 2016.

6.2.1.2. *International and national contexts*

- **Political discourses need to avoid overly technical and economic framings.**

More should be done to connect with the debates and value pluralism of contested norms such as transformation and resilience. Similarly efforts should be made to increase the socio-political salience of climate change by highlighting its many crossovers with contemporaneous social issues. This does not mean simply 'reframing' climate change as something else, but rather opening up the terms of the debate to include more voices in order to explicitly address the tensions between certain interests and issues. Arguably this already takes place at the international level to some extent. At the national level, countries with powerful veto-wielding finance ministries and single-party executives would do well to avoid narrow or overly technical framings.

- **National governments should seek to diversify their policymaking and governance networks.** Engaging with other sites of authority can mobilise additional resources and influence during constrained times and offers opportunities for policy learning. It also encourages voluntary action from the private and civic sectors. However, this comes with caveats. Primarily, echoing earlier criticisms of the governance turn, this strategy requires a sharing of power and resources, not just responsibilities. Further, it may add complexity and create more opportunities for checks and balances from new actors or rules, which can secure policy feedback but also slow down the pace of change. Countries with federal systems and a history of decentralised governance may

be in a stronger position to make the most of these opportunities, at least within the context of government institutions.

6.2.1.3. UK climate policy community

- **The subsuming of climate policy into BEIS poses a significant challenge.** It has broken a previously strong institutional alliance between a government department and the CCC, and sends a fairly unequivocal message to the public about the government's prioritisation of climate change i.e. it is now a background consideration when making decisions about energy and industry. Although the individuals who have been appointed to climate change posts within the department have strong track records, they face a difficult task in securing climate-specific policy development let alone integrating climate considerations into their colleagues' decision making (within BEIS as well as other departments). This raises serious questions about how to effectively 'mainstream' climate goals into government.
- **Non-executive government bodies, such as the CCC and Parliamentary Select Committees, may become more important.** Throughout this thesis the CCC was portrayed as a positive influence, whose reports and analyses were respected by government officials. However, despite their mandate not to make specific policy recommendations, they will need to increase the salience and impact of their progress reports to Parliament, as well as build stronger links with non-climate related departments. This is particularly as some of the parameters and potential contradictions within BEIS' remit begin to be formalised in policies (e.g. the upcoming Industrial Strategy and Clean Growth Strategy). The Parliamentary Select Committee responsible for scrutinising

climate and energy outputs provides an additional institutional space for deliberating policy pathways, but again, they are non-executive bodies and so their influence is limited.

6.3. Climate governance: the challenge of exercising agency with limited authority

Climate change, as a public policy and governance issue, embodies many contemporary debates about the changing role of the state and the need for new forms of governance for managing environmental change. At the heart of these debates are two prominent, and deeply political, themes: authority and agency. Questions of authority extend beyond *who* has the power and mandate to act, to include *how* this power is legitimised and exercised. Questions of agency refer to the strategic actions of agents and their dualism with pervasive social structures.

Climate change has been described as many things e.g. a wicked problem (Urry, 2016), an amplifier of risk and existing social issues (Beck, 2010), an economic opportunity (Stern, 2007) and a threat to democracy (Lovelock, 2009). Common to each is the necessary involvement of a wide range of actors because, ultimately, its potential impacts will affect everyone and their successful mitigation depends on everyone. Thus, the simple but significant fact that climate change means different things to different people (Hulme, 2010) adds a layer of interpretivist complexity to the already contested process of politically reconfiguring the state in an era of multi-actor governance.

In chapter 2, it was argued that already powerful actors have sought to retain their authority and influence and that this has been made possible by the predominance of a complex systems epistemology that allows for elitism. At its most anti-democratic this discourse invokes wartime analogies and apocalyptic forecasts to legitimise authoritarian leadership (typically in the form of the nation state and planned economies) (Gilley, 2012; Lovelock, 2009; Žižek, 2011). In its more moderate form, it has placed experts of climate science, economics and technology at the centre of knowledge creation and decision-making processes. Insights from chapters 3 and 4 in this thesis, and elsewhere in the literature (Boykoff et al., 2015) have shown that this has not always had a positive effect on public support and can actually undermine a political mandate for action. This is linked to a distrust of experts and scepticism about the feasibility and desirability of evidence-based policy (for a discussion see: Pawson, 2006), which has been exacerbated by a rise of populist discourses and ‘post-truth’ politics (Calcutt, 2016; Sismondo, 2017).

The impact of information technology developments on political (especially state-based) authority has been well summarised by Hajer (2009). In the context of climate change, it has come to be accepted by social theorists (Urry, 2016), communications experts (Hine et al., 2016) and policymakers (interviewed in chapter 5), that government does not have a monopoly over shaping the climate change message or defining a transition to a low-carbon future. But, as illustrated throughout this thesis, it is one thing to acknowledge multiple interpretations, but it is another thing entirely to create sufficient social and political space for this pluralism to play out (Stirling, 2011). In fact, it is clear that mainstream politics and the policymaking process – even in its

short lived outward facing initiatives such as ‘big society’ and ‘open policymaking’ – appears to adopt a discourse of shared authority (and responsibility) without facilitating a significant increase in agency (and influence) for other actors in practice.

Theorists of deliberative democracy and communicative discourse argue that the involvement of multiple and diverse actors can increase the efficacy, efficiency, equity and acceptability of public policies (Dryzek, 2010; Habermas et al., 1990; Schmidt, 2010). These claims have been discussed extensively with regards to climate change and energy transitions, noting the importance of paying attention to the relative power imbalances between different actors and ideas (Bäckstrand, 2010; Sovacool and Watts, 2009; Dryzek and Lo, 2014; Stirling, 2015; Wittmayer et al., 2016).

To test these theories empirically, this thesis applied (for the first time) recent conceptual advances in discursive institutionalism (see Carstensen and Schmidt, 2016). It elucidated the functioning of different types of ideational power, showing exactly *which* ideas mattered and *how* policymakers discussed and rationalised their decisions. This contribution has particular resonance for environmental issues such as climate change, which require a form of ‘scalar politics’ capable of acknowledging the material reality of greenhouse gas emissions – be they at individual or global levels – as well as the fluid interplay of ideas and discourses within broad networks of actors across space and time (MacKinnon, 2010).

Contrary to this, the UK case exhibited silo thinking within government that hindered cross-departmental/sectorial collaboration, leading to unconvincing messages and contradictory policy decisions that were drowned out by negative media framings. Furthermore, in the style of what Flyvbjerg (1998) has called ‘democracy in practice’,

chapter 4 showed how these entrenched ways of thinking (e.g. about energy infrastructure) constitute a powerful form of 'rationality', which produced ideologically motivated decisions and was the driving force behind policy rollback and slow implementation in the energy sector. Without this sort of keen attention to the power of ideas, and the discursive practices of decision makers that bring their assumptions to life, it will be difficult for climate policy researchers and stakeholders to identify underlying lines of contention and to develop effective strategies for influencing policy.

Having criticised some of the literature on multi-actor environmental governance for its lack of attention to politics and power in chapter 2, the potential for non-state innovation and bottom-up or hybrid forms of governance was re-examined in chapter 5. This was prompted by the UK Government's self-acknowledged limitations and its various strategies to devolve responsibilities and encourage a multi-sector response to climate change. The broad conclusion here was that largely non-state initiatives such as transnational networks and community projects were plentiful and ambitious, but – as is often noted in the sustainability transitions literature – faced significant barriers to up-scaling and realising their transformational aspirations (Geels, 2014). A similar story emerged from hybrid examples involving the state as a facilitator e.g. where powers were devolved without additional resources and when public-private partnerships and state-civic collaborations were limited by a lack of government funding or by the imposition of certain rationalities e.g. liberalism and economic growth.

So, the findings in this thesis sound a word of caution. Having found numerous examples of multi-actor climate policy and governance, as well as an ideological commitment within government to this style of governing, the critical question of whether this will lead to a more reliable and rapid climate transition has only just begun to be answered. Chapters 3, 4 and 5 showed how austerity politics and funding cuts have hindered progress in all sectors of society, especially where governance arrangements were reliant on state funding or institutions. More fundamentally, these findings also raise concerns about the rationale for state endorsement of multi-actor climate governance and its influence on other actors' agency, thereby directly challenging the presumed benevolence of an 'enabling/ensuring state'.

Governmentality scholars would see this as confirmation of the state's expansion into more prosaic forms of 'conducting conduct' i.e. an increase, rather than reduction, in state authority but through more coercive and 'hands-off' means (Aiken, 2016; Dean, 2010). In fact, it is precisely when governments officially endorse them as solutions that these networked forms of governance should be most wary of inadvertently reinforcing the status quo; ultimately their capacity to transform remains constrained by ever-present power imbalances and the continued managerialism of the state's involvement (Davies, 2011; Swyngedouw, 2013). Thus, a genuinely radical politics of climate change and low-carbon transformation will have to occur in governance spaces that lie outside of the purview of these discursive and material constraints (see: MacKinnon, 2010; Wilson and Swyngedouw, 2014).

Taken together, these findings return us to a number of previously voiced concerns about the governance turn, but in a new context and with added depth. To begin, the

authority and legitimacy of climate policies based solely on opaque expert evidence is not only objectionable on democratic grounds but it is being eroded by a wave of populism and selective use of evidence in an era of ‘post-truth policymaking’ (Sismondo, 2017). The UK Government has taken steps to open policymaking to more voices and transparency but familiar criticisms of token participation and the hypocrisy of redistributing responsibility but not capacity are still applicable. These examples of governance innovation facing practical barriers will be of interest to deliberative democracy theorists and transitions scholars (e.g. Bäckstrand, 2010; Bulkeley and Castán Broto, 2013; Dryzek, 2010). Similarly, responding to calls for empirical studies from the polycentric governance literature (Jordan, et al., 2016), this thesis provides some limited evidence of added value but also some evidence of these initiatives being instrumentalised and co-opted by the state.

6.3.1. Implications for theory and practice

6.3.1.1. *Climate governance*

- **Overlaps between climate change and other social issues bring actors together in a disruptive way.** This is particularly apparent in communications and media discourses about climate change, wherein no single voice or message prevails and climate science and policy are continually being interpreted from different perspectives. Whilst this encourages healthy critique, it may also stall progress by undermining public support and provoking resistance from vested interests and populists. Perhaps more significantly, the space for deliberation between competing interests and governance actors appears to be limited e.g. because of silo thinking within different institutions

and governance networks. Thus, more needs to be done to theorise and address the power relations that are embedded in climate policy and governance discourses.

- **The framing of climate change affects the level of authority and influence of different governance actors.** As was the case within government, prominent hybrid and non-state forms of governance still focus on economics and technology. Market-based forms of governance and those that pilot innovative techno-fixes enjoy the most authority; socially and materially construed. Similarly, despite efforts to diffuse responsibility away from the centre of the state, there is a persistent view that national governments hold unique authority over certain levers for change, yet they remain reluctant (or unable) to act. Overall, the general trend of authority and agency within climate governance favours technical experts and elite levels at the expense of empowering social movements and localised perspectives.
- **Governance networks can put pressure on the state, or circumvent it entirely.** By drawing on a wide range of sources, for knowledge and funding, governance networks can shield themselves from the turbulence of state-based politics. They can also put pressure on governments and other sectors of society by strengthening international agreements, piloting innovations and encouraging policy diffusion. However, their level of influence appears to be confined to low-carbon sectors, with breakthroughs to other areas requiring significant political and policy support that is hard to come by. Thus, whether climate governance networks represent a true redistribution of authority and agency or

simply a contemporary manifestation of interest group-based politics remains unclear.

6.3.1.2. UK climate policy community

- **Thought leaders have an opportunity to work with government.** In recognition of their inability to control messages and discourse about climate change, with regards to policy and beyond, government actors are seeking a more collaborative engagement with different ‘thought leaders’. Individuals and organisations from different sectors of society thus have the opportunity to make government discourse about climate change more socially relevant. Yet, as is so often the case, the scope for influence will likely be curtailed by overriding governmental imperatives such as securing support for certain policy decisions i.e. treating publics as recipients rather than architects of policy justifications. Similarly, the inclusiveness of such ‘elite visioning’ (to use a transitions governance term) can always be questioned. Other deliberative spaces and practices need to be developed if the climate policy and governance community are to connect meaningfully with disengaged parts of society whose voices are deafeningly silent in conversations about low-carbon transitions. Ultimately, local initiatives and community-based governance actors can certainly use the multi-actor governance agenda to gain visibility and authority, but they will need to be wary of being co-opted or instrumentalised.
- **The UK’s leadership position within climate governance networks is uncertain.** Many transnational governance networks, such as C40 and the Climate Group, have their headquarters in the UK and actively leverage the UK’s global position as a climate leader. Public private partnerships may

continue to be effective and the style of governing in the UK remains open to hybrid, private and civic forms. However, as the UK negotiates its exit from the EU, and its position as a leader within the UNFCCC becomes less important (as a result of the process becoming more voluntary), this situation looks set to change. Non-state actors may be able to draw on their experience of engaging with other, more reluctant, governments to fight any rollback. But, the many uncertainties this brings, and the increasingly hostile political and economic context in the UK, may encourage global climate governance pioneers to look elsewhere.

6.4. Reflections, limitations and further research

6.4.1. Research design

Recurring critiques of normativity and political naivety aimed at the sustainability transitions literature led to calls for more work on the social and political dimensions of these theories and frameworks (Avelino and Rotmans, 2009; Jørgensen, 2012; Lawhon and Murphy, 2012; Markard et al., 2012; Meadowcroft, 2011; Scrase and Smith, 2009; Smith and Stirling, 2010). A single case design was adopted in order to theoretically and empirically engage with some of these challenges in detail; taking the recent politics of climate change in the UK as an example of a ‘turbulent transition’ towards a low-carbon future. The four main research questions underpinning the thesis were based on optimism about the analytical edge offered by social theory concepts, and scepticism about the durability of the UK’s climate leadership positioning.

Chapter 2 set out some for the ontological and epistemological assumptions that underpinned the research design and analytical work of the thesis. Chief among them was the adoption of a relational ontology, rejecting the functionalism of systems-based approaches in favour of a view of social phenomena as co-constituting and historically contingent (DeLanda, 2006; Latour, 2005). Ultimately the emphasis of the thesis was on the social and political *processes* of climate policy and governance, rather than their technical or environmental *outcomes*, albeit with an acknowledgement that in reality they are co-evolving.

Chapters 3 to 5 mobilised a number of different social science theories about ideas, institutions and policymaking, using multiple analytical frameworks to explain recent events in the UK. Common to each was a dialectical understanding of social structures and agency, in which the actions of individuals or groups are said to be influenced by, and in turn exert their own influence upon, the durable structures of social life (Giddens, 1984). However, each framework emphasised different aspects of this dialectic and therefore produced different, but complementary, insights. The shared assumptions, and recurring themes of power, agency and authority, meant that the thesis as a whole was able to draw together a final set of contributions that were more than just a restating of its constituent parts i.e. two cross-cutting research contributions and agendas were elaborated.

Chapters 3 and 4 deployed frameworks that addressed ideational forms of power and discursive practices. Developing the link between Carstensen's three types of ideational power and Schmidt's Discursive Institutionalism was chapter 3's main theoretical contribution (Carstensen and Schmidt, 2016). Chapter 4 built on these

insights, connecting to specific climate and energy policy outputs, using critical discourse analysis to illustrate the influence of economic framings and arguments. Contrary to the communicative emphasis of the previous chapter, this type of discourse analysis focused on the boundaries of what was thinkable and how certain frames defined this. Moving away from the interpretivist emphasis on discourse, chapter 5 adopted a more structuralist approach to identify the specific factors constraining and enabling the actions of the UK climate policy community. Lastly, although not exactly a theoretical or analytical framework, the concepts and norms of polycentric governance offered a coherent set of evaluation criteria, yielding very specific findings about the distribution of agency within a given policy area.

The use of a single case research design has advantages and limitations (Flyvbjerg, 2006; Yin, 2009). In this instance, the decision to focus on one country was justified by virtue of the research questions. Tracking the interplay between specific ideas, institutions and individuals required a significant depth of qualitative data and timespan. It would have been difficult to achieve the same level of detail had there been more than one country to analyse. Despite the lack of a directly comparative case to test the external validity of the findings, the conclusions outlined above may be present in other countries and policy areas (see further research questions below).

Due to a greater emphasis on interpreted social processes, rather than verifiable policy outputs and outcomes, the findings offer more in the way of inductive insights than deductive-nomological truths (Mahoney, 2012). Thus, the methodological underpinning for the contributions came from the richness of the data, and the contextualised analysis of the UK case over time. This allowed for many causal process

observations to be made, multiple analytical frameworks to be used, and produced contributions to knowledge through 'the force of example' (Brady and Collier, 2010; Flyvbjerg, 2006).

A significant contribution was to illuminate and analyse the otherwise undocumented aspects of political process and decision making e.g. individuals beliefs, values and perceptions (Beamer, 2002; Yanow, 2000). The potential bias of these views was partly controlled for by ensuring anonymity for participants, and also by ensuring any arguments that depended strongly on these accounts (and not the researcher's analysis) were contextualised with as much information as was practicable without revealing the sources' identity. The stakeholder workshops were a vital source of knowledge co-production, yielding novel insights for participants and researchers alike (Martin, 2010). To retain a critical distance they were analysed for the discursive practices they revealed, more so than for their descriptive content.

Throughout the thesis, documentary and transcript data analysis relied on a hybrid form of thematic analysis, incorporating inductive data-driven codes as well as more theory-driven ones derived from the various analytical frameworks used (Fereday and Muir-Cochrane, 2006). In some instances, such as the analysis of discursive practices in chapter 3 or the evaluation of polycentric governance in chapter 5, a stricter inductive methodology (e.g. grounded theory) could have produced more extensive and novel theory-building insights (Charmaz, 2014). However, in both instances, and to some extent in this concluding discussion of the findings, the intention was to test the value of current theoretical propositions about power and agency – and the analytical frameworks available for studying them – rather than to generate new ones.

6.4.2. Unanswered questions

Three prominent and widely relevant themes emerged that warrant further research. First, the ambivalent role of the state in facilitating polycentric policy and governance needs attention. In addition to the structural barriers identified in the UK case (e.g. departmental power relations and resource constraints), a more fundamental issue emerged with regards to the state's rationale for engaging with non-central governance actors. Whether government actors see non-state and hybrid forms of governance as an opportunity for empowering bottom-up initiatives or as a means of achieving their own goals through more prosaic forms of power is pivotal. As the fields of polycentric governance and governmentality continue to grow, more research that brings their assumptions into dialogue would be of interest. Instead of *de facto* assuming localism to be good and neoliberalism to be bad, future research should track the way these agendas alter relations between governance actors *de jure* and, more normatively, look for ways to expose and challenge the rationale behind inadequate climate policies and governance arrangements.

Second, and following on from the above, the role of flagship policies such as strategies and targets needs to be understood in more political terms. Policy science and public administration is often concerned with measuring the efficacy of policy implementation. However, governments remain reluctant to carry out comprehensive *ex post* analyses and the increasingly technocratic approach to policymaking enables adjustments to targets and metrics to be depoliticised. Thus, the symbolic and strategic nature of policy targets needs greater attention. For instance:

- Who has the authority to set and revise targets?

- What power do monitoring agencies have in theory and in practice?
- Can the drivers of an implementation gap be identified and addressed?
- Who is accountable when targets are missed?

Third, processes for involving multiple perspectives in the development of a shared narrative of social change need to be explored. Distinct from the grand narratives of political ideology, the visioning of a climate compatible future should begin from non-partisan foundations. If the general public and politicians are to support policies in pursuit of such a vision – especially when their lives are altered and their interests are challenged – they will need to have had sufficient input to develop a sense of ownership and continued commitment during turbulent times. Thus, questions of deliberative democracy, devolved governance, and inclusive forms of communication are paramount. For instance:

- How are competing interests and contradictory policy goals managed?
- How are different ‘official’ messages from different sectors of society brought together?
- Who gets to shape government messages and how are these interpreted?
- Which forms of communication are most effective for generating dialogue and avoiding zero-sum interest based politics?

Finally, with regards to the UK case, a number of specific questions about the future of climate policy need to be addressed through further research and dialogue with the climate policy community. These include:

- How can the CCC and the climate policy community raise awareness about the growing implementation gap without undermining the UK's leadership position, and how can they secure political support for the policies needed to fill this gap?
- What are the consequences of leaving the EU and disbanding DECC, and how can policymakers now ensure that climate goals are prioritised within energy, industry and other sectors?
- Will it be possible to recreate a competitive consensus among political parties and senior decision-makers, or is another type of strategy needed, and what external drivers can these efforts harness e.g. the devolution agenda and negotiating leaving the EU?

6.5. Conclusions

This thesis set out to make a number of contributions to the pressing debate of how to govern social change towards a low-carbon future. Far from being a normative set of prescriptions about how to manage a particular transition, the main aim was to draw lessons from a case study in order to troubleshoot and provide useful insights into the numerous barriers and opportunities that can be anticipated along the way.

Nation states and their national governments continue to play a key role in this process. In fact, one of the central stories of this thesis was the way the state – represented by three different UK Governments between 2006 and 2016 – has exercised its authority and sought to adapt to the challenges of governing during a turbulent economic and political period. The other central story was the way society

more broadly is responding to the challenges of mitigating anthropogenic climate change. In this regard, the thesis brought much needed consideration to the way climate politics (in the abstract) has become disconnected from the political implications of transforming multiple sectors of society.

Broadly speaking, the theoretical contributions and innovations of this thesis brought the fields of sustainability transitions and political science into a closer dialogue. Some of the key limitations and blind spots of systems-based theories of transitions were identified and remedied using social theories of power and agency. The ideational and structural processes that enable vested interests to resist – or at least delay – fundamental social change were enumerated. The malleability of institutionalised ideas about governing climate change throughout this process was also illustrated, using a novel combination of theories about power and discourse.

A number of analytical frameworks were discussed, tested and critically reconsidered. This included the increasingly relevant policy dismantling framework that tracks policy change during periods of austerity as well as the broad church of polycentric governance that offers guiding principles for advancing climate innovations beyond the nation state.

Empirically, a number of hypotheses about climate politics, policy and governance were explored. Assumptions about the longevity and influence of flagship policies were challenged, partly as a result of an apparent lack of political will, contrary to the official discourses of government leadership and commitment to a low-carbon transition. The negative effects of this political gap were compounded by a concurrent – and not unrelated – decline of political/public salience and the pressures of a

prolonged economic depression. By closely tracking the institutional, and interpersonal, processes through which these factors affected policymaking, the thesis raised some critical questions about the inherent limitations of state-led responses to climate change; at both a discursive and policy level.

Although the negative consequences of these discursive and policy practices were enumerated in the case of renewable energy, some positive trends were identified in other areas. The double-edged sword of devolution and new forms of governance revealed high levels of ambition in non-central government sites of authority such as city networks and local communities. But these were tempered by relations with the state and by many of the same economic pressures faced by central government. As the UK's claim to being a climate leader has weakened and its relationship with other low-carbon pioneers, such as the European Union and the renewable energy sector, has grown uncertain, this case study has raised some crucial questions (and offered some useful insights) about the efficacy of different political strategies for tackling climate change.

The conclusions and recommendations of this thesis rest on a novel, extensive and highly relevant evidence-base. In-depth interviews with high level political actors and those involved in the wider climate policy community yielded some very informed and contextualised interpretations of how the thoughts and actions of decision makers had shaped UK climate policy in recent times. A mixture of partisan, professional, strategic and operational perspectives from government provided a comprehensive picture of the policymaking process. Whilst non-government actors and those on the fringes of policymaking – who are no less important due to their advisory, lobbying and

communicating activities – also meant that the case study was not entirely state-centric. The three co-production workshops brought these interactions between the climate policy community to life, and offered insights into their strategies for addressing future challenges such as negotiating leaving the EU and fostering a more inclusive narrative for the low-carbon transition. Finally, documentary evidence was used throughout the research as a constant counterpoint for triangulating the claims and interpretations of interviewees. It also underpinned much of the discourse analysis and policy output analysis.

Lastly, as this discussion chapter has made clear, there is much more to be said and done with regards to governments and their mediating role between society and climate change. Structural limitations and the negative effects of partisan politics and certain policymaking processes have been highlighted. Remedies for these have been discussed in the literature but as the low-hanging fruit begins to dwindle and these strategies continue to fall short of their goals then the need for more innovative or radical solutions will grow. Partly in anticipation of these more drastic decisions, but also partly in response to a recurring theme of a ‘democratic-deficit’ in climate politics, the most important task that this thesis sets out for future researchers and governance actors is to diversify the range of low-carbon futures we are working towards and to ensure that more people have the opportunity to discuss and direct our pathways towards them.

6.6. References

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7. Appendix

A. Interview invitation

Invitation to participate in research on UK climate policy

You are being invited to participate in a doctoral research project. Please read the following information carefully and consider whether you wish to take part.

The Project

This research aims to explore how and why climate policy in the UK has changed since the passing of the Climate Change Act in 2008. By collecting the views of policy actors, civil society and private enterprises and combining these with a detailed look at policy documents it is hoped that we can better understand how to achieve ambitious mitigation and adaptation goals. The research is funded by the Economic and Social Research Council.

Your Role

As someone identified as being a stakeholder in UK climate policy we would like to hear your thoughts on a number of issues. We would like to conduct a one-to-one interview with you, lasting up to an hour, and taking place at a time and place to suit you. This can be done via phone, over Skype or in person and will involve a simple mind map and timeline drawing exercise. The interview will be an informal discussion designed to gather your professional and personal opinions and you have the right not to comment or to end the discussion at any point.

Data Protection

The interview will be recorded and transcribed but only the immediate research team will have access. Recordings and transcripts will be completely anonymised so that your name or anything that could affiliate you with the information you share with us is kept separately. We may need to contact you in the future to seek permission to use particular quotes you have given or to discuss future research. Your contact details and interview data will be stored securely at the University of Leeds for up to 5 years but you have the right to request for it to be erased at any point. However, if you decide you do not want your interview to be included in the research you will need to let us know before analysis has begun (1st August 2015).

To arrange an interview or for further information please contact the primary researcher via the contact details above.

B. Example interview protocol

Interview Skeleton

Your Position

- Individually and as an organization:
- What are you trying to achieve and how?
 - Problematisation
- Who else do you work with to achieve this and how?
 - Professional and political coalitions
- What external factors affect your capacity/strategy?
 - Economics
 - Politics
 - Media

The Government's Position

- What have been the major changes in climate policy / governance since 2008?
 - Discourse
 - Practice
- What have been the most influential factors in this?
 - People
 - Events
 - Publications
 - Media
- How is the government implementing their policies?
 - Style of governing
 - Assumptions

Practice

- How does policy affect what you do?
 - Oversight
 - Targets
 - Metrics
 - Capacity
- Have you been able to influence the policy process at any stage?
 - Direct involvement
 - Giving evidence
 - Lobbying
- What has this meant for your outputs/achievements?
 - Strategy

C. Example workshop briefing note

Innovations in Climate Policy

2nd Workshop Brief

Overview

The first workshop in this series considered the scope for policy innovations relating to the social dimensions of climate change in areas including energy, heating, food and water. This second workshop develops some of the key ideas that emerged from the previous discussion by focusing in more detail on the scope for policy innovations in three related areas; communications strategies, innovative information technologies and policy integration and learning. In each case, we have identified an overarching question that will be addressed by expert speakers and through open discussion and working groups. The outcomes will inform the specific policy recommendations to be developed in the final workshop in the series.

Climate communications

Question: How could a long-term communications and engagement strategy on climate change build public support for transitions to a low carbon/climate resilient society and help to enable informed and targeted policy interventions?

Discussion primer

Transitions towards a low carbon, climate resilient future could have profound implications for many areas of social and economic life. But it is not clear that ‘the public’ are sufficiently aware of what the implications might be or have actively signed up to support all elements of the transition, particularly in the longer term. How could DECC (with regards to mitigation) and DEFRA (with regards to adaptation) best engage with the public and policymakers across government to build support for ambitious or demanding climate targets over the long term? Does government need to lead on this or could a broader coalition of influencers be developed? Would this turn into an advocacy exercise, or could more independent bodies or groups lead the communication and engagement process? Are there other related strategies or initiatives that could inform a longer-term strategic climate communications initiative? How could such an initiative tailor its activities to fit with the particular needs of different groups at different times? What is the right balance between appeals to collective action and more individualised interests?

Speaker: REDACTED

Working group: Climate policy relating to both mitigation and adaptation

Information and sustainable production and consumption

Question: How could new technology and new forms and flows of information transform the sustainability of production and consumption, and what are the implications for policy and governance?

Discussion Primer

We live in an information age where new technologies are creating a proliferation of new forms and flows of information. Some new information based technologies – such as Uber in the transport realm - have the potential to disrupt established patterns of production and consumption and to replace them with radically different alternatives. Others – such as wearable health devices - clearly create new opportunities for different actors and for individuals themselves to ‘govern’ aspects of life that were previously invisible or out of reach. Should, or could, policy harness some of the transformative powers of such innovations to deliver public interest objectives in new ways? Could new forms of (big or real-time) data create possibilities for new forms of monitoring (e.g. of food standards) or for more targeted forms of intervention (e.g. of food production or consumption)? Can we predict the areas where new technologies and new forms of information could have a deeper and more transformative effect and those where they may have a more superficial or temporary effect? Do we need to govern the technologies themselves and the information that they generate rather than the activities that have been the traditional focus of policy? Are there some areas that will or that should continue to be outside the reach of ‘governance through information’?

Speaker: REDACTED

Working group: Food policy with particular reference to food labelling

Complexity, policy integration and learning

Question: How could a better understanding of the complex drivers of - and multiple policy influences on – different forms of behaviour enable more joined up, effective and efficient policy interventions?

Discussion primer

Social behaviour emerges as the result of the collective influence of a vast ‘cocktail’ of different factors, some of which are policy related and many of which are not. Would a fuller understanding of the complexity of these factors and the way that they interact enable us to target the key drivers of some behaviours more effectively? What role could be played by new types of bottom-up policy evaluation – perhaps informed by big data or new framings and methodologies – in this process? Might policy learning be encouraged if the gap between somewhat speculative ex ante assessments (such as those in Regulatory Impact Assessments) and more empirically grounded ex post policy appraisals was closed? Could this enable environmental problems to be addressed at source through joined-up, integrated approaches to policy and would this be more

effective and efficient than more fragmented and reactive approaches? Are there instances where policy integration has successfully reduced the need for reactive policies or is the goal of coordinating across policy domains often impossible to realise?

Speaker: REDACTED

Working group: Energy policy with illustration from REDACTED