

Centre for  
Climate Change  
Economics and Policy

An ESRC Research Centre

**Sustainability Research Institute**

AN ESRC RESEARCH CENTRE

**Blowing policy bubbles: rethinking emissions targets and renewable energy subsidies in the UK**

**Ross Gillard and Kathryn Lock**

**October 2016**

**Centre for Climate Change Economics and Policy**

**Working Paper No. 282**

**Sustainability Research Institute**

**Paper No. 98**

**The Centre for Climate Change Economics and Policy (CCCEP)** was established by the University of Leeds and the London School of Economics and Political Science in 2008 to advance public and private action on climate change through innovative, rigorous research. The Centre is funded by the UK Economic and Social Research Council. Its second phase started in 2013 and there are five integrated research themes:

1. Understanding green growth and climate-compatible development
2. Advancing climate finance and investment
3. Evaluating the performance of climate policies
4. Managing climate risks and uncertainties and strengthening climate services
5. Enabling rapid transitions in mitigation and adaptation

More information about the Centre for Climate Change Economics and Policy can be found at: <http://www.cccep.ac.uk>.

**The Sustainability Research Institute (SRI)** is a dedicated team of over 20 researchers working on different aspects of sustainability at the University of Leeds. Adapting to environmental change and governance for sustainability are the Institute's overarching themes. SRI research explores these in interdisciplinary ways, drawing on geography, ecology, sociology, politics, planning, economics and management. Our specialist areas are: sustainable development and environmental change; environmental policy, planning and governance; ecological and environmental economics; business, environment and corporate responsibility; sustainable production and consumption.

More information about the Sustainability Research Institute can be found at: <http://www.see.leeds.ac.uk/sri>.

This working paper is intended to stimulate discussion within the research community and among users of research, and its content may have been submitted for publication in academic journals. It has been reviewed by at least one internal referee before publication. The views expressed in this paper represent those of the author(s) and do not necessarily represent those of the host institutions or funders.

## **TABLE OF CONTENTS**

<b>Abstract</b>	<b>2</b>
<b>About the Authors</b>	<b>3</b>
<b>1. Introduction</b>	<b>4</b>
<b>2. Case study: rationale, materials and methods</b>	<b>8</b>
<b>3. Case study: changing policies and perspectives</b>	<b>10</b>
<b>4. Discussion</b>	<b>21</b>
<b>5. Conclusion</b>	<b>23</b>
<b>6. References</b>	<b>24</b>

## **ABSTRACT**

The United Kingdom's (UK) Climate Change Act was the first instance of a nation state self-imposing legally binding targets for reducing greenhouse gas emissions. Its achievement depends to a large extent on decarbonising the country's energy systems, particularly through the scaling up of renewable energy supply. Political attention, policy image and the discursive entwining of climate and energy were all crucial drivers of this agenda in 2008. However, this article demonstrates that as political salience waned and economic depression dragged on, the cost of meeting long-term climate and energy targets is being reconsidered. Central to debates about setting interim emissions reduction targets and implementing low-carbon energy policies is their proportionality i.e. whether their perceived social costs outweigh their benefits and whether this may lead to over-investment or 'policy bubbles'. Drawing on an emerging literature on (dis)proportionate policymaking we mobilise these concepts to conduct a critical discourse analysis of policy documents and media articles, and 33 interviews with key political actors and stakeholders. The findings provide a detailed account of how the dominance of an economic framing, and the arguments therein about over-investment at a time of fiscal restraint, have been used to challenge climate targets and derail renewable energy policies. Ultimately, claims about policy proportionality hinge on which costs and benefits are considered. Despite the objective truth claims of economic and technical analyses of climate and energy issues, these framings have produced contradictory policy outputs and rationales, belying the ideological and political motivations behind certain decisions. We discuss these findings within the context of maturing renewable technologies, fluctuating energy prices and the UK's cross-party consensus strategy approach to climate politics. The novel concepts and discursive approach deployed in this article bring a fresh perspective to these recurrent, and widely relevant, debates in energy research and social science.

## **Acknowledgements**

The authors would like to thank Jale Tosun, Ilana Shpaizman, Meghan Alexander and three anonymous reviewers for their helpful comments on previous versions of the article. They would also like to thank the interviewees for their participation.

## **KEYWORDS**

Climate policy, targets, low-carbon energy, framing, over investment

Submission date 09-09-2016 Publication date 14-10-2016

## **About the Authors**

**Ross Gillard** has an MSc in sustainability (environment & development) from the University of Leeds and a PGCert and BSc in Psychology from the Universities of Cardiff and Worcester respectively. He is currently completing a PhD at the University of Leeds titled 'Governing turbulent transitions: the politics of climate and energy during austerity in the UK, 2006-2016'. The project is part of the second phase of CCCEP, contributing to the research theme 'Enabling rapid transitions in mitigation and adaptation'.

Corresponding author: [r.o.gillard@leeds.ac.uk](mailto:r.o.gillard@leeds.ac.uk)

**Kathryn Lock**'s background spans a wide range of media, from news journalism and feature-writing to editing and publishing. She has worked in the media for 30 years, having begun her career in local newspapers in Oxford before moving to London to work for the BBC in a variety of roles. She has worked as a freelance writer for national and regional press, written a regular environmental column and published 11 books.

Kathryn moved into climate change research through work as a research associate with the Stockholm Environment Institute at the University of York (2011-2013). She returned to academia in 2014 and did a Masters in Sustainability at the University of Leeds, specialising in Environmental Politics and Policy (graduating with Distinction). Her research project focused on discourses on climate change and she has a special interest in climate change communication and UK climate policy.

*'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)*

## **1. Introduction**

Reducing greenhouse gas emissions to mitigate climate change demands bold actions from nation states, 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 to make 'nationally determined contributions' and some leaders have developed flagship climate change policies to guide them (Frankhauser, Gennailo & Collins, 2015). But their realisation and political feasibility is far from assured, especially as action becomes more challenging (e.g. full decarbonisation of electricity supply), as public and political interest wanes, as energy prices fluctuate and as economies struggle in the aftermath of the financial crash of 2008/9. This is precisely the challenge facing the climate policy community in the United Kingdom (UK) where, despite world-leading legislation, a gap between rhetoric and action has emerged. By analysing the way key actors perceive the costs and benefits of climate change and related low-carbon energy policies in the UK, this article shows how certain policies have been reinterpreted as disproportionate; resulting in the rise of an economic framing and discourse of 'over-investment' to justify retrenchment.

### ***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 temporary conditions in which a certain problem and solution demand the attention of publics and policymakers alike (Jones & Baumgartner, 2012; Sabatier & Weible, 2007; Pralle, 2009). Contained within much of this theory is a warning about information processing errors and the possibility of over-reaction to the sudden increased activity in previously inert policy areas (Baumgartner, Jones, & Mortensen, 2007). Policymakers' bounded rationality (i.e. focusing on a small number of highly salient issues) is known to play a role in sudden momentums overcoming entrenched resistance and forcing policy change (Stirling, 2014). The extent to which this may produce disproportionate consequences is rarely considered at the time, except by naysayers and outliers. When facing cognitive overload or complex and urgent issues policymakers' may rely on heuristics and 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, 2016; Maor, 2012) and to better understand the subjectivity of rapid policy change (Jones & Baumgartner, 2012).

### ***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 or particular 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 particularly pertinent to understanding the non-neutral aspects of policymaking, where 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 specific policies, particularly for long-run issues like climate change.

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 engender 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 energy systems. These framing strategies are important for both the climate policy community and also for those who wish to challenge their decisions.

Efforts to build an agenda around a certain framing of climate policy were clear in the development and passing of the UK's Climate Change Act (CCA). The prominence of international negotiations and media coverage around climate change between 2006-2008 raised its saliency for politicians and the public; presenting it as an issue of scientific certainty warranting strong non-partisan political action (Boykoff, 2008; Rutter, Sims & Marshall, 2012). Campaigners used this framing to invoke the catastrophic risk of inaction, pitching a 'Big Ask' for ambitious policy targets (Friends of the Earth 2008). At the same time business leaders pointed to the economic case for action (most notably Stern, 2007), stressing the need for early investment to reap multiple benefits and to minimise financial risk. At the time these arguments provided the justification for legislative action but as agendas, frames and discourses have shifted so has the government's prioritisation of climate policy.

### ***Rationalising over-reaction***

Significant policy changes are often politically charged and publically scrutinised. Therefore the way they are perceived and (de)legitimised by various actors is crucial (Hajer, 2010; Jones & Wolfe, 2015; Sabatier & Weible, 2007). The discursive influence and emotional valence of new policy ideas is well theorised in the literature (Cox & Béland, 2013; Schmidt, 2010) and may lead to bold commitments requiring significant levels (of potentially unfeasible) government intervention (Maor, 2015). In addition to the afore mentioned information processing errors, Maor, Tosun & Jordan (2016) set out four political rationales for such policies that could later come to be seen as the causes of 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 seek to 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 models, this article focuses on the perceptions of those concerned with the costs and benefits of climate change and related low-carbon energy policies in the UK. These subjective accounts, and the discourses they mobilise, are analysed alongside observable policy outputs to illustrate the extent to which climate and energy policy decisions have been re-interpreted as over-reactions producing unfeasible expectations on government.

### ***The rise of policy bubbles***

There are various mechanisms through which innovative policies (those that are novel in context, form or scope) can generate positive feedback effects to protect their longevity e.g. creating new vested interests, reallocating resources and producing new information streams (Pierson, 1993). These can either be unintentional or deliberately designed into policies (Jordan & Matt, 2014). However, it is conceivable that these same mechanisms may 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 becomes crucial. This capacity is partially determined by institutional factors (Howlett, 2016; Kuzemko, 2015) but also by individuals' strategic actions e.g. discursive reframing or deliberate inaction (Bauer, Jordan, Green-Pederson & H  ritier, 2012; Howlett, 2014). Such checks and balances include: target setting, monitoring and evaluation, evidence-based goals, and reflexive implementation (Hajer, 2010; Howlett, & Lejano, 2012; Hughes, 2012; Vo  , Smith & Grin, 2009).

As well as professionalising the policy process these mechanisms may also politicise it. For instance, by strategically using target setting, governments may: impose responsibilities on successor administrations; establish or re-arrange policy areas; strengthen their international negotiating position and give the impression they are 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 particularly as their difficulty increases over time (Rutter & Knighton, 2012). Yet the efficacy of these mechanisms has already begun to be questioned, especially with regards to ensuring policy action and investment in low-carbon energy (Lockwood, 2013). Since 2008 the proportionality of the UK's climate targets and low-carbon energy policies could be readily reinterpreted in light of a prolonged economic downturn and a cost of living crisis.

## 2. Case study: rationale, materials and methods

### ***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 (on 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. For instance, it has been shown that political competition and support for green 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 to support for low-carbon energy.

### ***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, subjective, 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 also scrutinised.

### **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 1).

*Table 1: Summary of interviewees*

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

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 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.

### **3. Case study: changing policies and perspectives**

#### **National climate politics and emissions target setting**

##### ***The 'dangerous climate change' imperative***

Leading up to the passing of the CCA, political discourse from the two main 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 Tony Juniper, who initiated the Big Ask campaign, this sense of urgency and cross-party support 'opened a whole load of possibilities that weren't there before' (Rutter et al., 2012 p 114). 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).

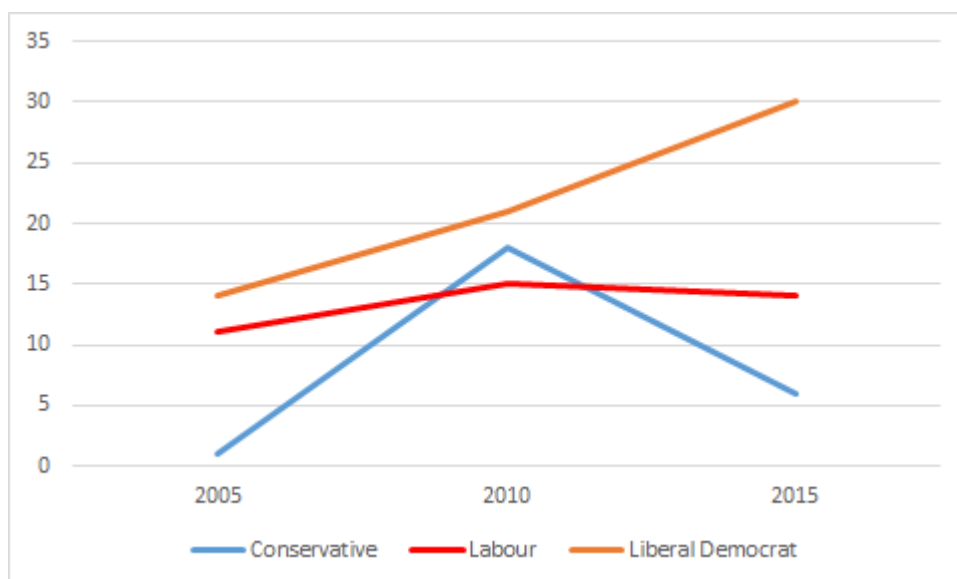
Pressure also came from the civic and private sectors. A public consultation on the Climate Change Bill produced more than 17000 responses from individuals that were 'overwhelmingly supportive' (HM Government, 2007 p 10) and the Confederation of British Industry (CBI), stated that 'this bill is a big 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 in mitigation and the catastrophic-risk framing of the Big Ask campaign 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 1), attesting to the short-lived nature of the competitive consensus.



*Figure 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 department ministers only a few individuals were keen to make emissions targets a priority, with the rest making 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.’*

### **Target setting amidst economic turmoil**

The five-yearly interim targets were an innovative and important element of the CCA’s longevity (see figure 2). In theory these carbon budgets were intended to provide an accountable 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 is 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).

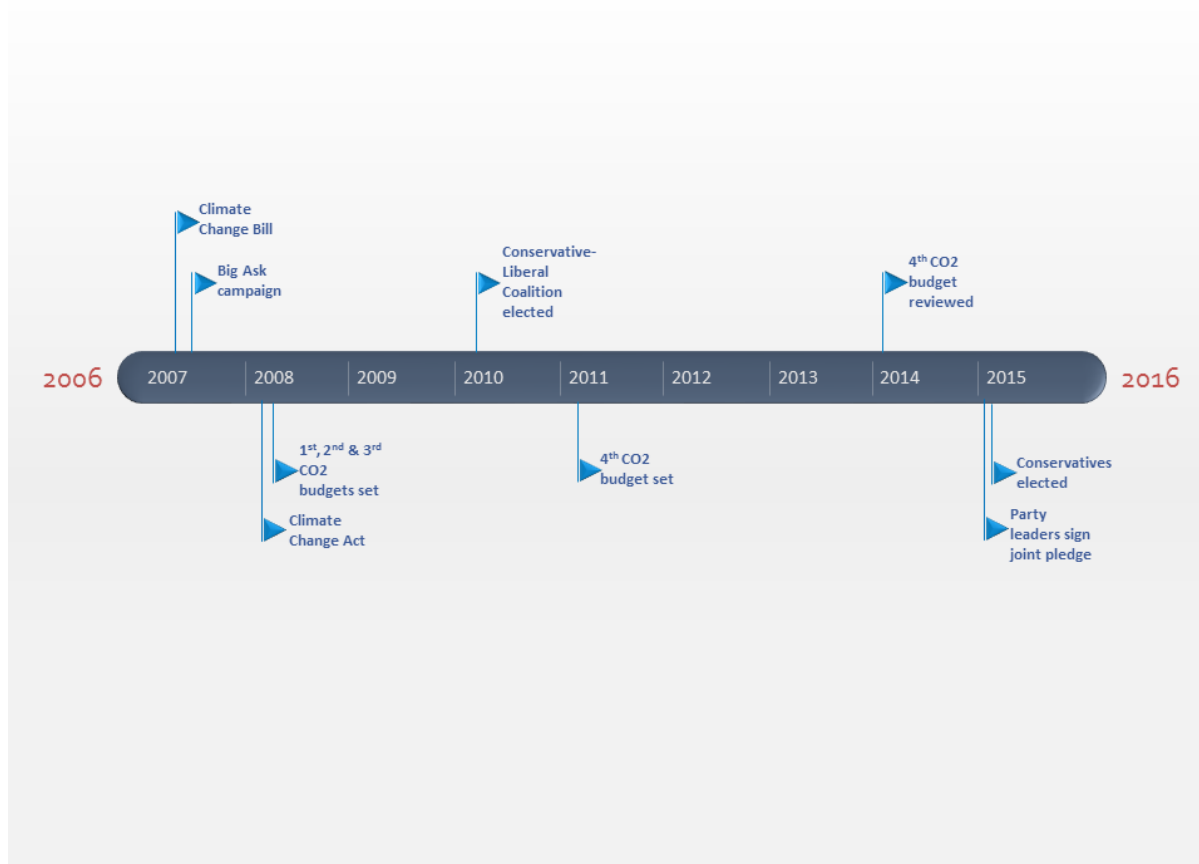


Figure 2: Timeline of national level climate policies

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 actual 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, p 2). 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 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 4<sup>th</sup> budget or the 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.

### ***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. However, the incoming minister of DECC set the tone by speaking of 'inheriting a department where policy costs on [household energy] bills had spiralled' and explicitly reframed 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 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 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 left 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 significant interest in the UN climate conference ('world politics' frame in figure 3). 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 commitment was adopted and rhetorically lauded, obscuring more detailed disagreements among policymakers about the potential costs of implementation.

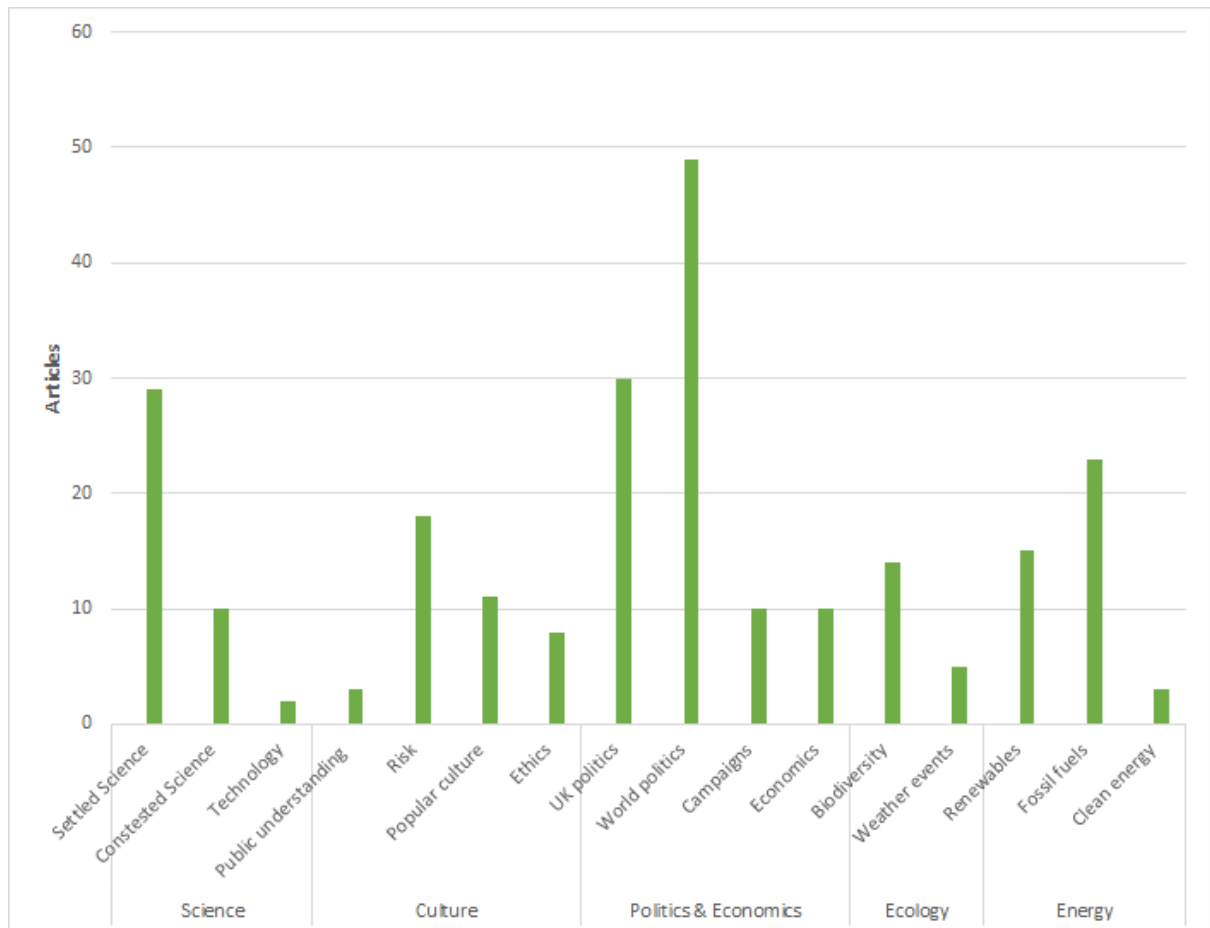


Figure 3: Frame analysis of UK national media coverage of climate change during election campaign period (29.03.2015 - 07.05.2015)

### 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 here 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 energy security and cheaper bills (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 all the green crap' (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, its 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, energy policy is still such a minor component of the bill.'*

The chair 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).

### ***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 (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)

### ***Policy instruments***

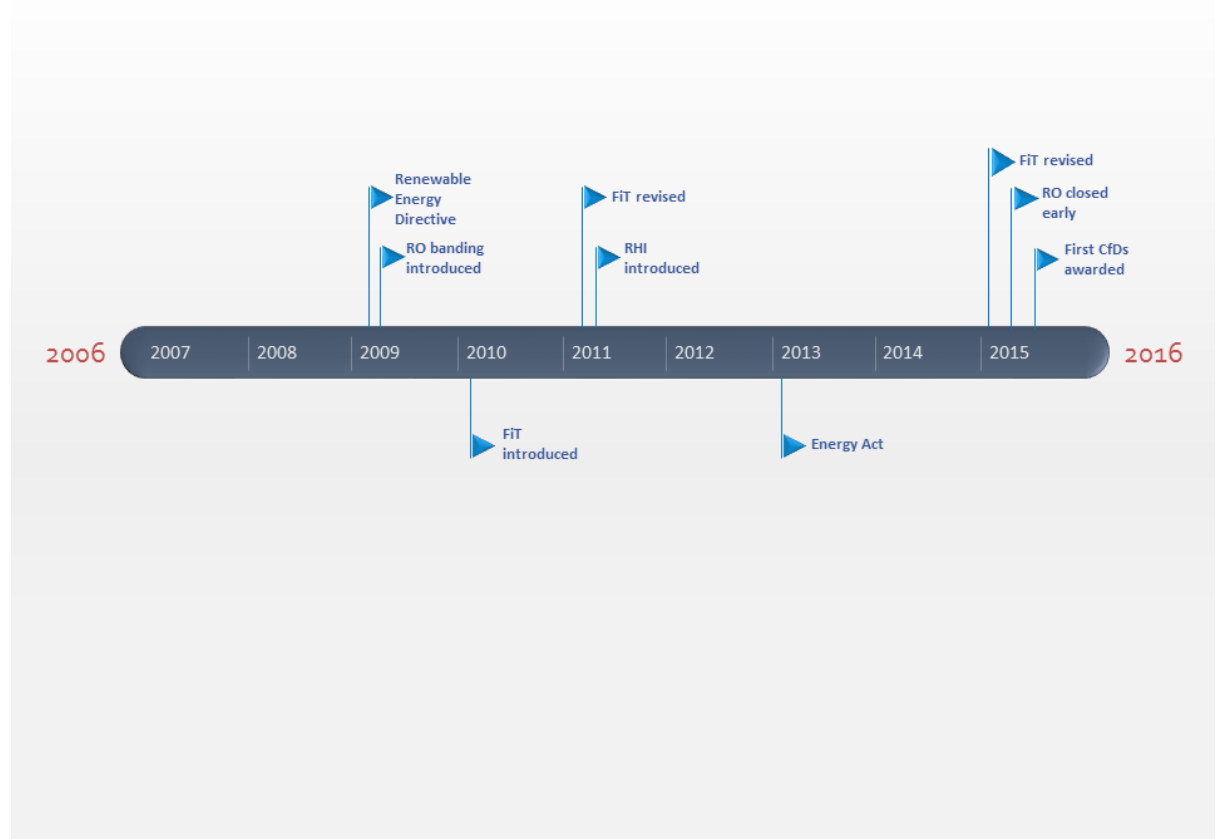
Although the overall number of low-carbon energy policy instruments increased between 2006 and 2016 (see figure 4), successive governments have evidently tried to contain their costs and complexity. In terms of instruments, the pre-existing Renewables Obligation (RO), which mandated energy providers 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 gone through many revisions) 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. Whereas 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.



*Figure 4: Timeline of low-carbon energy policies*

This issue became highly politicised by regular price increases and energy companies being accused of profiteering by then Labour leader Ed Miliband, who promised a 20 month price freeze and stricter regulations. The impact of renewables subsidies 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).

***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 perceived 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 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. 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, a 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. Discussion**

Direct attempts by politicians to re-interpret the CCA, or its four existing carbon budgets, as an over-reaction have been few and far between. 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., 2016) – had all been negated to a greater or lesser extent. For example, our analysis has shown that 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 has decreased (evidenced in interviews and

manifestos), as has national press coverage (Capstick et al., 2015). In the case of the latter, we have shown how attention often focused negatively on the politicisation of climate policies, especially the cost of renewable energy.

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 instruments to support renewable energy development. However, on closer inspection steps have been taken to scale back the generosity of subsidies, with policymakers and media reports alike describing 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 reforms of their long-term efficacy for increasing capacity (Parkes, 2012; Wood & Dow, 2011; Woodman & Mitchell, 2011). Tellingly, the discursive framing of supply-side energy policy moved away from a 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 appeals to economic rationality, 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 the concerns raised by some authors about weak institutionalisation<sup>1</sup> and the battle between vested/new interests (Pierson, 1993; Lockwood, 2013), our findings confirm that political support for renewable energy has been eroded. In addition, we have shown how this partially stemmed from a lack of commitment pre-dating the economic downturn that has been subsequently legitimised by a perceived over-investment in renewables. The positive effect of using energy and economics framing strategies (outlined by Pralle 2009) were thus turned on their head. Interim emissions targets and a politico-scientific knowledge consensus (two other recommended strategies) also struggled to prevent the salience of climate change from waning. Further research is needed to tell us more about why the renewables sector and climate policymakers have struggled to resist this rollback. For instance: why was so little made of the political nature of policy (re)calibration (Howlett, 2016); and what can be learnt about the influential power of economic ideas and discourses such as 'over-investment' and 'policy bubbles' (Maor, 2014; Schmidt, 2010).

---

<sup>1</sup> Since the time of data collection, the institutionalisation of climate change was further weakened by the abolition of the Department for Energy and Climate Change.



As the sense of urgency associated with risk-based climate discourses faded between 2006 and 2016, public and policymaker attention turned to the cost of ambitious emissions targets, specifically those associated with low-carbon energy. Not only did climate change slip down the priority list, but previous commitments began to be viewed as potentially expensive over-reactions that would lead to policy bubbles. Inadvertently compounding this trend, the cross-party consensus on climate change masked a lack of implementation and some quite contradictory policy decisions. For instance, our findings revealed hesitancy among senior decision-makers (noted elsewhere by Rickards, Wiseman & Kashima, 2014; Howlett, 2014) and highlighted the inconsistency of low-carbon energy policies aimed at decarbonising the electricity supply (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 portrayed a picture of sustained climate leadership at the international level and economic prudence in the national energy sector. Thus, cross-party consensus strategies and climate leadership framings such as those described by Giddens, 2009 and Carter and Jacobs, 2014 may be vital for strategic direction but they will need to be accompanied by close scrutiny of on-the-ground actions and a concerted effort to feed this analysis into public discourses.

## **5. Conclusion**

Beginning from a position of high salience, innovation and self-identified leadership in 2006, UK climate and low-carbon energy policy in 2016 appears to be stalling. Prolonged economic depression and a shift in political power from centre-left to centre-right played a part. During this period the costs associated with climate and low-carbon energy policies were reconsidered, with doubts being raised 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. The official justification was to avoid over-investment and whilst there is economic merit to this argument it only tells part of the story when taken 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 require, the assumption that this equates to a secure consensus distracts attention from a widening gap between rhetoric and action.

More generally, many of the assumptions about an incremental, technical and managerial approach to tackling long-term problems such as climate change are challenged. The possibility of 'over-reaction' to salient policy agendas and the ensuing feedback effects creating 'over-investment' or 'policy bubbles' implies that the default setting for policymaking is not one of purely rational and reflexive evidence-based decision making. This is not exactly a revelation for critical political science but it is an important reminder, and case study illustration, of the way flagship targets and complex policy instruments can begin to rapidly transform sectors of society but can also be pegged back by a shift in focus from efficacy to (economic) efficiency.

## References

Anderson, K., Bows, A. & Mander. 2008. From long-term targets to cumulative emission pathways: reframing UK climate policy. *Energy Policy*, 36, 3714-3722, DOI: 10.1016/j.enpol.2008.07.003.

Ares, E. (2011). *UK Fourth Carbon Budget: Standard Note SNSC 5966*. Retrieved from House of Commons Library:

<http://www.parliament.uk/business/publications/research/briefing-papers/SN05966/uk-fourth-carbon-budget>

Bauer, M. W., Jordan, A., Green-Pederson, C. & Héritier, A. (Eds.). (2012). *Dismantling public policy: preferences, strategies, and effects*. Oxford: Oxford University Press.

Baumgartner, F. R., Jones, B. D. & Mortensen, P. B. (2007). Punctuated equilibrium theory: Explaining stability and change in public policymaking. This is a chapter in Sabatier, P. A. and Weible, C. (2007) (Eds.) *Theories of the policy process* (2<sup>nd</sup> ed.). Boulder: Westview Press.

BBC (2006). In full: Cameron Speech (speech). Retrieved from BBC website: [http://news.bbc.co.uk/1/hi/uk\\_politics/5407714.stm](http://news.bbc.co.uk/1/hi/uk_politics/5407714.stm)

BBC. (2013). Energy policy: Government sees off rebellion over 2030 carbon target. Retrieved from BBC website: <http://www.bbc.co.uk/news/uk-politics-22764955>

Beamer, G. (2002) Elite interviews and state politics research. *State Politics & Policy Quarterly* 2, 86-96, DOI: 10.1177/153244000200200106.

- Benton, D., Francis, A. & Mount, A. (2016). *Beyond subsidy: how the next levy control framework can cut carbon at least cost*. Retrieved from Green Alliance website: [http://www.green-alliance.org.uk/Beyond\\_subsidy.php](http://www.green-alliance.org.uk/Beyond_subsidy.php)
- Blair, T. (2004). Full text: Blair's climate change speech (speech). Retrieved from The Guardian: <http://www.theguardian.com/politics/2004/sep/15/greenpolitics.uk>
- Blue, G. (2016). Framing climate change for public deliberation: what role for interpretive social sciences and humanities? *Journal of Environmental Policy & Planning*, 18, 67-84, DOI: 10.1080/1523908X.2015.1053107
- Boykoff, M. T. (2008). The cultural politics of climate change discourse in UK tabloids. *Political geography*, 27, 549-569, DOI: 10.1016/j.polgeo.2008.05.002.
- Cameron, A. (2015). Like making apple juice pay and alcohol tax: clean energy faces carbon tax. Retrieved from: <https://www.foe.co.uk/blog/like-making-apple-juice-pay-alcohol-tax-clean-energy-faces-carbon-tax>
- Capstick, S. B., Pidgeon, N. F. & Henwood, K. (2015). Stability and change in British public discourses about climate change between 1997 and 2010. *Environmental Values*, 24, 725-753, DOI: 10.3197/096327115X14420732702617.
- Carter, N. (2014). The politics of climate change in the UK. *Wiley Interdisciplinary Reviews: Climate Change*. 5, 423-433, DOI: 10.1002/wcc.274.
- Carter, N. & Jacobs, M. (2014). Explaining radical policy change: the case of climate change and energy policy under the British Labour Government 2006-10. *Public Administration*, 92, 125-141, DOI: 10.1111/padm.12046.
- CCC, (2008). *Building a low-carbon economy – the UK's contribution to tackling climate change*. Retrieved from Committee on Climate Change: <http://www.theccc.org.uk/publication/building-a-low-carbon-economy-the-uks-contribution-to-tackling-climate-change-2/>
- CCC, (2013). *Fourth Carbon Budget Review – part 2 – the cost-effective path to the 2050 target*. Retrieved from Committee on Climate Change: <http://www.theccc.org.uk/publication/fourth-carbon-budget-review/>
- CCC. (2016). Carbon budgets and targets. Retrieved from: <https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/>

- Charmaz, K. (2014). *Constructing grounded theory*. London: Sage Publications.
- Corner, A., Venables, D., Spence, A., Poortinga, W., Demski, C. & Pidgeon, N. (2011). Nuclear power, climate change and energy security: exploring British public attitudes. *Energy Policy*. 39, 4823-4833, DOI:10.1016/j.enpol.2011.06.037.
- Cox, R. H. & Béland, D. (2013). Valence, policy ideas and the rise of sustainability. *Governance*, 26, 307-328, DOI: 10.1111/gove.12003.
- DECC. (2009). *The UK Renewable Energy Strategy*. Department of Energy and Climate Change. Retrieved from UK Government website:  
[http://webarchive.nationalarchives.gov.uk/20100509134746/http://www.decc.gov.uk/en/content/cms/what\\_we\\_do/uk\\_supply/energy\\_mix/renewable/res/res.aspx](http://webarchive.nationalarchives.gov.uk/20100509134746/http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/res/res.aspx)
- DECC. (2011a). *Carbon Plan: Delivering our Low Carbon Future*. Retrieved from Department of Energy and Climate Change website:  
<https://www.gov.uk/government/publications/the-carbon-plan-reducing-greenhouse-gas-emissions--2>
- DECC. (2011b). *The UK Renewable Energy Roadmap: 2011*. Department of Energy and Climate Change. Retrieved from UK Government website:  
<https://www.gov.uk/government/collections/uk-renewable-energy-roadmap>
- DECC. (2012a). *Feed-in Tariffs Scheme: Government response to Consultation on Comprehensive Review Phase 2A: Solar PV cost control*. Department of Energy and Climate Change. Retrieved from UK Government website:  
<https://www.gov.uk/government/consultations/solar-pv-cost-controls-comprehensive-review-phase-2a>
- DECC. (2012b). *Energy Security Strategy*. Department of Energy and Climate Change. Retrieved from: <https://www.gov.uk/government/publications/energy-security-strategy>
- DECC. (2014). *Implementing the Electricity Market Reform*. Department of Energy and Climate Change. Retrieved from UK Government website:  
<https://www.gov.uk/government/publications/implementing-electricity-market-reform-emr>
- DECC. (2015a). Changes to renewables subsidies (press release). Retrieved from:  
<https://www.gov.uk/government/news/changes-to-renewables-subsidies>

DECC. (2015b). *Contracts for Difference (CfD) Allocation Outcomes for Round One*. Department of Energy and Climate Change. Retrieved from UK Government website: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/407059/Contracts\\_for\\_Difference\\_-\\_Auction\\_Results\\_-\\_Official\\_Statistics.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/407059/Contracts_for_Difference_-_Auction_Results_-_Official_Statistics.pdf)

Dryzek, J.S. and Lo, A.Y. (2014). Reason and rhetoric in climate communication. *Environmental Politics*. 24, 1-16, DOI: 10.1080/09644016.2014.961273.

EC. (2009). *Directive 2009/28/EC: Promotion of the use of energy from renewable sources*. Retrieved from European Parliament, Council of the European Union website: <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32009L0028>

Energy Act, Chapter 32, UK Parliament. (2013). Retrieved from UK Government website: <http://www.legislation.gov.uk/ukpga/2013/32/contents/enacted/data.htm>

Fischer, F. (2003). *Reframing public policy: discursive politics and deliberative practices*. Oxford: Oxford University Press.

Frankhauser, S., Gennaioli, C. & Collins, M. (2015) The political economy of passing climate change legislation: Evidence from a survey. *Global Environmental Change*, 35: 52-61.

Friends of the Earth. (2008). *History of the Big Ask*. Retrieved from: [https://www.foe.co.uk/news/big\\_ask\\_history\\_15798](https://www.foe.co.uk/news/big_ask_history_15798)

Friends of the Earth, (2012). *The Energy Bill: Decarbonising power by 2030*. Retrieved from Friends of the Earth website: [http://www.foe.co.uk/sites/default/files/downloads/energy\\_bill\\_2nd\\_reading.pdf](http://www.foe.co.uk/sites/default/files/downloads/energy_bill_2nd_reading.pdf).

Giddens, A. (2009). *The politics of climate change*. Cambridge: Polity Press.

Green Alliance. (2015). Cameron, Clegg and Miliband sign joint climate change agreement. (Press Statement). Retrieved from: [http://www.green-alliance.org.uk/leaders\\_joint\\_climate\\_change\\_agreement.php](http://www.green-alliance.org.uk/leaders_joint_climate_change_agreement.php)

Guardian. (2012). George Osborne letter to Ed Davey on gas and wind power *The Guardian*. Retrieved from: <http://www.theguardian.com/environment/2012/jul/23/george-osborne-letter-ed-davey-gas-wind>

Guardian. (2013). 'I don't want UK to be at forefront of tackling climate change', says Osborne. *The Guardian*. Retrieved from:

<http://www.theguardian.com/environment/2013/sep/28/climate-change-energy-bills-george-osborne>

Hajer, M.A. (1995). *The politics of environmental discourse: ecological modernization and the policy process*. Oxford: Oxford University Press.

Hajer, M. A, (2010). *Authoritative Governance: Policy-making in the age of mediatization*. Oxford: Oxford University Press.

Hickman, L. (2015). The Carbon Brief Interview: Lord Deben, part 1 (interview transcript). Retrieved from: <http://www.carbonbrief.org/blog/2015/02/the-carbon-brief-interview-lord-deben-part-one/>

Hill, K. (2009). *The UK Climate Change Act 2008 – Lessons for national climate laws: An independent review by ClientEarth*. Retrieved from ClientEarth website: <http://www.clientearth.org/climate-energy/climate-energy-publications/uk-climate-act-337>.

HM Government, (2007). *Taking Forward the UK Climate Bill: The Government Response to Pre-Legislative Scrutiny and Public Consultation*. Department of Environment, Food and Rural Affairs. Retrieved from UK Government website: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/22865/9/7225.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/22865/9/7225.pdf)

HM Government, (2010). *Government Response to the Second Annual Progress Report of the Committee on Climate Change*. Department of Energy and Climate Change. Retrieved from UK Government website: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/47934/616-ccc\\_report\\_response.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47934/616-ccc_report_response.pdf)

HM Government, (2011). *Implementing the Climate Change Act 2008: The Government's proposal for setting the fourth carbon budget*. Retrieved from UK Government website: <https://www.gov.uk/government/publications/implementing-the-climate-change-act-2008-the-government-s-proposal-for-setting-the-fourth-carbon-budget-policy-statement>

Howlett, M. & Lejano, R. P. (2012). Tales from the crypt: The rise and fall (and rebirth?) of policy design. *Administration & Society*, 45, 357-381, DOI: 10.1177/0095399712459725.

Howlett, M. (2014). Why are policy innovations rare and so often negative? Blame avoidance and problem denial in climate change policy-making. *Global Environmental Change*, 29, 395-403, DOI:10.1016/j.gloenvcha.2013.12.009.

Howlett, M. (2016). *Calibrating climate change policy: The causes and consequences of sustained policy under-design*. Manuscript submitted for publication.

Hughes, O. E. (2012). *Public Management and Administration* (4<sup>th</sup> ed.). New York: Palgrave Macmillan.

Ingham, J. (2013). Green taxes will hike up energy bills by almost £300 by 2020. *The Express*. Retrieved from: <http://www.express.co.uk/news/uk/436549/Green-taxes-will-hike-up-energy-bills-by-almost-300-by-2020>

Jones, B. D. & Baumgartner, F. R. (2005). *The politics of attention: How government prioritizes problems*. Chicago: University of Chicago Press.

Jones, B. D. & Baumgartner, F. R. (2012). From there to here: Punctuated equilibrium to the general punctuation thesis to a theory of government information processing. *Policy Studies Journal*, 40, 1-20, DOI: 10.1111/j.1541-0072.2011.00431.x.

Jones, B. D. & Wolfe, M. (2015). Public Policy and the Mass Media: an information processing approach. This is a chapter in Koch-Baumgarten, S & Voltmer, K (Eds.) *Public Policy and the Mass Media: the interplay of mass communications and political decision-making* (17-43). London: Routledge

Jones, B. D., Thomas III, H. F. & Wolfe, M. (2014). Policy Bubbles. *The Policy Studies Journal*. 42, 146-171, DOI: 10.1111/psj.12046.

Jordan, A. and Huitema, D. (2014). Innovations in climate policy: the politics of invention, diffusion, and evaluation. *Environmental Politics*. 23, 1-20, DOI: 10.1080/09644016.2014.923614.

Jordan, A. and Matt E. (2014) Designing Policies that intentionally stick: policy feedback in a changing climate. *Policy Sciences*, 47, 227-247, DOI 10.1007/s11077-014-9201-x

Kern, F., Kuzemko, C. & Mitchell, C. (2014). Measuring and explaining policy paradigm change: The case of UK energy policy. *Policy & Politics*. 42, 513-530, DOI: dx.doi.org/10.1332/030557312X655765.

Kuzemko, C. Energy depoliticisation in the UK: Destroying political capacity. *The British Journal of Politics & International Relations*, DOI: 10.1111/1467-856X.12068.

Lilley, P. (2012). *What is wrong with Stern? The failings of the Stern Review of the Economics of Climate Change* (Report no.9). Retrieved from The Global Warming Policy Foundation: [http://www.thegwpcf.org/content/uploads/2012/10/Lilley-Stern\\_Rebuttal3.pdf](http://www.thegwpcf.org/content/uploads/2012/10/Lilley-Stern_Rebuttal3.pdf)

Lockwood, M. (2013). The political sustainability of climate policy: The case of the UK Climate Change Act. *Global Environmental Change*. 23,1339-1348, DOI:10.1016/j.gloenvcha.2013.07.001.

Lorenzoni, I. and Benson, D. (2014). Radical institutional change in environmental governance: Explaining the origins of the UK Climate Change Act 2008 through discursive and streams perspectives. *Global Environmental Change*. 29, 10-21, DOI: 10.1016/j.gloenvcha.2014.07.011

LSE. (2013). Behind the headlines: the UK Energy Bill and decarbonisation target. Retrieved from: <http://www.lse.ac.uk/GranthamInstitute/news/behind-the-headlines-the-uk-energy-bill-and-decarbonisation-target/>

Maor, M. (2012). Policy over-reaction. *Journal of Public Policy*, 32, 231-259, DOI: 10.1017/S0143814X1200013X.

Maor, M. (2014). Policy bubbles: Policy overreaction and positive feedback. *Governance*, 27, 469-487, DOI: 10.1111/gove.12048.

Maor, M. (2015). Rhetoric and Doctrines of Policy Over- and Underreactions in Times of Crisis. Retrieved from Social Science Research Network: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2707511](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2707511).

Maor, M., Tosun, J. & Jordan, A. (2016). *The calculus of policy overreaction in climate policy*. Manuscript submitted for publication.

McTague, T. & Spencer, B. (2014). Family energy bills to be £70 HIGHER than ministers claimed... despite millions lavished of green energy schemes. *Daily Mail*.



Retrieved from: <http://www.dailymail.co.uk/news/article-2824056/Family-energy-bills-70-HIGHER-ministers-claimed.html>

Murray, J. (2013). Decarbonisation target narrowly defeated in House of Lords.

Retrieved from: <http://www.businessgreen.com/bg/news/2303531/decarbonisation-target-narrowly-defeated-in-house-of-lords-vote>

O'Neill, S., Williams, H.T., Kurz, T., Wiersma, B. & Boykoff, M., (2015). Dominant frames in legacy and social media coverage of the IPCC Fifth Assessment Report. *Nature Climate Change*, 5, 380-385, DOI:10.1038/nclimate2535.

Parkes, R. (2012). Can the UK meet its renewables targets? *Renewable Energy Focus*. 13, 24-27, DOI: 10.1016/S1755-0084(12)70011-X.

Parliament, UK. (2007). *Examination of Witnesses: Questions 32-39. Lord Lawson of Blaby and Professor David Henderson*. Joint Committee on the Draft Climate Change Bill: Minutes of Evidence. Retrieved from Parliament website:

<http://www.publications.parliament.uk/pa/jt200607/jtselect/jtclimate/170/7051604.htm>

Pielke Jr, R. (2009). The British Climate Change Act: a critical evaluation and proposed alternative approach. *Environmental Research Letters*, 4, 024010, DOI: 10.1088/1748-9326/4/2/024010.

Pierson, P. (1993). When effect becomes cause: Policy feedback and political change. *World politics*, 45, 595-628, DOI: 10.2307/2950710.

Pralle, S. B. (2007). Agenda-setting and climate change. *Environmental Politics*, 18, 781-799, DOI: 10.1080/09644010903157115.

Rickards, L., Wiseman, J. & Kashima, Y. (2014). Barriers to effective climate change mitigation: the case of senior government and business decision makers. *WIREs Climate Change*, 5, 753-773, DOI: 10.1002/wcc.305

Rudd, A. (2015). Amber Rudd's speech on a new direction for UK energy policy (speech). Retrieved from DECC: <https://www.gov.uk/government/speeches/amber-rudds-speech-on-a-new-direction-for-uk-energy-policy>

Rutter, J, Sims, S. & Marshall, E. (2012). *The 'S' Factors: Lessons from IfG's Policy Success Reunions*. Institute for Government. Retrieved from Institute for Government website:

<http://www.instituteforgovernment.org.uk/sites/default/files/publications/The%20S%20Factors.pdf>

Rutter, J. & Knighton, W. (2012). *Legislated Policy Targets: Commitment device, political gesture or constitutional outrage?* Retrieved from Institute for Government website: <http://www.instituteforgovernment.org.uk/publications/legislated-policy-targets>

Sabatier, P. A. & Weible, C. (2007). *Theories of the Policy Process* (2<sup>nd</sup> ed.). Boulder: Westview Press.

Schmidt, V. A. (2010). Taking ideas and discourse seriously: explaining change through discursive institutionalism as the fourth 'new institutionalism'. *European political science review*. 2, 1-25, DOI: [10.1017/S175577390999021X](https://doi.org/10.1017/S175577390999021X).

Simms, A. (2015). Where is Climate Change in the UK's General Election? *The Guardian*. Retrieved from: <http://www.theguardian.com/environment/2015/may/01/the-lamentable-absence-of-climate-change-from-uks-general-election>

Snow, D. A. (2004). *Framing Processes, Ideology and Discursive Fields*. This is a chapter in Snow, D. A., Soule, S. & Kriesi, H. (Eds.) *The Blackwell Companion to Social Movements*. Oxford: Blackwell Publishing.

Sovacool, B.K. and Watts, C. (2009). Going Completely Renewable: Is It Possible (Let Alone Desirable)? *The Electricity Journal*, 22, 95-111, DOI: 10.1016/j.tej.2009.03.011.

Stern, N. (2007). *The economics of climate change: the Stern review*. Cambridge: Cambridge University press.

Stirling, A. (2014). Transforming power: social science and the politics of energy choices. *Energy Research & Social Science*. 1, 83-95, DOI: 10.1016/j.erss.2014.02.001. Tickell, O. (2015). Leaked letter: Rudd admits 35% green energy undershoot, misled Parliament. *The Ecologist*. Retrieved from: [http://www.theecologist.org/News/news\\_analysis/2986190/leaked\\_letter\\_rudd\\_admits\\_25\\_green\\_energy\\_undershoot\\_misled\\_parliament.html](http://www.theecologist.org/News/news_analysis/2986190/leaked_letter_rudd_admits_25_green_energy_undershoot_misled_parliament.html)

Urry, J. (2016). *What is the future?* Cambridge, UK: Polity Press

Voß, J.-P., Smith, A. & Grin, J. (2009). Designing long-term policy: rethinking transition management. *Policy sciences*. 42, 275-302, DOI: 10.1007/s11077-009-9103-5.

Wood, G. & Dow, S. (2011). What lessons have been learned in reforming the Renewables Obligation? An analysis of internal and external failures in UK renewable energy policy. *Energy Policy*. 39, 2228-2244. DOI: 10.1016/j.enpol.2010.11.012.

Woodman, B. & Mitchell, C. (2011). Learning from experience? The development of the Renewables Obligation in England and Wales 2002–2010. *Energy Policy*. 39, 3914-3921, DOI: 10.1016/j.enpol.2011.03.074.

Wright, O. (2012). 'The Environmental Taliban': George Osborne slams Parliamentary climate change campaigners as Treasury fights to water down Energy Bill commitments. *The Independent*. Retrieved from: <http://www.independent.co.uk/news/uk/politics/the-environmental-taliban-george-osborne-slams-parliamentary-climate-change-campaigners-as-treasury-fights-to-water-down-energy-bill-commitments-8215495.html>

Wetherell, M. (2001). Debates in discourse research, in Wetherell, M., Taylor, S. & Yates, S. J. (eds). *Discourse theory and practice: a reader*. London: Sage Publications.

Yanow, D. (2000). *Conducting interpretive policy analysis*. London: Sage Publications.

Yeo, S. (2015). DECC: Amber Rudd reduces subsidy for renewable energy: *Carbon Brief*. Retrieved from: <http://www.carbonbrief.org/decc-amber-rudd-reduces-subsidies-for-renewable-energy>