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British Electricity Policy in Flux: Paradigm Ambivalence and Technological Tension

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Abstract

Drastic changes have taken place in UK electricity policy over recent years as government has sought to address the challenges associated with energy security, affordability and commitments to reduce carbon emissions. This study investigates the underlying policy changes between the year 2000 and 2012, particularly the Electricity Market Reform, as the most fundamental transformation in the British power market since liberalisation, almost three decades ago. It illustrates that although this policy had revised the long legacy of market-based and technology neutral electricity policymaking, it was yet to be claimed as a wholesale *paradigmatic shift*, because, as of 2012, it still suffered from a form of *paradigm ambivalence* and *socio-technical lock-in*. Furthermore, this research identifies an *accumulative* process of policy change explaining how a complex set of dynamics transformed the UK electricity policy mix. The thesis relies empirically on conducting 53 semi-structured interviews as well as scrutinising policy documents and relevant secondary studies.

The thesis draws relevant approaches within policy studies that attend to address continuity and change in policy frameworks, in particular the Advocacy Coalition Framework (Sabatier 1999) and Policy Paradigm (Hall 1993) perspectives. The study contributes to this literature in three distinctive ways. First, it questions the adequacy of existing frameworks for conceptualising policy change in ‘large-technical’ and ‘techno-centric’ subsystems, such as electricity policy. In return, it introduces *technology preference*, as a policy component capturing the socio-technical elements of electricity policymaking. Second, to explain *why* and *how* such significant changes had been undergone, it forms a bridge between the characteristics of policy change and the extent that existing policies are perceived as irreconcilable *policy failures*. By this, it, albeit, moves beyond the conventional typology of change drivers in policy literature. Third, this research extends the emerging concept of negotiated agreement and policy compromise as a pathway to evolutionary changes (Sabatier & Weible 2007). Inspired by Institutional Change theory (Mahoney & Thelen 2010), it proposes that compromised policies are often at the risk of policy *reversibility* and *retrenchment*, subject to any shift in the contextual conditions they have originated in. Overall, the thesis provides an understanding of one of the very complex and contemporary cases for studying policy change theories.

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Seyed Emamian, Edinburgh
Midnight, 31st of December 2013

Declaration

This is to certify that the work contained within has been composed by me and is entirely my own work, unless otherwise formally indicated. No part of this thesis has been submitted for any other degree or professional qualification. Some of the material used in this thesis has been published in the following papers:

- Emamian, SMS, The Analysis of Multi-Level Changes: The Case of UK Electricity Market Reform, The first International Conference of Public Policy, ICPP2013, Grenoble, France, June 2013.
- Emamian, SMS, The UK electricity policy change and paradigmatic shift, PSA 2013 conference, Policy Specialist Group panel, Cardiff, UK, March 2013.
- Emamian, SMS, The Politics of Innovating Governance in the UK Energy Policy: The Case of Electricity Market Reform, The Third Berlin Forum Innovation in Governance, Berlin, June 2012.
- Emamian, SMS, The Role of Energy Security Concern in the UK Energy Policy: The Case of Electricity Market Reform, 'New Energy Security Challenges' Workshop, London, May 2012.

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Date: 31st December 2013.....

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Glossary of Abbreviations

ACF	Advocacy Coalition Framework
BETTA	British Electricity Transmission and Trading Arrangement
BIS	Department for Business, Innovation and Skills
BBC	British Broadcasting Corporation
BERR	Department for Business Enterprise and Regulatory Reform
BP	British Petroleum
CBI	Confederation of British Industry
CCA	Climate Change Act
CCL	Climate Change Levy
CCGT	Combined Cycle Gas Turbine
CCP	Confederation of UK Coal Producers
CCS	Carbon Capture and Storage
CEO	Chief Executive Officer
CHP	Combined Heat and Power
CfD	Contract for Difference
CT	Carbon Trust
CCC	Committee on Climate Change
CEGB	Central Electricity Generating Board
CHPA	Combined Heat and Power Association
CM	Capacity Mechanism
CPF	Carbon Price Floor
DECC	Department for Energy and Climate Change
DEFRA	Department for the Environment, Food and Rural Affairs
DETR	Department for Environment, Transport and the Regions
DNOs	Distribution Network Operators
DTI	Department for Trade and Industry
EMR	Electricity Market Reform
EFET	European Federation of Energy Traders
EST	Energy Saving Trust
ET	Energy Transition
ETI	Energy Technology Institute
ETS	Emission Trading Scheme
EU	European Union
EC	European Commission
EG&SKTN	Energy Generation & Supply Knowledge Transfer Network
EUETS	European Union Emission Trading Scheme
EPS	Emissions Performance Standard
EPRG	Electricity Policy Research Group
EPG	Energy Policy Group
EWP	Energy White Paper
EIUG	Energy Intensive Users Group
FCO	Foreign and Commonwealth Office
FFL	Fossil Fuel Levy
FIT	Feed-in-Tariff
FoE	Friends of the Earth
GDP	Gross Domestic Product

GHG	Green House Gases
GUMG	Glasgow University Media Group
HC-Deb	House of Common- Debate
HMG	Her Majesty's Government
HMT	Her Majesty's Treasury
HCSTC	House of Commons Science and Technology Committee
IoD	Institute of Directors
InCluESEV	Interdisciplinary Cluster for Energy Systems, Equity and Vulnerability
IGov	Institute of Governance for Exeter Energy Group
IPE	International Political Economy
IEA	International Energy Agency
IPCC	International Panel on Climate Change
IPPR	Institute for Public Policy Research
JESS	Joint Energy Security of Supply Working Group
LCF	Levy Control Framework
LCTP	Low Carbon Transition Plan
Lib-Dem	Liberal Democrat
MP	Member of Parliament
MS	Multiple Streams
NETA	New Electricity Trading Arrangement
NFLA	Nuclear Free Local Authorities
NFFO	Non-fossil Fuel Obligation
NGOs	Non-Governmental Organisations
NG	National Grid
NIA	Nuclear Industry Association
NPF	Narrative Policy Framework
Offer	Office of Electricity Regulation
Ofgas	Office of Gas Supply
Ofgem	Office of the Gas and Electricity Markets
OECD	Organisation for Economic Co-operation and Development
OPEC	Organisation of the Petroleum Exporting Countries
OECD	Organisation for Economic Cooperation and Development
PIU	Performance and Innovation Unit
PEPP	Pro-market Energy Policy Paradigm
PE	Punctuated Equilibrium
PSJ	Policy Studies Journal
RO	Renewable Obligation
RPI	Regulatory Policy Institute
RSA	Royal Society for the encouragement of Arts, Manufactures and Commerce
RCEP	Royal Commission on Environmental Pollution
RSPB	Royal Society for the Protection of Birds
RCoJ	Royal Courts of Justice
REA	Renewable Energy Association
R&D	Research and Development
RD&D	Research, Development and Demonstration
RSP	Regulatory State Paradigm
SEPN	Sustainable and Education Policy Network
STRN	Sustainable Transition Research Network
SDRN	Sustainable Development Research Network
SEG	Sussex Energy Group

STS	Science and Technology Studies
TM	Transition Management
TNOs	Transmission Network Operators
TUC	Trade Union Congress
TSB	Technology Strategy Board
UK	United Kingdom
UKERC	UK Energy Research Centre
US	United States of America
UKCS	United Kingdom Continental Shelf
UN	United Nations
WWF	World Wildlife Fund
WTO	World Trade Organization
WWII	World War Two

Chapter One: Introduction

1.1. Thesis Introduction

This thesis analyses electricity policy changes in the United Kingdom (UK) from the year 2000 to 2012. It particularly seeks to provide an understanding of and an explanation for the introduction of Electricity Market Reform by the Department of Energy and Climate Change (DECC) in the early 2010s. Conceptually, this research draws upon the literature of policy studies as an analytical framework informing contextual explanations as well as facilitating theoretical contributions.

This introductory chapter aims to open up the discussion over the thesis subject, its analytical importance and the background literature. It shows why studying recurrent alterations in the UK electricity policy is academically interesting and how significant the potential contribution of this research is for policy knowledge. As such, it outlines the main research questions that this study has set out to answer and provides an overview of the structure of the thesis and further chapters.

1.2. The changing nature of UK electricity policy

While debates over energy policy, in general, have been intrinsically intertwined with the long history of the industrialisation process, electricity, in particular, has increasingly positioned itself at the heart of modern societies. It is, nowadays, characterised as the life blood of a wide range of daily activities, insofar as it is ‘taken for granted’ in all developed economies. As Patterson (1999: 1) describes, during the last century the power industry has improved the ‘course of *human history*’ and has made ‘*modern industrial society* possible’. From a policy studies point of view, electricity policy has always been a challenging case for studying and examining

policy change theories. In fact, it has shown an analytically 'prima facie relevance' to policy studies (Szarka 2010: 838)¹. It represents an essentially complex policy subsystem comprising a conflicting confluence of interests, ideas, values, politics and technologies. This is reflected in what Thomas Hughes (1983) points to as a combination of technology, institution and politics. As such, electricity systems 'incorporate not only technical and physical things..., but also utility companies, electrical manufacturers and reinforcing institutions such as regulatory agencies and laws'. Therefore, different approaches about how such a complex system should be governed and what socio-economic role it is expected to play have historically been the subject of highly politicised disagreements and policy discussions. Despite that, in the post-privatisation context, energy policy generally remained 'under-represented' in policy literature, due to the predominance of a technocratic and de-politicised perception of energy at that period of time (Kuzemko 2011: 17).

In recent years, studying policy changes in the electricity sector has arguably attracted a higher level of political involvement and academic interest in Britain, due to several reasons. Firstly, as the result of the electrification process, electricity is increasingly assumed to form a large part of the UK future energy mix as the 'dominant source' and the 'focal point of competition' (Butler 2013; see figure 23 in Appendix B, the Exxon Mobil Energy Outlook to 2040). Consequently, it is expected to play a much wider role across the whole economy and it is mentioned as potentially the main driver for meeting UK energy targets (DECC 2009b; CCC 2010). Secondly, as an early mover, for several decades the UK has inspired the global pattern of liberalisation and privatisation in the energy and electricity sector (IEA 2006: 9; Henney 2011; Kuzemko 2011: 16). Unsurprisingly, recent developments in electricity policy have been widely understood as the reverse signs of the 'British model'. In particular, Electricity Market Reform (EMR), introduced by the DECC in 2011-2012, was seen as 'the biggest transformation to Britain's electricity market since privatisation' (Davey, the then DECC Secretary of State, in Harvey 2012). Such substantial shifts and their international implications have become interesting research subjects for policy change scholarship.

Furthermore, since the early 2000s, the UK Government has shown a high political ambition to lead international climate policies and agreements. Such aspiration has led to a series of ambitious domestic climate obligations and international renewable commitments. This puts the power sector at the centre of political attention and academic analysis, given the fact that in all lead scenarios, the role of electricity has been thought crucial for meeting those legally binding targets. In addition, the UK electricity system has witnessed a period of intense security challenges, due to a combination of geopolitical and domestic factors. Security of supply has thus been raised as another national priority that the energy and power sector is expected to fully consider.

The fifth element in the significance of electricity policy relates to the technological characteristics of the UK power industry and infrastructure². Given the central role of technological choice in meeting electricity targets (IPCC 2007: 147; IEA 2007: 176; DTI 2007: 216; Foxon et al 2008: 1), it is widely understood that Britain needs a ‘far-reaching technological change’ to fulfil its obligations. It becomes even more of a challenging policy change with regards to the legacy of technology-neutral policymaking in the UK. Finally, it has always been evident that there is a correlation between changes in energy and electricity policy and changes in wider political and economic debates. The coinciding of energy liberalisation and overall economic strategies for privatisation and marketisation in the 1980s is one clear example. Thus, policy analysts might consider any fundamental shift in electricity policy as a mark for a paradigmatic shift in broader political and economic governance.

As the most recent emanation of electricity policy, all those dimensions of policy significance were arguably represented in EMR. Indeed, EMR was supposed to bring about a wide range of policy implications for the electricity system and other related policy sectors. It had challenged the predominant market policy paradigm that the UK introduced to the world of electricity policy in the 1980s. It was also supposed to actualise multiple ambitious and rather diverging sets of policy objectives comprising security, emission reduction and affordability. Likewise, it was designed to substantially shift the current fossil fuel-dominated technology mix of power

generation towards the low carbon family of technologies. Finally, EMR was expected to attract a level of financial investment in the next decade which would outweigh investments in almost all other economic sectors (Harvey 2012). Surprisingly, there are still some aspirations among UK policymakers that if EMR goes well, the UK could potentially continue the legacy of the liberalisation era by inspiring a new generation of electricity policymaking across the world (cf. Interview 47, Former member of DECC ministerial team, Conservative MP, February 2013).

Overall, if there was only one fact to highlight from the overview of UK electricity governance since the early 2000s, it would be the changing nature of electricity policymaking. Albeit from different viewpoints and for diverse reasons, it has been widely acknowledged that the then electricity system was in ‘crisis’ and in an urgent ‘need of change’ (Kern 2009: 2; Kuzemko 2011: 27). That is exactly where the starting position of this thesis originates. Therefore, it begins by addressing specific questions about *to what extent*, *why* and *how* the governance of the British electricity system has changed over the period of 2000-2012. Based on an empirical analysis of this case study, this thesis contributes most directly to the broad literature aiming at either characterising or explaining policy shifts undergone in the context of British energy and electricity governance (see Helm 2003, 2005, 2007; Mitchell 2008; Scrase & MacKerron 2009; Kern & Mitchell 2010; Rutledge 2010; Scrase et al 2010; Szarka 2010; Kuzemko 2011; Henney 2011; Skea et al 2011; Pearson & Watson 2012; Kern et al 2013). Methodologically, new empirical findings come from either the application of improved analytical frameworks, or the expansion of the analysis scope to cover all components of electricity policy, including technological dimensions, or even the extension of the analysis timescale to the end of 2012, when the process of EMR was already taking place but has never been analysed in the reviewed literature.

In order to inform those contextual observations, this study then returns to the literature of policy change. This is where the thesis suggests a set of conceptual contributions to diverse policy frameworks seeking to theorise the characterisation and the explanation of policy change. Amongst a wide range of policy theories, this thesis in particular adds respectively to the literature of policy paradigm (Hall 1993;

Oliver & Pemberton 2004; Kuzemko 2011; Kern et al 2013: 2), the theoretical field of Advocacy Coalition Framework (Wieble et al 2009; Nohrstedt & Wieble 2010; Wieble et al 2011; Nohrstedt 2011; Albright 2011), and the concept of Negotiated Agreement as a path to gradual transformation (Sabatier & Wieble 2007; Nohrstedt 2008; Mahoney & Thelen 2010; Ingold 2011).

1.3. Outlining the research questions

To analyse and explain the extent and dynamics of policy shifts in UK electricity governance between 2000 and 2012, this thesis has set out to answer three specific research questions. They are phrased as simply as possible in order not to bias the direction of answers and to remain open to in-depth contextual explanations. The first one is substantially a descriptive research question aiming to provide an in-depth understanding of *what* exactly had changed during a period of more than a decade. Particularly, it investigates those policy components of the UK electricity policy mix representing a form of policy shift, and the degree of change profundity. Conceptually, it is built upon a theoretical field dealing with conceptualising and defining what *different meanings* of policy change are and how they relate to each other. The literature aims to clearly determine under which circumstances a wholesale paradigmatic shift could be identified. The first research question is formulated as follows:

- With particular respect to EMR as the most recent reform in electricity policy, how could one *characterise* and *measure* changes undergone in the UK electricity policy between 2000 and 2012? Did EMR represent a significant policy change? If so, what were the *extent* and *aspects* of the change? Did it fulfil the characteristics of a wholesale *paradigmatic shift*?

Following the conceptualisation of *what* changes occurred from the early 2000s to 2012, the second research question aims at explaining *why* and *how* such significant changes emerged. This is an explanatory question seeking to provide an understanding of the causalities and the processes that shifted the UK electricity

policy mix, as identified in response to the first research question. As will be discussed later, there is a specific focus on the evolving role of the market policy paradigm in UK energy governance, from when it was seen as a complete orthodoxy to the period of massive market displacement under EMR. Below is a formulation of the second research question this thesis aims to answer:

- Having conceptualised what changes had occurred, in the previous question, we now ask *why* had those changes emerged? In particular, *why* did that process lead to the formation of EMR in 2011-2012? *Which* policy dynamics influenced its characteristics, and *how*? How could one *explain* the process of major shifts in the UK electricity policy mix?

Given the choice of technology at the heart of contemporary electricity policymaking, this is where this thesis turns to the last research question. It is another explanatory question that is assumed as a subsidiary of the second question. Whilst the previous one seeks to broadly explain major shifts in the UK electricity policy, the third research question provides an in-depth explanation of alterations in the technological dimensions of the electricity policy. Particularly, it focuses on gradual transformations in the role of nuclear and renewable technologies in the final low carbon generation mix.

- Given the choice of technology as central to the UK electricity policy debates in the early 2010s, *why* did the role of low carbon generation technologies, i.e. nuclear and renewable, alter over the period of the study? *Which* were the policy dynamics and *how* did they turn the divergent nuclear-renewable balance to a convergence and then a deep tension under the EMR policy process? How could one *explain* the gradual transformations in the low carbon electricity technology policy?

Answering these questions may perhaps be inextricably intertwined with conceptual discussions about what the policy literature offers to inform contextual explanations and to theorise empirical observations. Therefore, this thesis is also expected to draw a set of theoretical contributions for the literature of policy change. In order to clarify

those conceptual implications, the next chapter develops four analytical propositions that this thesis is to examine by applying them to the case of UK electricity policy.

1.4. An overview of the thesis structure and contributions

The principal intention behind this thesis is to provide a deeply contextual understanding of the UK electricity policy evolution. Therefore, answering the empirical research questions is the main factor in structuring the thesis's chapters. They are thus respectively represented in three empirical chapters of which they are chapters four, five and six. Although this study is an empirically oriented piece of work, the findings are by no means theory-free observations. This fact guides us to the importance of theoretical propositions, developed in the next analytical chapter, as the second element of the thesis structure. Throughout this thesis, each research question is investigated in a separate chapter by applying one, or occasionally two, conceptual propositions shedding light on empirical explanations and paving the way for theoretical contributions. The final feature that this thesis is structured around is different time frames within the whole period of the analysis. While all three empirical chapters analyse the years between 2000 and 2012, albeit with different research purposes and from diverse analytical lenses, they have been divided internally into several sections mainly on the basis of shorter pieces of time representing a form of policy change. Besides those three principal chapters, this thesis, as usual for all PhD works, also includes four extra chapters discussing analytical and methodological issues as well as highlighting introductory and concluding points. This structure will be elaborated in more detail below.

The next chapter is devoted to providing a conceptual lens and analytical framework for answering each research question. It thus comprises three main sections that respectively focus on the three main questions by bridging the gap between empirical observations and alternative theoretical explanations. As such, one section theorises how to define the changes undergone in the UK electricity policy between 2000 and 2012, whereas a further section provides a theoretical platform to explain why and

how those changes emerged. The last section discusses the literature of gradual policy changes to suggest how one could theoretically explain the shifts in nuclear and renewable policies. Through a review of the contemporary policy change literature, those sections provide an overview of what current theories offer to address various aspects of UK electricity policy evolution represented particularly in Electricity Market Reform (EMR). They then problematise the explanatory power of existing literature in capturing the complexities of this particular case study. Eventually, building upon developing a set of theoretical propositions, the second chapter not only facilitates analysing empirical findings and informing contextual explanations, it also provides an analytical base for examining new conceptual developments.

The third chapter is another introductory chapter discussing the overall design of the thesis and the methodologies this research is built upon. It briefly discusses the rationale behind approaching a case study for conducting this research. It then moves to determine the choice of case and the unit of analysis in the next section. The source of data, methods of data gathering and data analysis are the subjects of further two sections of chapter three. Finally, it clarifies the methodological limitations and challenges this thesis has encountered.

The fourth chapter is expected to provide an in-depth understanding of the UK electricity policy change from the early 2000s to 2012. By applying an improved framework developed in the analytical chapter, it shows that, as of 2012, the main changing features of UK electricity policy, manifested in EMR as a '*politically determined*' and '*technology specific*' policy package, still did not represent a wholesale *paradigmatic shift*. This is where the chapter points to analytical shortcomings of current literature in tracing shifts in technological features of electricity policymaking. As existing frameworks conceptualise, policy change is taking place upon a variety of four policy components and governance levels: policy paradigm, objectives, institutions and instruments. To cover this analytical gap, proposition 1 adds a *fifth* policy component, so-called *technology preference*, to the framework of characterising policy changes, at least in 'large-technical' or 'techno-centric' subsystems like the power sector.

Building upon the findings of the previous chapter in characterising the UK electricity policy change from the early 2000s to 2012, chapter five aims to explain overall *why* and *how* such significant changes occurred. In particular, it focuses on the evolving role of the market policy paradigm from when it was seen as a complete orthodoxy to a process of gradual displacement that eventually led to paradigm ambivalence in the period of EMR. It shows that throughout more than a decade of very complex policy process, there has been always a relation between the level and the nature of perceived *policy failures* and the actual policy changes on the ground. The chapter points to a widespread recognition of electricity market failure in low carbon technology delivery as the main driver of EMR³. Theoretically, it moves beyond the conventional typology of change drivers in policy literature based on the distinctive origin and nature of impetuses. It claims that policy failure is a *relative* concept to previous policy legacies which is imposed by *policy salient* drivers and is socially and politically *constructed* and *strategised* by competing advocacy coalitions.

Given the fact that the choice of low carbon technology, largely nuclear and renewable, was at the heart of UK electricity policy debate particularly under EMR, chapter six investigates *how* and *why* the nuclear-renewable balance had gradually shifted throughout the period of study, 2000-2012. It shows how already divergent nuclear and renewable advocacy coalitions compromised on an agreement as the result of an inevitable process of policy negotiation. It then explains how the ambiguous and complex design of EMR left the UK electricity policy fraught with *policy tensions* derived from intensive lobbying and contestation. As of 2012, it displays a reduction in the political significance of nuclear technology and a form of nuclear relapse. The chapter refers this either to the post-Fukushima context with the emergence of shale gas or a fall in political support of the Conservative party. Finally, it highlights an interrelation between nuclear-renewable reconciliation and a form of *internal defection* of extreme members of both advocacy coalitions. By examining proposition 4, it also expands the explanatory power of the ACF-originated concept of negotiated agreement. It suggests that compromised policies are often associated with *inherited tensions* due to *policy gaps* they are suffering from. Furthermore, the chapter

claims that those policies are in constant risk of *policy retrenchment* or even *reversibility* following any contextual shift or new coalitional balance.

The concluding part of this thesis summarises the main empirical findings and theoretical contributions of the research. Having deeply analysed the UK electricity policy change over a period of more than a decade up to 2012, chapter seven briefly reviews answers to the research questions based on empirical findings and rich observations. It also clarifies the challenges this case study brings into the literature of policy change and, in return, which theoretical contributions it proposes to policy scholarship. For this purpose, it returns in more detail to the conceptual framework and propositions developed in chapter two. Furthermore, it suggests some analytical lines that this research has not tackled but that potentially represent avenues for further research. Finally, the chapter closes with an account of some methodological and practical limitations that this thesis has encountered, and a few final reflections.

Chapter Two: Analytical Framework and Theoretical Propositions

2.1. Introduction

This chapter aims to provide a conceptual lens and analytical framework for further empirical chapters. Each further section focuses on the theoretical aspects of one of the main research questions. Respectively, section two facilitates answering *what* changes had been undergone in the UK electricity policy between 2000 and 2012, whereas a further two sections provide a theoretical platform to explain why and how those changes had emerged. Through a review of the contemporary policy change literature, they provide an overview of what current theories offer to address various aspects of the UK electricity policy evolution, particularly the Electricity Market Reform (EMR). They then problematise the explanatory power of existing literature in capturing the complexities of this particular case study. By developing a set of theoretical propositions, this chapter finally facilitates the analysis of empirical findings and informs contextual explanations as well as examining new conceptual developments. As an analytical framework, it is expected, overall, to form a bridge between research problems and alternative theoretical solutions (Yin 2003). It should thus not only pave the way of a selective process of data collection, by avoiding being overwhelmed by a huge amount of irrelevant data, but also needs to provide a conceptual base for further analytical generalisations.

2.1.1. Electricity system as a subject for policy studies

Electricity is central to modern societies and Britain has for decades led the world of energy and electricity policy towards liberalisation and privatisation. Nevertheless, recent developments in the UK electricity policy have marked a substantial shift from what was traditionally the ‘British model’. Electricity Market Reform (DECC 2011,

2012) is seen as ‘the biggest transformation to Britain's electricity market since privatisation’ and a ‘once-in-a-generation opportunity’ (Davey, the then DECC Secretary of State, in Harvey 2012). This is because EMR is assumed to bring a wide range of policy implications for the electricity system and other related sectors: it challenges predominant market policy paradigm; it is supposed to actualise multiple ambitious policy objectives, i.e. security, emission reduction and affordability; it is designed to change the energy technology mix; and it is expected to attract a level of investment in the next decade which outweighs investments in almost all other economic sectors (Harvey 2012). Consequently, the controversies over EMR have transcended the boundaries of conventional policy actors such as civil servants and interest groups to a heterogeneous range of players including civil society idealists, interest-oriented businesses, political parties and academic scholars.

Basically, there is a conflicting confluence of interests, ideas, values, politics and technological innovations that eventually shapes energy policy rather than each of them separately. Therefore, to analyse such a complex and fundamental shift in the UK electricity policy as EMR, this study needs an analytical framework that pays significant attention to the process of policy change and its interplay with contextual factors, technological innovations and ideas. To conclude, regarding the nature of research questions, this study links up theoretically with the broad literature of public policy process in general and policy change frameworks in particular.

2.1.2. Policy studies and change frameworks

Nowadays, public policy influences ‘almost all aspects of our lives’ (Cairney 2012: 22). It has been defined overall as the ‘sum total of government action’⁴. In reality, policy is made through a complex process where hundreds of participants interact in the context of interdependent political environments with nested institutional arrangements, uneven power relations, and uncertain scientific and technical information about problems and alternative solutions. Thus, policy studies typically try to theorise and inevitably simplify the complexities of policy process, analyse policy contents, and explain causally the drivers of policy changes⁵ (Howlett & Ramesh 1995).

Regarding the characteristics of UK electricity policy recounted before, the shifting nature of contemporary policy theories is generally seen as compatible with the analytical requirements of this study. Firstly, they reflect a clear departure from a scientific perspective to policy analysis, so-called ‘policy optimism’ based on two conventional metaphors of ‘comprehensive rationality⁶’ and ‘policy cycles⁷’. Instead, the modern literature provides a complex, controversial and highly politicised perception of policymaking with the involvement of rationally bounded policymakers⁸. Secondly, there is a move away from centralised and government-led policymaking towards a diffused form of ‘governance’. Modern policy environments assume a much broader participation of heterogeneous policy actors, within and outside the government, in an interactive-collective process of policymaking and policy change. Such a complex process is characterised by a ‘blurred boundary’ of formality⁹ and a form of ‘public-private interdependency’. It has thus switched the role of modern states, in Cairney’s (2012: 154) term, from ‘rowing’ towards ‘steering’¹⁰. Finally, the ‘technocratic’ (Hajer 1995: 275) understanding of policymaking ‘as usual’, based merely on material interests and institutions, is no longer inspiring modern policy frameworks¹¹. Instead, the ideational explanation of public policy puts ideas¹² at the centre of influencing policy change, albeit in a ‘symbiotic relationship’ with other factors¹³.

However, there is ‘no single unifying theory applicable to public policy as a whole’ (Cairney 2012: 282). In fact, the world of policy is ‘too complex to allow for parsimonious and universal explanation’. Policy frameworks differ based on their different analytical focal points¹⁴ and diverse questions they are supposed to answer within the complex realm of policy process. Therefore, a specific function that this chapter is expected to fulfil is to briefly review the literature of the main policy change theories and develop an analytical framework that sheds lights on empirical studies and facilitates answering the research questions and examining the propositions.

2.1.3. Outline of the chapter

With respect to the trinity of research questions, the next section focuses on the first descriptive question about how one could characterise and measure changes in the UK electricity policy between 2000 and 2012, particularly the most recent changes represented in the case of EMR: Did EMR represent a significant policy change? If so, what were the extent and aspects of the change? To facilitate answering this question, section two starts with a review of recent developments in policy change literature aiming at measuring and characterising policy and governance changes. Based on an analysis of early empirical results from the EMR case study and the most recent critical developments in the literature, the section then problematises current frameworks and points to analytical shortcomings in tracing shifts in technological features of electricity policymaking. It continues with developing the first proposition. Building upon the incorporation of insights from transition literature into policy change studies, this proposition provides a framework that paves the way for a more comprehensive understanding of the UK electricity policy change from the early 2000s to 2012.

To provide a theoretical platform for the conceptualisation of *why* and *how* those changes had emerged and, in particular, *why* that process led to the formation of EMR in the UK context, the third section reviews the literature of significant policy changes. While that literature provides an understanding of the different *nature* and *origins* of change drivers, it does not say anything about specific parameters conditioning the impact of a particular change impetus on public policymaking. To cover this theoretical gap, it moves beyond the conventional typology of change drivers in policy literature by developing the second proposition. Furthermore, by developing the third proposition, this section highlights the role of subsystem context and coalitional balance in imposing a particular meaning on as well as framing the policy impact of change drivers.

A further section also aims to facilitate answering the third research question about *how* one could explain a ‘gradual transformation’ represented in the shifting low

carbon technological balance of electricity policy under EMR. In order to theorise such incremental policy change, the fourth section is built upon the concept of ‘negotiated agreement and policy compromise’ (Sabatier & Weible 2007). Inspired by recent developments in ‘Institutional Change’ (see Thelen’s works in 2005, 2009), the fourth proposition theorises that compromised policies are always ‘vulnerable to shift’ following alteration in contextual conditions that policies have rested on. Finally, section five reviews and summarises the main theoretical lines that this study is founded upon.

2.2. Measuring and characterising policy changes

Policies function as a socio-political institution, once they get fully institutionalised (Clegg 2012). They potentially shape institutions, ideas, alliances, and other aspects of the policymaking arena (Skocpal 1995 cited in Silberberg 1997: 372). Consequently, they then reflect signs of ‘path dependency’, ‘policy feedback’ and ‘status quo advantage’ and thereby imply inertia and impose the challenge of ‘changeability’. However, different modes of change in terms of the ‘degree’ (continuous or disjuncture); the ‘process’ (gradual or radical); and the ‘type’ (aspects and dimensions) are likely to occur in public policies¹⁵ (Streeck & Thelen 2005: 9; Kuzemko 2011: 24). Given that change is seen as an intrinsically ‘diachronic’ and ‘relative’ concept (Hay 1999: 30), it is analytically difficult and disputable to rigorously assess. Nevertheless, there is a literature that seeks to provide an account of policy change, its different features and various levels. To provide a theoretical framework for dealing with the first descriptive research question as conceptualising UK electricity policy changes between 2000 and 2012, particularly EMR, this section starts with a literature review of various ‘methods of assessing policy change’ in terms of both *type* and *degree*¹⁶. The first concept refers to the *characterisation* of policy change, whereas the latter points to the *measurement* of its profundity. Having critically scrutinised previous works and early case results, this section eventually contributes to this literature through developing a theoretical proposition.

2.2.1. Literature Review: The typology of policy change

Policy change is defined overall as change in the policy aspects of a 'governmental program'. Such a broad definition of public policy imposes several ambiguities on the way of a precise understanding of policy change¹⁷. Therefore, clarifying what public policy means and which components it comprises is crucial in characterising change typologies. As Cairney (2012: 24) points out, any definition of public policy should analytically differentiate between what policymakers say; what they actually do; what they do not do; and what consequences their decisions bring about.

- **The Policy Paradigm Theory and change orders**

As the starting point for characterising policy change, the original work of Peter Hall (1993: 278) offers a four-layered hierarchical model of policymaking. From his viewpoint, a 'policy mix' or 'governance regime' (Kern & Howlett 2009) consists of four distinctive analytical levels called 'policy components'¹⁸. They include policy settings, policy instruments, policy goals and policy paradigm. Although the first three components had been already mentioned in policy literature, the introduction of policy paradigm as the fourth overarching policy component is something new that Hall has brought into the field.

Building upon the 'Kuhnian'¹⁹ image of scientific paradigms', Hall (1993: 279, 290) conceptualises policy paradigm²⁰ as an 'interpretive framework' of ideas and 'one feature of political discourse'. It not only influences 'numerous levels', from policy objectives to policy instruments and relevant settings, but also frames the fundamental understanding of policy problems. It shapes the key philosophy behind policymaking; frames the 'very problem' that needs to be addressed; cognitively 'filters information'; and 'focuses attention' on a particular range of solutions. In other words, the policy paradigm interpretively 'circumscribes what is feasible, possible and desirable' (Kern & Mitchell 2010: 6). In reference to the emergence of a pro-market liberalised paradigm in the UK energy policy since the 1980s, Mitchell (2008: 2) argues that it functions as a 'band of iron' holding together a framework and constraining 'certain actions and policies'. It is largely 'taken for granted' through

creating a form of academic and political ‘orthodoxy’ over a period of decades²¹ (Kuzemko 2011: 17).

Having conceptualised multiple levels of policymaking, any policy change could be embodied in different forms of alteration in policy components. Respectively, depending on how many and which policy components have shifted, policy change could eventuate in various degrees of profound consequences. It is exactly what Hall suggests to bridge between the *characterisation* and the *measurement* of policy change. With respect to the hierarchy of policy components, Hall (1993: 278) simply conceptualises different orders of change. ‘The first order change’ implies adjustment in the level or setting of current policy instruments, whereas change in policy instruments and techniques themselves is labelled as ‘second order change’. Together they reflect ‘normal policy making’ and ‘incrementalism’. He then characterises a ‘third order change²²’ entailing a shift in policy goals and their priorities and hierarchy. Once all policy components alter simultaneously, there is a status of ‘radical’ change in the governance system called a ‘*paradigmatic shift*’.

In addition to Hall's original policy components, a group of scholars have recently introduced another dimension to characterise a paradigmatic shift more precisely (Kern & Mitchell 2010: 4; Kuzemko 2011; Kern et al 2013: 2). Building upon the work of Oliver and Pemberton (2004) and Mitchell (2008), they argue that ‘the structure of governance institutions’ also *allows* or *constrain* the new policy paradigm’s embeddedness: ‘the movement from one policy to another is likely to be preceded by significant shifts in the locus of authority over policy’ (Hall 1993: 280). In other words, what provides ‘legitimacy and credibility’ for policy paradigm is the ‘political authority’ it enjoys (Bernstein 2001: 30). Therefore, they offer four²³ inter-related policy components and ‘constituent levels of governance’, visualised in figure 1: ‘1) policy paradigm (interpretive framework of ideas about the subject and how it should be governed), 2) policy goals, 3) policy instruments and 4) governance institutions’ (Kern et al 2013: 5). Altogether, they constitute a ‘governance system’ or a ‘policy mix²⁴’. A fully-fledged paradigmatic shift thus could be identified, once a clear shift in all policy components occurs simultaneously.

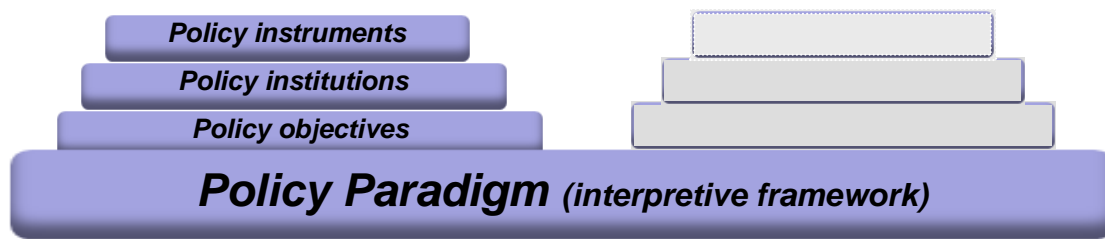


Figure 1: The four-layered model of policy mix and governance level

Regardless of such precise characterisation and measurement, the concept of policy paradigmatic shift generally implies a ‘clear break’ in previous framework of practices, which is rather ‘complex’ to define and ‘difficult to assess’. This is what Kuzemko (2011: 14, 18) points out as a common problem in the application of policy paradigm literature in policy studies. To some extent, it is also the case for a few studies about UK energy governance that have applied the concept of policy paradigm and change (Helm 2005; Mitchell 2008; Kern 2010; Kern & Mitchell 2010; Kuzemko 2011). In his seminal works, Dieter Helm (2005, 2007) has focused mainly on objectives and less clearly on policy instruments. From his point of view, paradigmatic shift is analogous with an alteration in ‘context’ and ‘ideas’ and is embodied in new policy ‘objectives’ and ‘instruments’ (Helm 2005: 1). Consequently, the linkages between energy policy and the wider system of economic governance in his work are overlooked. By contrast, the role of an ‘overall socio-economic paradigm’ has been acknowledged by the work of Mitchell (2008). She argues that neo-liberal ideas have dominated ‘both energy and wider macroeconomic policymaking in the UK and beyond’. Subsequently, the four-folded model of policy paradigmatic shift, albeit with small changes²⁵, has been applied in a series of recent studies of the UK energy policy evolution (Kern & Mitchell 2010; Kuzemko 2011; Kern et al 2013).

With regards to other forms of policy change, the contribution of policy paradigm literature is still limited to the typology identified initially by Hall’s change orders. While there is a tendency in recent policy literature to ‘measure varying degrees of change’ which ‘fall outside a paradigmatic shift’ and significant change (Kuzemko

2011: 257), new developments have just acknowledged them vaguely, albeit with neither clear definition nor characterisation.

- **The Advocacy Coalition Framework and the minor-major dichotomy**

There is another change typology proposed by the Advocacy Coalition Framework²⁶ (ACF) (Sabatier 1999). To measure different forms of policy changes, it provides 'clear-cut dimensions' through a *major-minor* dichotomy. This model of measurement is characterised in a clear analogy with the ACF's proposed hierarchy of policy beliefs²⁷. A minor policy change represents an alteration in just *secondary aspects* of a policy proposal, implying empirical settings and specific designs, whereas shifting the *policy core aspects* of a 'governmental program' forms a major policy change (Nohrstedt 2008: 109). As the ACF defines, the policy core aspects refer to a set of subsystem-wide features of a policy like the policy objectives and values, main challenges, their causes and overall solutions as well as policy proposals. Overall, this typology is analytically compatible with other definitions found in the literature (e.g. Cortell & Peterson 1999; Rose & Davies 1994; George 1979; Hall 1993; Howlett & Ramesh 2003).

What is analytically missing in the ACF policy change typology is the role of the *deep-normative aspects* of policies. Given that such deep-normative features are highly embedded and widely cross-sectoral, the ACF conceives them as rather 'non-negotiable' and 'unchangeable', particularly through a process of sub-system wide policy change. Nonetheless, having compared two analytical concepts, Hall's definition of the policy paradigm fits arguably well with what Sabatier acknowledges as 'deep-normative beliefs'²⁸.

- **The Policy Paradigm theory and the ACF as complementary**

Regardless of epistemological and explanatory differences that exist, the ACF and Policy Paradigm theory could synthetically complement each other in characterising and measuring policy change. On the one hand, there is an overall compatibility between the concepts of policy components and what the ACF refers to as policy aspects. On the other hand, while the introduction of paradigmatic shift could cover the ACF's shortcoming in measuring the highest level policy changes, i.e. shift in

deep-normative policy aspects, the minor-major dichotomy would offer a conceptual tool to the Policy Paradigm theory for detecting other, less significant levels of change. Governance change, as such, is understood as taking place upon a variety of levels and through a set of policy components. Accordingly, this chapter conceptualises a hierarchical three-layered change typology, which is well consistent with both the Policy Paradigm and the ACF frameworks. Table 1 summarises this conceptual relation.

Table 1: The complementarities between the Policy Paradigm theory and the ACF

<i>Measuring Change Levels</i>	<i>The ACF's characterisation (Policy aspects)</i>	<i>Hall's characterisation (Policy components)</i>			
		<i>Policy instrument</i>	<i>Policy institution</i>	<i>Policy objective</i>	<i>Policy paradigm</i>
Minor change	Secondary aspects	✓	Probably	—	—
Major change	Core policy aspects	✓	✓	Probably	—
Paradigmatic shift	Deep-normative aspects	✓	✓	✓	✓

2.2.2. The problematisation of policy change literature: Technology is still missing

Having applied the synthetic model of change typology on a decade of UK electricity policy evolution, it has gradually become apparent that policy-driven models, i.e. those derived from merely policy literature, are analytically unable to characterise all features of a policy change. Although in early studies, technical issues like system structure or technology mix were seen as something secondary

to other policy components²⁹, recent developments have critically pointed out that the current model of policy mix does not fully capture actual ‘*practices and outcomes on the ground*’ (Lockwood et al 2013: 12). Central to this set of policy impacts is *technological change*. In a direct challenge, Kern et al (2013: 20) argue that policy paradigm theory has ‘little to say’ about ‘how the energy system *operates*’ and ‘deliver *technologies*’ and what the ‘*characteristics of socio-technical system*’ are. In a similar statement, Bolton and Foxon (2013: 11) highlight the central role of technology in analysing ‘contemporary energy governance’.

This fact has theoretical roots in a long history of criticising policy studies for ignoring ‘socio-materiality’ and ‘physical machinery’ in their analysis (Joerges 1996: 3-4). By presenting the electricity system as a typical example, Thomas Hughes (1983) introduced the concept of ‘large technical systems’ characterised by ‘high technology intensity’ and ‘hierarchical complexity’ (Hodby 1998: 5; 2005: 1115). From his point of view in such mixed systems of material and non-material components, ‘technical and social systems are inextricably inter-linked’ and ‘societal functions’ are being fulfilled largely through ‘technical objects’ (Joerges 1996: 3). In other words, ‘shift in *technological base*’ is ‘central to’ and ‘corollary of’ overall electricity system change³⁰ (Winkel 2012: 5; Winkel et al 2012: 5). The following developments then came to the conclusion that generally social science, including policy studies, should take ‘technical rationality’ and ‘techno-structure’ more seriously into consideration (Joerges 1996: 4-5).

Given the ideological stance of neo-liberal energy paradigm not to ‘pick a winner’ and not to decide about ‘technology portfolio’ (Scrace et al 2010: 25), so-called ‘*technology neutrality*’, the analytical lack of policy frameworks in detecting the technological component of policy mix has arguably been less visible during recent decades. Nonetheless recently, with respect to the substantial shift in the nature of UK energy policymaking, this problem became increasingly challenging. Particularly, the initial findings of the EMR case study demonstrate how significantly the substance of electricity policy has moved ‘*beyond target-*

setting' and *'institutional reforms*' towards *'technology specific*' and *'delivery focused*' policymaking. As a former member of DECC ministerial team said:

Well EMR is obviously a big policy change, yes, the main mechanisms is first of all it provides for the first time a serious way of encouraging all three of the low carbon electricity generating families, so gives us the means *to deliver* decarbonisation of the power sector... It is a *technical solution* to a policy objective, which at the last election we shared by all three major political parties... So EMR is substantially about *practicality* and *delivery*, as a *vehicle for policies* it shows change in means and direction of *policy delivery*... (Interview 46, Former member of DECC ministerial team, December 2012)

The central role of technology in contemporary electricity policymaking is also reflected explicitly in a quotation from an interview with an ex-member of DECC ministerial team that 'the main distinctive factor in the EMR is the *structure of technology*' (Interview 47, February 2013). This fact is in clear contrast with a long period of 'technology-neutral' policymaking in the UK liberalised electricity system. The following comment from an interviewee illustrates how current policy debates are largely centred on competing approaches to technological dimensions of electricity policy.

Opinions differ about the *mix of technologies, fuels* and other measures that should be prioritised. The differences of opinion are partly due to technical and economic uncertainties, and partly due to *social and political preferences* of different *advocacy groups*. (Watson 2013)

2.2.3. Socio-technical transition as a complement to policy change literature

To bridge the gap between material and non-material components of large technical systems, there is a tendency in the policy field to incorporate insights from Science and Technology Studies (STS). The main rationale behind this synthesis is that STS provides a systematic approach to the electricity system in which components including technology or policy 'are not studied in isolation' (Bolton & Foxon 2013: 3). Such systems consist of both 'technological system' and 'policy regime' (Geels 2004; Kern & Howlett 2009: 392). In other words, while there is still, in theory, a 'little cross-over' between technology studies and policy literature, in practice technology policy cannot 'be segmented off' from

wider electricity policy change (Winskel et al 2012: 1, 2, 25). In short, technology preference is a ‘*central matter*’ for contemporary electricity policy³¹.

As a specific theory, several recent studies suggest that the literature of Socio-Technical Transition (STT) is supposed to provide a complementary ‘useful framework’ in explaining policy change in complex socio-technical systems (Bolton & Foxon 2013; Kern et al 2013; Kuzemko 2013). While early versions of this theory were highly criticised for a form of ‘de-politicised’ and ‘technocratic’ account of technological transformation (Shove & Walker 2007; Smith & Stirling 2007; Kern & Smith 2008; Meadowcroft 2009, Kern & Howlett 2009; Kern 2012), recent developments in turn have tried to interconnect the two separate analytical worlds of policy and technology studies (Kuzemko 2013; Geels 2013). In consistence with Hughes (1983) characterisation of electricity system as a ‘*seamless web*’ incorporating a ‘combination of technologies and institutions’, STT introduces a socio-technical configuration composed of a ‘heterogeneous web of relations’ (Law 2009) amongst technologies, actors, rules, policies and fuels (Kern 2010; Pearson et al 2012; Bolton & Foxon 2013). STT aims to provide a ‘holistic’ understanding of how policies change and technologies diffuse derived from the co-evolution of material and human actors (Lovel 2007: 2500). In figure 2, Kern (2010) has displayed a typical configuration of the electricity socio-technical system³².

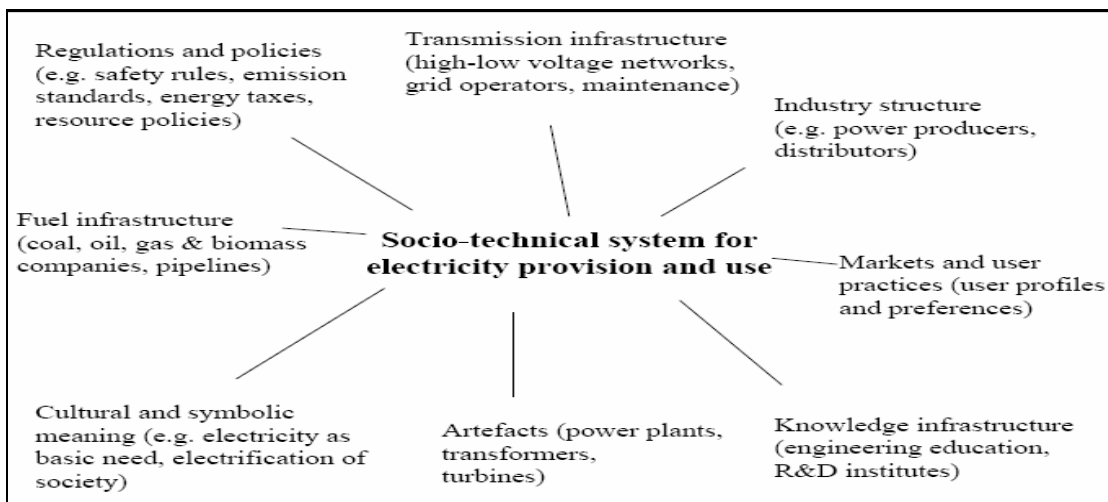


Figure 2: The socio-technical system for electricity provision and use (Kern 2010: 9)

One important consequence of such a complex socio-technical configuration is the logic of *'lock-in'* and *'path dependency'* (Unruh 2000). It means that once a specific *combination* of technologies and institutions dominates, it tends to favour particular technological options and solutions (Watson 2013). In other words, socio-technical *'interdependencies'* like *'institutional lock-in'*, *'societal acceptability'* and technical characteristics constrain the possibility and direction of change. As a clear instance, the *'dominant design'* of the UK electricity system, like other mature electricity systems, has a set of specific features like *centralised* fossil-fuel generation, dominated by *large-scale* technologies and vertically integrated utilities³³. Unsurprisingly, any new technology that is not fully matched with this set of characteristics and institutional arrangements is supposed to be the subject of system resistance or adaptation. This path-dependence feature is embodied in the design of *'long-lived* electricity infrastructures³⁴', the portfolio of investments, and the configuration of incumbent regime players and actors³⁵. In a scenario-building study, Pearson et al (2012) illustrate how different design of the socio-technical system and actor configuration could lead to a set of diverse technological results and generation mix (See figure 20 in Appendix B).

To summarise, on the basis of early findings of the EMR case study, it seems that the *choice of technology* in the electricity system is associated with policy dimensions about how *'power supply is organised, designed, structured, operated and controlled'* (Wolsink 2012). In other words, the *dominant design* of the electricity socio-technical system³⁶ depends heavily on inherited preferences and policy directions in terms of a set of institutional arrangements like the level of *centrality, scale, structure* and *generation-mix*.

2.2.4. Proposition 1: technology preference as a policy component

Building upon the incorporation of insights from transition literature into policy change studies, this sub-section aims to provide a theoretical framework by developing a clear proposition. In order to answer the first descriptive research question about the extent and aspects of policy change in EMR, chapter four is

expected to empirically examine the applicability of that framework in more than a decade history of the UK electricity policy change.

Arguably, there are some theoretical complementarities between technology studies and policy change literature. On the one hand, regarding the nature of the electricity system as a ‘large-technical’ and ‘techno-centric’ subsystem, measuring and characterising policy change exclusively on the basis of current policy frameworks as shown in table 1, results in an analytical shortcoming in taking ‘socio-materiality’ and technological preference of electricity policies into account. On the other hand, transition literature and Socio-Technical System theory have received long-standing criticism in failing to capture well the political complexities of the transition process (Shove & Walker 2007; Smith & Stirling 2007; Kern & Smith 2008; Meadowcroft 2009, Kern & Howlett 2009; Kern 2012).

Together, the policy change framework and STT could open up an analytical possibility of characterising policy changes, more rigorously, in ‘large-technical’ and ‘techno-centric’ subsystems such as the electricity system. The main argument here, encapsulated in proposition 1, is that without considering shifts in the characteristics of socio-technical systems, the full characterisation of policy changes is yet analytically incomplete. In fact, this new definition of change implies ‘wider transformations’ than just ‘normal policy regimes’ that includes socio-technological systems³⁷ as well. Accordingly, table 2 provides a visualised summary of an improved framework that this section proposes for both characterisation and measurement of change in techno-centric subsystems.

***Proposition 1:** In ‘techno-centric’ policy subsystems, the characteristics of socio-technical systems constitute a significant component of policymaking. They should be taken as an independent **policy component** in characterising and measuring policy changes, called here **technology preference**.*

Table 2: The completed five-layered framework of policy mix for ‘techno-centric’ subsystems

<i>Policy Change levels</i>	<i>Policy components and characteristics (modified Hall’s model)</i>				
	<i>Policy instruments</i>	<i>Policy institutions</i>	<i>Technology preference (socio-technical configuration)</i>	<i>Policy objectives</i>	<i>Policy paradigm</i>
Minor change	✓	Probably	Probably	—	—
Major change	✓	✓	✓	Probably	—
Paradigmatic shift	✓	✓	✓	✓	✓

2.3. Explaining major policy changes

The process of policy change is characterised by a complex, messy, lengthy and evolutionary nature (Kuzemko 2011: 223). Thus, policy change frameworks deal conceptually with the question of ‘how can we explain periods of relative stability, even inertia, which are then succeeded by often dramatic policy change?’ (Meijerink 2005: 2) With regards to the complexity of change process, any attempt to understand how policies change requires simplifying assumptions and building clear theories. The challenge is how to simplify, what to emphasise, and what to ignore. Thus, as Wilson (2000: 255) points out ‘the problem of the policy change literature is that different studies focus on different dimensions of change process. They highlight one dimension but ignore others’.

With respect to the shifting nature of UK electricity policy by late 2012, particularly a substantial distance from market policy paradigm in EMR, this research aims at explaining *why* and *how* those major changes have emerged and *which* policy dynamics have influenced their characteristics. To answer this explanatory question, this section relies on the literature of policy change and seeks to provide a convincing account of the main change drivers. Then it bridges the gap between what is already recounted in the literature and the policy mix framework developed earlier in section two. As such, it points to theoretical shortcomings that the current literature suffers from and tries to cover them. Finally, it will develop a proposition for empirical examination in further chapters.

2.3.1. Literature review: policy change frameworks and change drivers

For more than two decades, three major ‘reference approaches’ have clearly dominated the field of policy change: the Advocacy Coalition Framework (ACF) (Sabatier 1987, 1988; Sabatier & Jenkins-Smith 1993), the Punctuated Equilibrium theory (PE) (Baumgartner & Jones 1993), and the Multiple Streams approach (MS) (Kingdon [1984] 1995). Since all frameworks belong to the modern generation of policy theories³⁸, they have been proved to offer ‘widely contrasting and accepted accounts’ of policy change. Nevertheless, there is still a remarkable criticism that they have been developed separately and without sufficient mutual theoretical interaction and cross-boundary synergy (Real-Dato 2009: 117). There are also other policy process frameworks dealing partially with the notion of policy change³⁹. Amongst them, the Policy Paradigm theory (Hall 1993; Campbell 1998; Hay 2001, 2004; Kuzemko 2011) with an exclusive focus on paradigmatic shift level has hardly tried to explain policy change. It has been largely utilised to measure the level of policy change, as shown in the previous section. In terms of explaining the process of change, the Policy Paradigm theory primarily addresses why policies are path-dependent, continuous, and cognitively resistant to substantial shifts more than instability and change. Therefore, this section starts with a review of the first three main ‘reference’ frameworks.

With regards to the application of policy change theories in explaining UK electricity policy changes and EMR in particular, none of the theoretical frameworks above has been tested precisely in this context. There are a few partial applications in a limited time frame, mainly before EMR by 2010. Helm (2005, 2007) has used a version of policy paradigm; Mitchell (2008) is concerned with sustainable energy policy; Kern (2010) has exploited discursive institutionalism in innovation policy; Szarka (2010) has focused on wind policy in the Europe through the lens of the ACF; and Kuzemko (2011) has developed policy paradigm to explain UK overall energy policy change by 2010.

- **The Punctuated Equilibrium Framework**

The Punctuated Equilibrium Framework (PE) seeks to address both policy stability and change under one framework through a generalisable 'common pattern'. It recognises the existence of 'an institutionalised policy monopoly'⁴⁰, as the main mechanism behind long-term policy stability. Monopolistic policies could remain stable for a long time and 'dampen pressures for change' (Meijerink 2005: 9)⁴¹. Once pro-change actors become able to redefine issues, convey a 'newly fashioned policy image' and find the 'venues' to institutionalise the new policy image, a form of significant and non-incremental policy change⁴² is brought about (Meijerink 2005: 10). This implies that PE sees policymaking as 'a continual struggle between the forces of balance and equilibrium and the forces of destabilisation and contagion' (Jones & Baumgartner 2012). As is normal for almost all policy change frameworks, PE points to external 'focusing events' as the main driver of such radical change⁴³ (Nohrstedt 2008: 9).

- **The Multiple Streams Framework**

The Multiple Stream framework (MS) is built on three rather independent 'streams of actors and processes' in problems, policies and politics (Kingdon 1995). Central to its explanation for major policy changes is the concept of 'windows of opportunity'⁴⁴. This means that a combination of 'compelling problems', 'available solutions' and 'receptive political climate' facilitate the situation of 'fixing subject into decision agenda' (Nohrstedt 2008: 10). Windows of opportunity here are also seen as driven always by an external problem. They might be exploited by 'policy

entrepreneurs' through facilitating the coincidence of these three streams (Meijerink 2005: 9)⁴⁵.

- **The Advocacy Coalition Framework as a policy change framework**

The ACF is seen as a 'progressive theory'⁴⁶ and 'the most widely discussed contribution' to the field of policy studies in the past two decades⁴⁷ (Fischer 2003: 1). As a broad conceptual framework, the whole idea of the ACF comprises multiple theoretical strands and has been quite widely used to shed light on diverse aspects of the complex and puzzling process of policymaking⁴⁸. It has also borrowed several concepts from other scholarly fields and disciplines⁴⁹ leading to its 'growing complexity'⁵⁰ (Weible et al 2009: 132; Nohrstedt 2011: 481). Nonetheless, since inception in the 1980s, the aim of explaining policy change has increasingly attracted remarkable attention in ACF scholarship. The most recent versions (Sabatier & Weible 2007; Weible et al 2009; Weible et al 2011) have encouraged ACF studies 'to intensify efforts to specify the theory of policy change'⁵¹. From a policy change perspective, other fundamental concepts of the ACF like policy subsystems⁵², advocacy coalitions⁵³ and belief systems⁵⁴ are conceptual bases for providing a credible explanation of the policy change process: 'as means for that end' (Weible et al 2011: 355)⁵⁵. As Szarka (2010: 839) describes, the ACF is not merely a 'taxonomy for cataloguing species of coalition', but a theory proposing causal drivers for coalition formation and policy change. This is a framework that provides an explanation for both continuity/stability and change/instability simultaneously (Cairney, 2012: 219).

The ACF contribution to the policy change literature rests on answering some important questions paving the way of a more concrete understanding of change dynamics: How is the policy change within a subsystem conditioned and framed by a wider political context and external change drivers? What are the main characteristics of the policy subsystem which are important in policy change explanation? How do actors, categorised into advocacy coalitions, interpret the policy change drivers through their 'belief-driven conceptual lenses' (Nohrstedt & Weible 2010: 9)? And, which mechanisms do link drivers to actual policy changes? Recent versions of the ACF explain policy change through a typology of

four different paths: external subsystem events⁵⁶; policy-oriented learning⁵⁷; internal subsystem shocks⁵⁸; and negotiated agreement⁵⁹ (Sabatier & Weible 2007; Weible et al 2009). Amongst them, the impacts of learning and negotiated agreement are exclusively limited to minor/incremental policy changes. It directs us to the main contribution of the ACF for ‘non-incremental changes’ which is the introduction of ‘external-internal dichotomy’. Though for several decades and inspired by neo-institutionalism⁶⁰, major policy changes have always been conceptualised as occurring ‘external’ to policy subsystem boundaries (Nohrstedt & Weible 2010: 19).

2.3.2. From policy proximity to policy saliency

For a large number of policy studies, the conceptual distinction between external and internal change drivers has proved analytically useful (Weible et al 2009; Nohrstedt & Weible 2010: 19; Albright 2011: 507). It provides an understanding of different *origins*, either exogenous or endogenous, of change drivers and moves beyond the assumption that an external change impetus is the only prerequisite for non-incremental policy alteration. But this dichotomy has its analytical limits as well⁶¹. A series of critical studies points out that there are variations in the post-crisis changes, from wholesale paradigmatic shift to minor policy responses, or even no change at all (Boin & 't Hart 2003; Nice & Gross 2001; Birkland 2006; Boin et al. 2009; Nohrstedt 2008). It means even quite similar events could cause different policy impacts when they come to different contexts. It shows the fact that to stimulate a major policy change, the emergence of an (external/internal) event might be ‘crucial’ but it is not necessarily ‘sufficient’ (Cairney 2012: 210). Consequently, it is seen then as critical to have more rigorous theories regarding the factors conditioning the impact of events on policymaking (Hall & Taylor 1996; Legro 2000). Particularly, Nohrstedt and Weible (2010: 6) suggest that new studies should address how factors like the nature of events and the characteristics of subsystems affect final policy outcomes.

In terms of the nature of change drivers, inspired by the ACF’s external-internal dichotomy, Nohrstedt and Weible have moved a step forward to provide more

clarification for those ‘broadly conceptualised’ events⁶². They introduce the concept of ‘policy proximity’ implying the degree that a change driver potentially affects existing policy components (Nohrstedt & Weible 2010: 20). This means that close proximity will increase the likelihood of a widespread policy change. As Boin et al (2009: 98) describe, some events ‘hit at the heart of existing policy domains’. Combining the scale of an event with the level of proximity, this section suggests the concept of ‘*policy saliency*’ to clarify better differences in the nature of change drivers. It means a ‘policy salient’ impetus is one that not only has sufficient magnitude for change, but also enjoys the privilege of policy proximity and impact on a wide range of existing policy components.

2.3.3. Proposition 2: policy failure as an essential driver for a major policy change

However, the relationship between policy saliency and final policy change is not simply straightforward. Critics point to a ‘phenomenological’ distinction (Nohrstedt & Weible 2010: 19) between the origin of events on the one side, and what actually causes shift in policies on the other side. In other words, what ultimately stimulates shift in existing policies is a series of ‘political processes’ and ‘societal reactions’ triggered perhaps by policy salient events rather than merely events themselves (Birkland 2006; Cortell & Peterson 1999; Kingdon 1995). Given that policies are ‘path-dependent’ and display ‘trajectories’, those societal processes result from ‘meaningful reactions’ to previous ‘policy legacies’, once they adjust to new contexts⁶³ (Weir & Skocpol 1983; in Hall 1993). Policy literature calls such situations the status of *policy failure* implying ‘*periods of disorder*’ and ‘*momentums of breakdown*’ that *question* and *discredit* established policies, practices, and institutions and increase receptivity to new ideas (Alink et al 2001; Boin et al 2005; Cortell & Peterson 1999; McConnell 2008: 557). In other words, a mixture of the ‘accumulation of anomalies’ and the perception of ‘policy failure’ is essential causal driver for major or non-incremental policy shifts.

Building upon the concept of policy saliency, the main argument here is that there is a relationship between the level and type of challenges and anomalies that change drivers impose on existing policies on the one hand, and the features of final policies on the other hand. Actual changes are framed by the extent that existing policy components are ‘de-institutionalised’ and what they are expected to reform against. From this perspective, the saliency of change drivers should imply the level of *disruption* they could bring about into existing policy arrangements⁶⁴: The higher the level of policy saliency, the greater the likelihood of widespread perceptions and allegations of policy deficiency and failure. As an example, it will be elaborated in chapter five that as of 2012, there was a common belief that the existing electricity market no longer works and it will meet neither ambitious policy targets nor new contextual requirements. In fact, it seems that the ‘accumulation of anomalies’ and the emergence of a broad ‘dissatisfaction with policy failures’ (Hall 1993: 280) are crucial prerequisites for any major policy change. By developing the proposition 2, this section seeks to bridge the gap between policy failure and the policy mix framework developed in section 2.

Proposition 2: *The characteristics of ultimate changes relate to the degree and the nature of ‘deficiencies’ and ‘failures’ that salient change drivers present to any existing policy components⁶⁵.*

2.3.4. Proposition 3: coalitional balance and framing contestations

But policy changes do not occur in a ‘political-administrative vacuum’ and ‘the effects of [exogenous/indigenous] shocks cannot be understood in isolation from internal subsystem affairs’ (Weible et al, 2009: 128). Instead, the level of policy failure perception, as the ultimate change impetus, is also affected by the characteristics of subsystem context and ‘pre-existing policy conflicts’ and debates⁶⁶. The policy impact of change drivers is thus mediated not only by the nature of the change driver, so called *policy saliency* here, but also through a process of ‘strategic social construction’ and ‘contest framing’ by advocacy coalitions (Nohrstedt & Weible 2010: 19). Given the complexity of policymaking,

recent developments in the literature argue that change drivers, e.g. crises, are neither ‘self-apparent’ nor ‘knowable’ nor even ‘certain’ and ‘unambiguous’ (Kern & Mitchell 2010; Kuzemko 2011). Therefore, they are always subject to ‘interpretation’ (Jones & Baumgartner 2012) by competing coalitions. Whether a policy salient event will result in major policy change depends, to some extent, on the capability of pro-change coalitions to ‘seize the moment’ by intensifying efforts for achieving greater influence (Mintrom and Vergari 1996). They strategically exploit the occurrence of an event and employ ‘persuasive tactics’ to impose meaning on it in terms of causes, the level of failure, implications and policy alternatives⁶⁷ (Boin et al. 2009; Widmaier et al. 2007).

In the absence of a pro-change advocacy coalition, as Nohrstedt and Weible (2010: 13) predicted, it seems quite unlikely that any new problem definition or credible solution could gain sufficient policy prominence, even notwithstanding an intrinsically policy salient change impetus⁶⁸. Given that the perception of policy failure is crucial for major policy shifts, a pro-change coalition is assumed to frame a widespread contestation and to blame existing policy components as the main strategy for policy change⁶⁹. This was evident in the case of the Climate Change Act in 2008 when the low carbon advocacy coalition was able to frame an accumulative perception of policy failure in meeting both insecurity challenges and climate objectives. Consequently, climate policies were conceived as common solutions for all energy policy challenges and objectives. Drawn from these insights, this research develops the following proposition.

Proposition 3: *The level of policy impact of a change impetus is conditioned not only by its policy saliency, but also by coalitional balance, in favour of or against policy change, and their strategies.*

2.4. Understanding gradual transformations

As discussed earlier, any attempt to understand how policies change requires simplifying assumptions and creating clear theories. The challenge is, albeit, how to simplify, what to emphasise, and what to ignore. To provide an analytical framework for explaining major and non-incremental changes in the UK energy policy between 2000 and 2012, the previous section reviewed three ‘major reference approaches’: the Advocacy Coalition Framework (ACF) (Sabatier 1987, 1988; Sabatier & Jenkins-Smith 1993), the Punctuated-Equilibrium theory (PE) (Baumgartner & Jones 1993), and the Multiple Streams approach (MS) (Kingdon [1984] 1995).

Nevertheless, it became apparent that most policy change theories have focused exclusively on explaining discontinuous and significant forms of change. The introduction of concepts like ‘Windows of opportunity’ (Kingdon 1984), ‘Punctuated equilibrium’ (Baumgartner and Jones, 1993), and Paradigmatic shift (Hall 1993; Kuzemko 2011) are some examples of such significant changes. Arguably, they draw a ‘rather sharp conceptual line between [continuity] and discontinuous change’ (Thelen 2009: 474). Given that they are always driven by an ‘external factor’, Nohrstedt and Weible (2010: 3) think that ‘over-emphasising the role of external factors’ (Fischer 2003: 7) in policy change frameworks and the centrality they are afforded are conceptually inspired by ‘varieties of neo-institutionalism’ literature⁷⁰.

However, to address incremental changes evident in the last decade of UK electricity policy, such as shifting the technological balance of low carbon generation between nuclear and renewable, this study requires an analytical framework that could provide an explanation of such ‘gradual transformations’, perhaps based on endogenous drivers. Theoretically, there is a tendency in recent policy literature to ‘measure varying degrees of change’ which ‘fall outside of paradigm shift’ and significant change (Kuzemko 2011: 257). Hall’s Change Orders (1993), i.e. the first, second and third order change, and Sabatier’s (1999)

minor-major policy changes are two examples. To explain why diverse forms of change occur, the original version of the ACF introduced ‘policy-oriented learning’ as an additional driver to external shocks⁷¹. In recent developments, Sabatier and Weible (2007) have conceptualised two other endogenous change drivers: ‘internal subsystem shocks’ and ‘negotiated agreements’. In terms of internal shocks, as discussed in the previous section, although its conceptual distinction from external shocks might be helpful for a clearer explanation of ‘shocks-policy change linkage’, their overall definitions and impact pathways are almost the same (Albright 2011: 506). Instead, that section proposed the concept of policy saliency. By contrast, the introduction of the concept of ‘negotiated agreement and policy compromise’ is rather new in the field of policy change literature.

2.4.1. Literature review: the concept of negotiated agreement

Building upon previous ACF works on the ‘conditions facilitating cross-coalition learning’ (Jenkins-Smith 1990) and ‘the alternate dispute resolution literature’ (Bingham 1986; Carpenter & Kennedy 1988; O’Leary & Bingham 2003), Sabatier and Weible (2007: 206-7) have defined negotiated agreement as a policy compromise amongst competing coalitions after a long period of ‘deadlock status’ that stalls public policymaking. In order to counteract the risk of ‘escalating uncontrollable value conflicts’ under the condition of contradictory or mutually exclusive demands for policy change, policies could often change through an incremental ‘middle-way’ solution (Nohrstedt 2008: 49).

Following the introduction of ‘negotiated agreement’ in 2007, the main ACF scholars arranged a review of almost 80 ACF-based studies between 1986 and 2009. As one of the conclusions, they pointed to the fact that some components of the ACF, including negotiated agreement, have yet remained ‘largely unexplored’ amongst reviewed applications (Weible et al 2009: 132). Therefore, they encouraged further research to examine theoretical propositions relevant to overlooked components of the framework, particularly negotiated agreement. Similarly, in an introduction to the Special Issue of Policy Studies Journal (PSJ) in

2011, several ACF intellectuals have highlighted negotiated agreement as a major component of the ACF that has remained ‘minimally addressed’ (Weible et al 2011: 357). Overall, it seems that the concept of negotiated agreement is still theoretically under-specified and empirically under-scrutinised.

2.4.2. The empirical applications of negotiated agreement

Since then, the notion of negotiated agreement has been mentioned in at least two ACF-based studies. Nohrstedt (2008: 91), in his analysis of Swedish nuclear policy change, pointed to the role of negotiated agreement among the three political parties involved. The final compromise on nuclear policy took place eventually to avoid ‘another referendum’ as the only way of unfolding ‘policy stalemate’ and ‘paralysing debate’ around the timing of the nuclear phase-out. He also argued that negotiated agreement and political compromise has a natural tendency towards ‘incrementalism’ (Nohrstedt 2008: 49). Generally, to avoid escalating uncontrollable and mutually exclusive value conflicts, such as what he calls ‘the dichotomous relationship between proponents and opponents of nuclear power technology’, it would be ‘less difficult’ for policy coalitions to agree on a continuous ‘middle-way solution’ (Nohrstedt 2008: 49). Nevertheless, what Nohrstedt has concluded is just another reconfirmation of ‘the importance of negotiated agreements as one important path to policy change’ (Nohrstedt 2008: 91). Despite these contributions, what is still missing is the incorporation of negotiated agreement in new theories and the empirical examination of those theories, as recommended by Weible et al (2009, 2011).

Another application of this concept was undertaken by Ingold (2011) through studying Swiss climate policy. In contrast to Nohrstedt’s work, she has developed a clear hypothesis about the role of policy brokers in negotiated agreement.

‘Hypothesis: If coalitions are in a hurting stalemate, policy change is more likely to be the result of negotiated agreement facilitated by policy brokers’ (Ingold 2011: 439).

To examine this proposition, Ingold has defined ‘hurting stalemate’ as ‘a situation [of escalated conflict] in which neither side can win, but neither side want to back down or accept loss either’ (Rubin, Pruitt & Kim 1994). In ‘policy stalemate’, the status quo is ‘unacceptable’ any more and ‘no alternative is also available other than negotiation’ about a ‘reasonable solution’. In her study, she shows how a policy broker ‘abandoned its preferences’ to reach a mixed ‘political compromise’ preventing a winner-loser dichotomy (Ingold 2011: 450). The important role of the policy broker there was to actively suggest an innovative ‘policy solution’ covering a minimum preference of both coalitions.

Beyond the theoretical borders of the ACF, the concept of policy and political compromise has also been frequently evident in addressing incremental changes in UK energy policy. Steven Bernstein (2001) pointed to a form of ‘liberal-environmental compromise’ in the early 2000s. What he nominated as a compromise was a combination of climate ideas and neo-liberally informed policy instruments. At that time, the Labour government became convinced that market-based policymaking would efficiently deliver climate targets. This fact has also been acknowledged by Kuzemko (2011: 155, 235), who describes vague climate objectives in the 2003 Energy White Paper as a ‘weak compromise’ from New Labour to ‘quell political opposition’ and to ‘defuse climate calls for change’. Nevertheless, she argues that this strategy to ‘compromise opposition’ is not necessarily stable. It would become increasingly of higher risk, as adopting those targets left the UK government open to yet more scrutiny and critique. Similarly, Kern (2012a), in his analysis of UK electricity innovation policy, has concluded that the narrative of ‘developing low carbon technology’ embodied in the Carbon Trust in the early 2000s was partially successful, because it was ‘complementary to existing market-based dominant discourse’. In his view, being compromisingly ‘in-line’ with incumbents could facilitate partial influence but, in turn, would limit causing wider changes (Kern 2012a: 18).

2.4.3. Compromised policies and vulnerability to shift

Founded on the seminal work on ‘Institutional Change’ by Streeck and Thelen (2005), there are some new developments, led by Thelen, that have focused on theorising incremental-continuous institutional changes, a so-called ‘gradual transformation’. Given the point that ‘policies themselves are institutions’⁷², (Skocpol 1995; Silberberg 1997: 372), Thelen’s work has been widely used even within policy change literature as well (Kern & Howlett 2009; Clegg 2012). To differentiate from the broad literature of neo-institutionalism, she has tried to demonstrate how endogenous change drivers could cause incremental-evolutionary changes alongside exogenous sources of change (Mahoney & Thelen 2010: 4).

From Thelen’s point of view, policymaking, and more generally ‘institution-building’, is often, to some extent, a matter of ‘political compromise’ between conflicting coalitions behind each policy (Thelen 2009: 491). This argument is based on the fact that policies always reflect the ‘coalitional balance’ behind them. Given that, she pointed out that in the real policy making arena, there are ‘new categories’ beyond the ‘simple dichotomy of winners and losers’ in the process of policymaking (Mahoney & Thelen 2010: 14): ‘The losers don’t always go away. They may find some ways to *occupy* or *redeploy* policies’ (Thelen 2009: 491). Therefore, compromised policies do not necessarily reflect the beliefs of any particular coalition involved. Instead, they may be ‘*unintended consequences*’ of conflict or the result of ‘*ambiguous compromises*’ among differentially motivated actors and coalitions (Mahoney & Thelen 2010: 8).

Accordingly, to explain a path to incremental policy change, Thelen has focused on a set of ‘policy gaps’ between the original design and the actual outcome of compromised policies that open up some spaces to ‘different interpretation and implementation’⁷³, (Mahoney & Thelen 2010: 10). The rationale behind this nomination is that those inherited tensions keep compromised policies always subject to change. Firstly, the stability of these policies is always threatened by the

legacy of internal contestations and resource politics. In fact, ‘policies create politics’ (Skocpol 1995) because they are not ‘power neutral’. They inevitably have ‘*distributional consequences*’ and ‘*political implications*’. This characteristic of compromised policies culminates once they are used to allocate and ‘mobilise’ ‘highly valued political-economic’ resources and institutions, such as this research deals with in the case of energy policy. Furthermore, compromised policies often suffer inevitably from ‘*conceptual ambiguities*’ in their design. These types of policy gap would allow competing coalitions to impose their own interpretations on vaguely-designed policies.

In sum, Thelen and her colleagues argue that highly negotiated and compromised policies are not always ‘self-reinforcing’ and ‘self-perpetuating’. They are ‘fraught with tensions’ and internal fragmentations. Consequently, they are practically often ‘*vulnerable to shift*’ once their design represents any form of policy gaps like ‘*political compromises*’, ‘*contested settlements*’ and ‘*institutional ambiguities*’ (Thelen 2009: 477; Mahoney & Thelen 2010: 8). Built on her ‘*political-coalitional theory*’, Thelen highlights the role of two dynamics in using policy gaps to change policies. Firstly, the emergence of new realities and ‘*contextual shifts*’ could simply trigger a process of conceptual re-interpretation and practical modification within compromised policies which could potentially lead to change in the current design of policies (Mahoney & Thelen 2010: 11). Secondly, any likely shift in the ‘*balance of power in coalitional base*’ behind policies could drive change endogenously in some aspects of the original design of the policies, either in their forms or functions. However, Thelen’s approach in taking agency and coalitions as central to the analysis of policy change is consistent with this research’s overall framework inspired largely by the ACF.

2.4.4. Developing proposition 4

It is noteworthy to remember that this section, alongside the previous section, aims to theoretically facilitate answering the overarching research question of explaining *how* and *why* UK electricity policy has changed since the early 2000s. Amongst various factors that have contributed to this change, recounted earlier,

this section has specifically focused on theorising the role of negotiated agreements and policy compromises. Building upon a literature review of theories for gradual policy change and policy compromise, this section seeks to develop a theoretical proposition as a basis for empirical examination and testing. Having showed the substantial *'importance'* of negotiated agreement as a pathway to *'gradual-evolutionary'* changes via *'often mixed policy solutions'* in previous studies (Nohrstedt 2008; Ingold 2011), this thesis theorises what happens next, once a policy has changed through a mutual compromise.

***Proposition 4:** Compromised policies often suffer from 'contested' arrangement and 'ambiguous' design which keeps open a space for 'continuous tension' and 're-interpretation'. Therefore, they are always 'vulnerable to shift' following 'contextual change' or new 'coalitional balance'.*

2.5. Summary and conclusions

As of 2012, the UK electricity policy has witnessed a series of substantial shifts in different policy aspects and components. Following several decades of overall stability, albeit with gradual alterations, under the dominance of a liberalised and marketised electricity system, those changes have recently culminated in a distinctive policy package called EMR, proposed by the DECC in 2011 and 2012. As is common with almost all types of public policies, EMR has resulted from a lengthy, complex and evolutionary process of change and alteration. To analyse such convoluted mix of interests, ideas, values, politics and technologies, this study needs an analytical framework primarily based on policy studies to shed light on those complexities and provide a ground for likely theoretical contributions.

With respect to the research questions, section two has aimed at theorising a more concrete conceptualisation and definition of the extent and the aspects of changes in UK electricity policy by late 2012. To capture technological aspects of such

socio-technical shifts, it has moved beyond the disciplinary boundaries of policy studies. Inspired by the Transition literature, section two has proposed *technology preference* as the fifth policy component alongside policy paradigm, policy institutions, policy objectives and policy instruments.

Section three has been designed to theoretically facilitate an explanation of causes and dynamics of major shifts particularly in the role of market policy paradigm in all aspects of electricity policy. Building upon analytical foundations of the ACF like policy subsystem and advocacy coalitions, this section has tried to illustrate why different change drivers, either external or internal shocking events, show different levels of policy impacts. By introducing the concept of *policy saliency*, it has suggested that the characteristics of final policy changes are the function of not only the magnitude and proximity of a change driver, but also the extent of *disruption* and *failure* perception that it imposes on existing policy components. Furthermore, the contribution of this section reaches further than merely clarifying the nature of change drivers. To identify factors conditioning policy impacts of a change driver, it offers important additions to social constructivist approaches of “framing contests” (Boin et al. 2009; Widmaier et al. 2007). It emphasises the role of actor constellations in constructing the widespread perception of deficiency and failure by highlighting the notion of *coalitional balance* of pro-change advocacy coalitions.

Finally, section four has moved beyond the traditional metaphor of policy change literature in focusing on major policy changes following the emergence of an external change driver. In order to explain gradual shifts in the balance of low carbon technologies in the UK electricity system, it has aimed to enhance the explanatory power of negotiated agreement and policy compromise, introduced by recent versions of the ACF (Sabatier & Weible 2007). By incorporating insights from Institutional Change theory (Thelen 2009), it has assumed that *compromised policies* are ‘*vulnerable to shift*’ following ‘contextual changes’ or new ‘coalitional balance’.

Theoretical analyses of this chapter and developed propositions will be respectively examined in further empirical chapters by being applied to the case of UK electricity policy between 2000 and 2012. The process of electricity policymaking in general and EMR in particular may be too complicated and messy to be fully captured and analysed. Given that there is no single universal solution for dealing with the world of policy, any likely analytical framework is inevitably unable to investigate some particular aspects of such a complex policy process. Therefore, this chapter by no means claims that it has provided a comprehensive analytical framework explaining all aspects of the studied case. By contrast, it is committed to a selective approach, within the scope of a PhD thesis, by focusing on certain theoretical strands that on the one hand are supported more visibly by empirical evidence, and on the other hand are more likely to contribute to the literature of policy studies.

Chapter Three: Research Design and Methodology

3.1. Introduction

This chapter aims at discussing the overall design of the thesis and the methodologies this research is built upon. A research design is understood as an overall plan bridging between initial questions and drawn conclusions (Yin 2003: 20). There are various ways of designing research depending on specific characteristics of the study like the type of research questions; normative values and beliefs of the researchers and their audiences; and, the amount of research that has been already conducted in the field (Clegg 2010). This might be seen simply as a 'research blueprint' of different research steps like: outlining research questions and objectives; designing a research strategy; discussing ontological and epistemological issues; developing analytical propositions; selecting data sources and the unit of analysis; defining methods of data gathering and discussing how to analyse data. Given the research questions and analytical propositions already outlined, this chapter addresses how to answer those questions and examine correspondent propositions. Throughout the chapter, it also clarifies methodological limitations and challenges this thesis has been encountered with.

3.2. Strategising the research as a case study

Given a research strategy as an overall approach of answering research questions⁷⁴, this thesis relies on the case study strategy to provide a rich contextual analysis of the UK electricity policy change between 2000 and 2012. The case study design is understood as a useful strategy for a research intending to provide an in-depth understanding and a holistic interpretation of a complex and

contemporary social phenomenon that is indistinctively embedded in the context (Yin 2003: 2, 13). This definition fits well with the nature of policy subject this thesis aims to deal with and the triple research questions it is expected to answer to. Amongst different research strategies and methods acknowledged in the literature⁷⁵ (Yin 2003: 5; Lijphart 1971; Clegg 2010), the case study is widely suggested for specific modes of empirical research dealing with why and how-type explanatory questions, investigating experimentally uncontrollable social phenomena, examining theoretical propositions, using diverse data sources and developing ‘analytical generalisation’ instead of statistically generalisable theories.

Almost all of these characteristics are, to some extent, represented in the subject of this study. This justifies, in fact, why the case study could be an appropriate approach for conducting this thesis. Firstly, EMR, as the most recent emanation of electricity policy, is a very contemporary and ‘over-complex’ policy package that, at the time of analysis and writing in 2012-2013, was still on the process of reviewing and modification. Secondly, while this thesis involves a descriptive enquiry about what policy changes had identified by 2012, it also deals with two further why and how-type research questions requiring deep explanation and rich empirical recognition of causes and dynamics of undergone shifts in electricity policy. It is noteworthy that perhaps such intrinsically nested and intertwined arrangement is too complex to be neatly de-contextualised and become the subject of an experimental control. This exactly what makes case study an advantageous research strategy when it comes to historical explanation of causal mechanisms in a particular context (George & Bennett 2005: 6). Furthermore, previous chapter developed a set of analytical propositions based on theoretical literature to inform empirical observations. They not only frame the process of data collection and analytical stages, but also create a basis for theoretical generalisation (Yin 2003: 22, 33).

Another feature that supports case study as the choice of research strategy is the diversity of data sources that throughout this research have been analytically

explored. In addition to 53 semi-structured interviews conducted, this research relies on a variety of different data sources including policy document analysis, the review of stakeholder responses to policy consultation and a wide range of secondary materials. Altogether, they shed light on various aspects of this complex subject, albeit in answer to three different research questions, and provide a holistic understanding of electricity policy over the period of study. Finally, the nature of outlined research questions indicates that this thesis is more an empirical piece of the work looking for a detailed analysis of underlying contextual dynamics than a theoretical research leading to universal generalisation. In other words, the main research objective of this thesis is primarily drawing a rich description of and a meaningful ‘real-life’ explanation for an intensively changing period of UK electricity policy. This contribution fits well with what is so-called differently in the literature as either ‘contingent generalisation’ (George & Bennett 2005: 8) or ‘middle-range theory’ (Kern 2010: 62) or ‘analytical generalisation’ (Yin 2003: 48). It implies that such analysis is analytically verified and reliable, but subject to the existence of certain conditional elements. This is exactly what Cairney (2012a: 4) argues about the overall tendency of policy literature, in general, to provide ‘thick descriptions’ through applying case studies rather than suggesting contextless and simplified policy laws (Cairney 2012a: 31). Epistemologically, for contingent generalisation, a case study requires to also specify ‘bounds of applicability’ of developed theories. It is perhaps different from overall ‘generalisability’ that means theoretical findings are always fixed and applicable, simply across different social and political contexts (Nohrstedt 2008: 18).

To avoid concerns about the validity and robustness of the abstract findings of single unified case studies (Yin 2003: 45), this thesis applies a form of multiple-embedded case study design. By dividing the whole period of analysis into shorter time-frames, this research paves the way of 'longitudinal' comparisons between different policy stages. As such, to answer the first research question, policy changes have been identified in five different time-scales. Altogether, they draw a complementary picture of an evolutionary process of electricity policy change

between the year 2000 and 2012. It is similar for chapter five when it comes to explain underlying dynamics of those policy changes. This also provides an understanding of rather separate, but albeit interrelated and accumulative, processes of policy change leading to different modes of electricity policy mix in each sub-period of analysis. Therefore, the conclusion about the crucial role of policy failure perception in driving policy changes is, in fact, underpinned by such internal comparisons and multiple replications rather than generalising based on merely an analytically ‘vulnerable’ individual case study. However, even multiple-embedded case studies by no means suggest ‘statistical’ generalisations. In the case of this thesis in particular, it is neither sufficiently replicable nor represent a typical sample of a population to follow the logic of statistical generalisation.

3.3. Determining data sources: the choice of the case and the unit of analysis

The selection of the case and unit of analysis are, on the one hand, analytically interrelated with the nature of the research questions and theoretical propositions, and on the other hand, empirically affected by methodological considerations and practical restrictions⁷⁶ (Yin 2003: 24). As discussed in thesis introduction, this research investigates the case of UK energy policy change in a certain period of time. The rationale behind this selection is based on ‘strategic sampling’ perspective (Pettigrew 1990). It means, instead of simply representing a particular category or population, this case displays a high level and strategic characteristics of the subject as an ‘*extreme*’ and a ‘*critical*’ case for studying policy change (Yin 2003: 40). It is, to some extent, an extreme case of policy change regarding the significance and the scale of undergone shifts away from liberalisation and privatisation of power industry, in which the UK has played the role of an international classical model for several decades. Thus, such profound policy change potentially brings about a wide range of theoretical and policy implications into the world of international electricity policy. Likewise, it could be

seen as an extreme subject to be studied in the sense of the scope of change in which it represents an alteration in a broad set of policy components including technological dimensions of electricity policy.

It also reflects some features of a critical case study. The British electricity governance is a contemporary and complex policy subsystem that is influenced by a confluence of interests, ideas, values, politics and technologies. It is reflected in the level of technical and political disagreements over policy discussions about how power sector should be governed and which socio-economic function it needs to fulfill. Different pieces of policy literature (Sabatier & Jenkins-Smith 1999: 125; Szarka 2010: 838) describe energy and electricity issues as 'prima facie relevant' to policy change scholarship⁷⁷. Therefore, analysing such complicated case study requires covering a wide range of policy theories and concepts. It also seems critical for policy studies respecting the crucial role of power sector in the whole economy. It increasingly becomes an inextricable part of the modern social life and an indispensable driver of economic growth. Consequently, any shift in electricity policy could trigger remarkable policy changes in other sectors as well and stimulate shifts in the wider framework of macro-economic governance.

Those practical and analytical features, altogether, make the UK electricity policy an attractive subject for an academic policy research. It is worth noting here that in the beginning of this research, I was thinking about comparing the case of UK electricity policy with what is happening in Scottish level. Soon after, due to some analytical and practical reasons I moved away from the idea of a comparative case study. It was not only because I found the UK-level case as a unique and strategic sample, but also with regards to the fact that there was no comparable case of Scottish electricity policy. Indeed, this is a particular policy arena that yet has not been devolved to Scotland and is ruled centrally from the Whitehall. Though that at the time of writing in 2013, Scotland has authority over some other policy subjects like economic growth or environmental issues that potentially affect energy and electricity policies, albeit indirectly and from different perspectives. Another rationale referred back to the characteristics of current case as a complex

and multiple-embedded policy package which involves several avenues for internal comparisons, as discussed before.

In terms of defining the unit of analysis, this thesis relies on the concept of 'policy subsystem' introduced by the ACF and applied by a wide range of modern policy frameworks. A policy subsystem, as such, is a 'semi-autonomous' system in which 'the vast majority of policy making occurs' within its functional/substantive and territorial/geographical boundaries (Sabatier & Weible 2007: 193; Albright 2011: 486; Nohrstedt 2011: 462; Weible et al 2009: 134). This is, in fact, an analytical construct and artificial partitioning that simplifies the analysis of a wide range of heterogeneous policy players within and outside the government. From the ACF point of view, a policy subsystem comprises a manageable number of informal networks of stakeholders called 'advocacy coalitions' in which they participate in an interactive-collective process of policymaking. However, policy subsystems are neither 'immutable' to the wider context nor practically independent from other policy subsystems. Policymaking, in reality, happens through nested and interconnected relations between overlapping policy subsystems.

This thesis, as such, analyses the UK electricity policy subsystem over the *time period* between the early years of 2000s, when new generation of energy and climate challenges began to arise and the State came back to energy policy, and the end of 2012, when EMR was manifested in the Energy Bill and the last interviews for this research were conducted. The minimum period of a decade for analysing policy changes is fully endorsed by policy literature (Sabatier & Weible 2007: 192). It allows examining theories more strategically over a wider context of policy evolution and with 'smoothing out short-term fluctuations' (Szarka 2010: 837). However, this timeframe, particularly with respect to the yet ongoing process of EMR at the time of writing in 2013, characterises this thesis as a very recent and contemporary research. Consequently, despite some research advantages like the availability of data and the accessibility to experts and main policy actors, this characteristic has constrained the possibility of a comprehensive retrospective analysis of the case over a full policy cycle. As such, it is yet hard to

analyse EMR's policy implications and practical consequences. For a case study research, it would be less challenging to analyse a policy change phenomenon through a historical examination that perhaps needs a few years of hindsight⁷⁸.

In terms of *geographical boundaries*, this study focuses on UK-wide policies and correspondent policy actors involved. Whilst the emergence of different 'supranational' and 'sub-national' levels of governance, like respectively the European Union and devolved areas, have left Britain with only a 'blurred boundary' of the sovereignty⁷⁹, the specific case of energy and electricity policy have still remained under the strategic control of Westminster and Whitehall (Helm 2007; McGrown 2009; Kern 2010). However, it by no means reflects the characteristics of what is so-called 'old Westminster' and 'majoritarian' political system in energy policy⁸⁰ (Lijphart 1999). This is where brings us to a 'fundamental ontological question' about whether or not we could apply policy theories originated in different, largely plural, political systems, e.g. the ACF as an American theory, in policy context of the UK. In response to this question, Cairney (2011) points to the concept of 'post-parliamentary UK policy style'. As such, he argues the real characteristics of UK policymaking⁸¹ no longer represent the 'majoritarian reputation' of 'British political tradition': 'the traditional model of Cabinet and parliamentary government is a *travesty of reality*' (Richardson & Jordan 1979: 4). In practice, most of the 'humdrum' policy decisions are made outside Parliament based on 'consultative machinery' of 'civil servants and interested groups association' rather than merely 'ministerial and senior civil servant involvement' (Jordan & Cairney 2013: 2, 5). Particularly in energy policy, while there is a growing pattern of the State revival in 'making strategic decisions and creating accountability', the strong legacy of privatisation has substantially 'hollowed the State out' from full executive power over energy industry (Cairney 2012: 160). It has led to a form of 'groups-government' partnership in electricity policy that disperses the process of policymaking outside the boundaries of the Government, whilst still keeps a certain degree of strategic national authority. Such UK-wide electricity policy is evident even for some multinational giants and global businesses that are active in the UK power sector.

By contrast, the status is rather different when it comes to defining *functional borders* of the UK electricity policy subsystem. This is an extremely ‘nested and overlapping’ policy subsystem. Vertically, it is difficult to make a clear-cut analytical distinction between electricity and overall energy policy subsystem. In particular, they are hardly discernable in the first stages of analysis in the early 2000s, whereas a form of electricity-specific policymaking becomes clearer throughout the late 2000s and the early 2010s. It is the case also horizontally with other overlapping policy subsystems like climate, industrial, economic and innovation policy (Scrase et al 2010: 3). It means, a large proportion of policy actors in power industry are at the same time the policy stakeholders of other interrelated subsystems.

To exemplify the wide range of participants involved actively in the process of electricity policy making, this section overviews a contemporary sample of 233 organisations who responded to the DECC call for EMR consultation in December 2010 (DECC 2010). The functional diversity and remarkable quantity of this sample reflects, albeit to some extent, the breadth and the multiplicity of policy actors involved in the process of electricity policymaking⁸². It fits well with the wider definition of policy subsystem in modern policy literature beyond the formal boundaries of governmental departments. As such, a general typology of actors here includes four distinctive organisational bodies:

- Industrial companies, businesses and trade associations which their activities are affected directly or indirectly by EMR⁸³;
- Different types of governmental departments and public institutes⁸⁴;
- Academia, research institutes and consultancies with different affiliations⁸⁵;
- Various types of civil society activists and non-governmental organisations (NGOs)⁸⁶.

Table 3 proposes an overall classification of actors who submitted their responses to EMR consultation. This table is based on their organisational typology, but

albeit regardless of their diverse policy positions. Perhaps, this is not the only way of classification and they could be categorised in substantially different ways. Appendix D also displays another list of participants in a similar important policy, the BETTA, in the early 2000s. Although the BETTA is not fully comparable with EMR, a longitudinal comparison between them could raise some general ideas about two different ranges of policy participation. A dramatic increase in the number of participants and a more remarkable role of renewable industries and environmental NGOs are two important shifts that are evident in EMR consultation process.

Table 3: A typology of actor involved in the EMR policy process

	<i>The category of stakeholder</i>	<i>The quantity of actors</i>
1	Industrial companies and trade associations	161
2	governmental departments and public institutes	20
3	academia, research institutes and consultancies	25
4	civil society activists and NGO's	33

3.4. The methodology of collecting data from multiple sources

The research questions posed in this case study require different methods of data collection to draw a comprehensive picture of electricity policy changes and a rich explanation of underlying dynamics driving them. The multiplicity of data sources not only sheds light on different aspects of such complex process, but also triangulates, to some extent, between diverse analyses from different points of view. In addition to ‘completeness’ and ‘explanation’, in Bryman’s term (2006), as two rationales behind mixed-method strategy, this thesis also uses some sources of data like document analysis and secondary literature to develop interview instruments. Overall, the mixed-method approach is, in fact, a highly

recommended strategy in research method literature (Yin 1994; George & Bennett 2005) for enhancing the reliability and explanatory power of a case study research⁸⁷. Before outlining the main data sources, it is noteworthy to remember that in this thesis, as usual in case study approach, the analytical importance of qualitative methods outweighs probable contributions of quantitative sources. This characteristic reflects the nature of studying policy change that requires a detailed social and political examination of a specific context rather than a statistical generalisation of selective samples over a large population. For such complex and deep analyses, as Fischer (2003: 108) argues, ‘quantitative methods have to take a back seat to qualitative research’. This fact is underpinned by a historical study of almost 80 policy research, largely based on the ACF, undertaken by Weible et al (2009: 127). It shows that qualitative methods like semi-structured in-depth interviews, document analysis and a mixture of them have been used in more than two-thirds of all policy studies between 1990 and 2010.

There are five different sources of data that this thesis largely relies on. Firstly, it analyses the main policy documents throughout the period of study. They includes, but by no means are exclusively limited to, two Energy Reviews in 2002 (PIU) and 2006 (DTI), two Energy White Papers in 2003 and 2007 (DTI), the Climate Change Act in 2008 (HMG), the Low Carbon Transition Plan and the UK Renewable Energy Strategy in 2009 (DECC) and finally the Coalition Agreement in 2010. Most importantly, this research focuses on a series of EMR policy documents published over the period of 2010-2012 by the DECC in which they reflect different stages of EMR policy process. They started with EMR consultation call in December 2010, the EMR White Paper in July 2011, the Technical Update in December 2011, the draft of Energy Bill in May 2012, the pre-legislative Parliamentary hearing in July 2012 and finally the Energy Bill published in November 2012.

The second source of data is reviewing the literature that have analysed some aspects of the UK energy and electricity policy in a part of the research timeframe. There is perhaps no publication analysing exactly the UK electricity policy change

over the whole period of the study. Particularly, this research has never reviewed any academic publication investigating EMR policy process. Nevertheless, there are several pieces of literature that this thesis has used to complete the puzzle of this research particularly in the beginning stages of the analysis and for the period of early 2000s. Amongst them, this section highlights two seminal works of Dieter Helm in 2003 and 2005, a book from Catherine Mitchell (2008), a collected edition of Scrase and MacKerron (2009), a conference paper of Kern and Mitchell presented in IRSPM 2010, a SPRU working paper co-authored by Scrase et al in 2010, a PhD thesis from Florian Kern (2010) at SPRU, the University of Sussex, a historical book of Alex Henney published in 2011, a chapter co-authored by Paul Ekins, Jim Skea and Mark Winskel in *Energy 2050* (Skea et al 2011), a PhD thesis submitted to the University of Warwick by Caroline Kuzemko in 2011, a paper presented in Parliamentary Group for Energy Studies by Pearson and Watson in 2012 and a joint paper co-authored by Florian Kern, Caroline Kuzemko and Catherine Mitchell published in 2013.

Analysing published comments and responses of different stakeholders to electricity policies is the third source of data collection for this research. It means I have reviewed a large number of policy advices or working papers that main stakeholders have drafted in order to convey their perspective on a particular policy. For example, before EMR there was a series of publications from different institutions like Ofgem's Project Discovery (2009), the Treasury's Energy Market Assessment (2010), the CCC's Step Change (2009) and the CBI's Decision Time (2010) that paved the policy way towards EMR. The most intensive analysis I have done was on 233 stakeholder responses to the DECC call for EMR consultation in December 2010. This clarified the position of every stakeholder on EMR and gave me an idea about which advocacy coalitions were shaped within EMR's specific policy subsystem. It was not albeit the ending point for analysing policy actor's perspectives. I continued that by reviewing publications from main stakeholders reflected in media and newspapers or presented in the list of energy research institutions over the period of 2011 and 2012. For that particular purpose, I have subscribed to the daily energy news summarised by UKERC, the EG&S

KTN weekly newsletters, the monthly newsletters of STRN and SDRN, and IGov publications. As such, I was receiving the most important news and recent publications in the form of daily, weekly or monthly newsletters.

The fourth specific source of data was the participation in policy seminars and conferences that were mainly held in London. It was one of the advantages of researching on a contemporary and rather hot topic that left me with this opportunity to attend in some very high profile policy events, particularly about EMR. By this, I not only was being informed of the most updated stakeholders' perspective on electricity policy issues and particularly EMR, it also became possible for me to get in touch with several big names in the field, either from senior politicians and policymakers or from main stakeholders' representatives or even high profile energy experts and academics. Practically, those events provided an excellent platform for my research to get access to a group of important people that otherwise it would be very difficult and time-consuming for me to meet and to conduct interviews with. After the approval of my research proposal in August 2011, I participated in two events in the rest of that year: The InCluESEV conference on 'Energy justice in a changing climate' in November 2011 and subsequently, the Westminster Energy Forum on 'the UK's emissions reduction strategy' in December 2011. Unsurprisingly, 2012 was the main year for data gathering. Therefore, I attended several high profile events in London. It started with the Cornwall Energy event in April called 'Electricity Market Reform: Playing out the Middle Game'. Then continued with two important events from the Westminster Energy Forum: 'the UK's Renewable Energy Strategy: count down to 2020' in May 2012 and, albeit most importantly, 'Transforming the UK's electricity market: one year on from the Reform White Paper and the Ofgem Review' in June 12th 2012. It culminated with another seminar held in Westminster July 2012 called 'Annual Ministerial Review of UK Energy Policy, Regulation & Delivery'. That year was ended by the closing conference of Energy Security in Multi-polar World project which was held in the Royal Society in December 2012. While I entered the writing stage since the early 2013, I continued with attending some selective events to keep updated about EMR policy

process. The first one was a workshop organised by the Exeter IGov on ‘Theorising Governance Change for a Sustainable Economy’. It took place in April at British Library. I also participated in annual conference of Westminster Energy Forum on EMR in July 2013. The theme for this year was ‘Delivering Electricity Market Reform’. The last event of the year was another Cornwall Energy review of EMR process which was held in October under the title of ‘Electricity Market Reform: Moving towards the End Game’. The detailed programs of those events could be found in Appendix C.

Finally, the last but not least original source of data was conducting 53 semi-structured interviews. There were what exactly put this research at the point and revealed what is going behind the scenes of formal policy documents. They were largely conducted between November 2011 and December 2012, with a few complementary interviews during 2013. I started by interviewing academics and energy experts in a more flexible structure. It albeit, by no means, points to a non-structured method of interviewing. I always was using a list of questions, shown in Appendix A. However, I was applying different degrees of openness and flexibility in the structure of discussion based on interviewee’s background and policy stance. While there was a risk of being biased with particular academic points of view, I ultimately came to a contextualised overview of the UK electricity policy change by contrasting diverse perspectives. Academic interviews also were thought a good starting position for a ‘snowballing sampling’ method⁸⁸ aiming at identifying the key strategic actors of the process (Tansey 2007: 765). The question about other important people whom I need to hear their viewpoints was a permanent part of my closing questions. Eventually, I stopped the chain of interviews, once I found most of the recommended names are somebody I have already interviewed. Though that I tried to prevent from being biased with a list of similar position interviewees by asking about somebody who completely oppose them as well. Having shaped a background analysis of the subject and a good list of interviewees, I moved to the next phase of more structured enquiry by interviewing the main policy players from politicians, former and current senior civil servants, the representatives of important businesses and trade unions, some

policy advisors of the main non-governmental organisations involved in electricity policy process and somebody from important think-tanks and influential energy research institutes and consultancy sectors. The list of interviewees in Appendix A suggests a good portfolio of important people in policy field including the former DECC Secretary of State and Energy Minister, several MPs of DECC Select Committee from different political parties and the main civil servants involved in the EMR policy process. It also reflects the perspectives of very important figures in the history of UK electricity policy, which are analytically very worthwhile. Figure 5 in Appendix A shows an overview of the mixture of interviewees in this research. Though that all interviews were being recorded, noted, transcribed, coded and systematically analysed in conjunction with the findings from other research sources.

A challenge I was facing with throughout the interview phase was the need for finding multiple interviewees, even within retired civil servants, to accomplish one specific aspect of the analysis. In fact, as the result of rapid structural changes and the legacy of civil servants' job rotation, there was a lack of knowledge about the history and the background of policies within existing departments. It became clear when I was asking some questions about previous policies and the context that current policies are resting on. Most of the times, I was being replied by such answers that we are new in this department and you need to contact former members. Another difficulty referred to a politically conservative nature of British civil servants. Those interviews thus were indeed as the least analytically productive ones. I characterise most of currently in place civil servants I interviewed as somebody who were seen very cautious in answering the questions, extremely neutral about policies, and also very concerned about their anonymity and probable consequences of their responses. By contrast, I found retired policymakers and some academic energy experts as the best interviewees in terms of precision and explicitness of their, albeit diverse, perspectives. The status was entirely different with politicians and business representatives. It was seen that they were primarily trying to justify their political or commercial position by attacking their rivals or opponents. It was to some extent the same for civil

societies as I found them, albeit in different levels, in a rather ideologically biased and analytically normative stance. Overall, one of the main concerns I had in analysing those interviews was about how to re-contextualise what interviewees said, based on their diverse background and motives, in order to interpret what they exactly think⁸⁹. Nevertheless, something that surprised me was the good level of access to high profile policymakers in the UK. As an overseas PhD student, there was no unbearable barrier, perhaps except a longer waiting time, on my way for interviewing the Secretary of State or the Energy Minister. It was totally different in my previous research experiences outside the UK. The situation was rather opposite with interviewing high positions in energy giants, mainly the Big Six. It was for me as one of the most time consuming and uncomfortable parts of this research. Most of the emails requesting an interview did not get replied and few set appointments were suddenly cancelled. Inevitably, I got a practical strategy by interviewing some lower level representatives either before or after some Westminster events or alternatively over the phone. All interview characteristics including the date, the format and the position of respondent are also indicated in Appendix A.

One thing that it worth noting here is that all five sources of data does not enjoy a similar *analytical weight* throughout the whole study. In fact, based on the nature of research questions and the period of study, they reflect various levels of importance and accessibility. For example, there was no secondary literature available about the policy process of EMR. Therefore, as analysis proceeds towards the period of EMR, the greater analytical weight is attached to the original evidences like interview materials. Whereas, the analysis of policy changes in the early 2000s, by contrast, is largely based on policy documents and some secondary studies. Likewise, analysing the consultation responses is the best method to characterise EMR in chapter four. Unsurprisingly, it does not work well for the purpose of explaining underlying dynamics behind the official features of those changes. It requires a rich observation that is only embedded in personal experiences of main policy players involved. This is something that might be unfolded only through a series of challenging interviews. To conclude, it

means that throughout the whole thesis, the analytical weights of different units of analysis and sources of data have been inevitably evolved.

3.5. Data analysis methods

Having developed a set of correspondent theoretical propositions for each research question, they are expected to play the role of an overall strategy in the way of analysing empirical evidence. As such, they not only frame the process of data collection either by specifying which evidence is required or by preventing from being overwhelmed by irrelevant data, they also direct the process of analysis by providing alternative answers to the research questions. Without a clear set of theoretical propositions, there is always a risk for case studies to end up with purely descriptive findings (Kern 2010: 81). From this viewpoint, analysing empirical findings would largely mean examining to what extent they support or reject theoretical propositions. This definition is practically reflected in both the design of interview questions and the coding guideline of interview materials. In addition to such deductive part of the research, there are also some rooms for inductive elements in this thesis, what is so-called by Yin (2003) as '*explanation building*'. In the case of the lack of theoretical explanation for some specific parts of empirical findings, this study suggests some lines of conceptual extension for existing theories, which ultimately enhance their explanatory power.

In order to analyse the relationship between empirical findings and theoretical propositions, this thesis relies on the process tracing method (George & Bennett 2005). It is defined in the literature as a method 'to reconstruct a process and identify causal mechanisms in a complex phenomenon' (Kern 2010: 63). It investigates, mainly deductively, whether or not empirical findings of the process fit well within research hypotheses⁹⁰ (George & Bennett 2005: 7). As such, it is highly applicable in a qualitative research aiming at providing contingent analysis of the causalities within a complex policy process⁹¹ (Yee 1996: 102; Campbell 2002: 29; Tansey 2007). In this context, the process tracing method, thus, reflects

a prima facie relevance to the case study approach (George & Bennett 2005: 6; Kern 2010: 65). Particularly, when it comes to explain causal mechanisms behind policy changes, it requires drawing a rich understanding of contextual interactions between policy players and change drivers. For this purpose, process tracing needs to recreate circumstances under which the policy change occurred, based on different empirical evidence particularly transcripts of interviews with the main policy players. However, as an analytical shortcoming for policy studies, it is noteworthy to remember that process tracing method is disadvantageous in providing clear policy implications and prescriptive findings (Kern 2010: 83).

Practically, the findings of this research have been drawn from a systematic process of recording, transcription, coding and categorisation under theoretical themes related to each research question. To ensure compatibility and consistency of the analysis, all stages were done manually throughout this thesis and without relying on mechanical analysis by any machinery or software. Findings from various sources have been then triangulated, compared and contrasted to enhance their conceptual reliability and robustness. This analytical journey has eventually led to a set of integrated-holistic pictures in response to the research questions through a repetitive process of reviewing and adapting empirical findings with hypothetical theories.

3.6. Summary and conclusions

Having outlined the research questions and analytical propositions respectively in chapters one and two, this chapter aimed to discuss other elements of the research design addressing how to answer those questions and examine correspondent propositions. It started with the notion of research strategy. Throughout the second section, it explained why the multiple-embedded case study approach is a reasonable choice for undertaking this thesis. It then described which case is selected and why it is analytically important to be studied. Likewise, what the main units of analysis are in terms of timeframe, geographical coverage and

functional boundaries. The further section was dedicated to address the methodological package has been used in this research to shed lights on different angles of the complex case of UK electricity policy. It revealed the analytical rationales behind each method including analysing policy documents, reviewing secondary literature, investigating stakeholders' comments and consultation responses, participating in high profile policy seminars and conferences and conducting 53 semi-structured interviews. Finally, the fifth section displays how empirical evidence are analysed and what is the role of process tracing method in reconstructing a rich understanding of British electricity policy process and causal mechanisms driving shifts in those policies. Overall, throughout five sections, this chapter draws a holistic picture of the analytical journey this thesis has undertaken.

Chapter Four: Conceptualising UK Electricity Policy Change

‘And so the UK energy policy saga continues. ...Each step is presented as the answer – *definitive and final* – but behind that rhetoric is the slippery suggestion of another review of the policy, which makes everything decidedly *temporary*’ (Butler 2012)

4.1. Introduction

This chapter aims to provide an understanding of the UK electricity policy change from the early 2000s to 2012. By applying the framework developed in the analytical chapter for assessing governance changes, it claims that current features of the UK electricity policy still do not fulfil all the characteristics of a wholesale *paradigmatic shift*. It is the case notwithstanding the introduction of Electricity Market Reform (DECC 2011,12), as a ‘*politically determined*’ and ‘*technology specific*’ policy ‘transformation’. Theoretically, this chapter problematises current policy change literature. The chapter points to analytical shortcomings in tracing shifts in technological features of electricity policymaking. By examining the first Proposition, this chapter offers a *fifth* policy component⁹², so-called *technology preference*, for characterising policy change in such ‘large-technical’ or ‘techno-centric’ subsystems. By answering the question of *what* changes have occurred, this chapter paves the way for further empirical chapters in explaining *why* and *how* those changes emerged.

4.1.1. The problem of assessing the UK electricity policy changes

Our analysis of the UK electricity policy since the early 2000s has revealed a continuous process of change which recently culminated in the introduction of Electricity Market Reform (DECC 2011, 2012). This chapter aims at providing an understanding of the extent and features of changes manifested in EMR. Nonetheless, it is important not to portray EMR as the end of the story. It is only

the latest stage in what seems likely to remain an inherently unstable process. This is reflected in an observation by an experienced energy expert, a board member of Energy UK:

...That's a common perception. I've seen young people in my office that think energy policy has always been stable and, it is now rarely going to be changed and it will be like that *forever* or at least for the rest of my working life. No, it blooming well won't. It gets *changed pretty frequently* and at the end of this interview you might conclude that the real question is, 'I wonder how long EMR would actually exist?' How long will it be before somebody says this needs to be revised again? (Interview 27, July 2012)

While many have drawn attention to the continued change in the UK electricity policy, there is no common understanding of either the level of '*profundity*' or the '*type*' of those changes. This is reflected in diverse ways of labelling different changes. On the one hand, a range of approaches *measure* the level of changes from a 'profound change' (Blair in DTI 2003: 3) to a 'new energy paradigm' (Helm 2005, 2007) and a 'ground breaking change' (FoE 2008). Similar accounts of far-reaching change have been characterised by the vague term 'energy transition' (DECC 2009) as well as 'the biggest transformation' and 'once-in-a-generation fundamental reform' (Ed Davey in Harvey 2012).

Others have rejected these accounts of a fundamental shift in the UK electricity and energy policy. They highlight the existence of a 'remarkable resistance' and 'bands of iron' that have 'locked in' the UK electricity policy from actual transition (Mitchell 2008; Kern 2010; Kern & Mitchell 2010; Kuzemko 2011). These arguments are manifested under such statements as 'still no paradigm shift has happened' (Mitchell 2008; Kern 2010; Kuzemko 2011). Similarly, a group of interviewees, mainly from a STS perspective, insist that there is yet 'no actual reform' and 'still very little has changed' (Interviews 2, 4, 6, 7, 8). Consistently, Pearson and Watson (2012: 2) point out that, despite several changes, 'to some extent, we have been here before'.

Whether or not changes are measured as significant, there are other types of labelling focusing on *characterising* policy changes. Instead of just measuring the level of change, they point to the *types* and *aspects* of change. From this

viewpoint, the changes in the UK electricity policy could be characterised based on a set of analytical features. They range from conventional IPE questions about ‘state-market’ ideas (Helm 2005; Rutledge & Wright 2011) to debates about change in policy objectives and their hierarchy (Mitchell 2008; Helm 2005). Similarly, issues like shifts in the socio-economic role of energy (Pearson & Watson 2012; Kuzemko 2011) and the alterations in energy technology and innovation policies (Kern 2010; Winskel 2012) have also been taken separately into consideration.

Indeed, changes in the UK electricity policy have been described in a wide range of different and even contrasting ways. Such diversity reveals varying, albeit ambiguous, models of change assessment. A common problem in such statements is that it is rather unclear what they overtly *mean* by policy change and what are the *criteria* they have measured policies against. Though, all statements do acknowledge that there are some changes in the UK energy and electricity policy, what is, albeit, one of the thesis presumptions. Indeed, in the absence of a clear definition of policy change, it seems that such conclusions are mainly based on a ‘normatively biased’ assessment of ‘what kind of change *should happen*’ (Kuzemko 2011)⁹³.

4.1.2. The chapter proposition: technology preference as a policy component

To cover this theoretical gap, this chapter examines the first proposition developed in the analytical chapter. Building upon the incorporation of insights from transition literature into policy change studies, this proposition provides a framework facilitating a more comprehensive understanding of the UK electricity policy change. Further sections are expected to empirically examine the applicability of that framework in more than a decade of history of the UK electricity policy change. It is noteworthy to remember that this chapter is primarily to answer the first descriptive research question about how one could characterise and measure changes in the UK electricity policy between 2000 and 2012. In particular, it focuses on the most recent changes represented in the case

of EMR: Is EMR a policy change? If so, *what* are the extent and aspects of the change? The explanation of *why* and *how* such changes have come about is the subject of other empirical chapters.

As discussed in the analytical chapter, there are some theoretical complementarities between technology studies and policy change literature. On the one hand, based on the original work of Hall (1993) and the Advocacy Coalition Framework (Sabatier, 1999), current policy literature presents a four-level model of policy components to characterise policy changes. It includes policy paradigm, objectives, institutions and instruments. Nevertheless, regarding the nature of the electricity system as a ‘large-technical’ and ‘techno-centric’ subsystem, current policy frameworks suffer from an analytical shortcoming in taking socio-materiality and the technological preference of electricity policies into account. This problem is even more challenging with respect to a shift in the substance of UK electricity policymaking. In particular, EMR represents a clear move from a ‘*technology neutral*’ electricity policy to a ‘*technology specific*’ and ‘*delivery focused*’ generation of policy.

On the other hand, the Socio-Technical Transition literature (STT) is supposed to provide a ‘comprehensive account’ of technology change in complex socio-technical systems. It points to the logic of ‘*lock-in*’ and ‘*path dependency*’ in which a combination of socio-technical configurations⁹⁴ constrains or favours particular technological pathways. For the UK electricity system, as an example, such socio-technical design is widely understood by interviewees as a set of specific features like *centralised* fossil fuel generation, dominated by *large-scale* technologies, designed to be supply oriented and structured around big and vertically integrated utilities⁹⁵. But, in return, STT has received long-standing criticism in failing to capture well the political complexities of the transition process. Its approach has been widely contested for a so-called ‘de-politicised’ and ‘technocratic’ account of technological transformation (Shove & Walker 2007; Smith & Stirling 2007; Kern & Smith 2008; Meadowcroft 2009; Kern & Howlett 2009; Kern 2012).

Together, the policy change framework and STT could open up an analytical possibility of characterising policy changes, more rigorously, in ‘large-technical’ and ‘techno-centric’ subsystems such as the electricity system. The main argument here, encapsulated in proposition 1, is that, without considering shifts in the characteristics of socio-technical systems, the full characterisation of policy changes is yet analytically incomplete. Accordingly, table 4 provides a visualised summary of an improved framework that the analytical chapter proposes for both characterisation and measurement of change in techno-centric subsystems.

Proposition 1: *In ‘techno-centric’ policy subsystems, the characteristics of socio-technical systems constitute a significant component of policymaking. They should be taken as an independent **policy component** in characterising and measuring policy changes, called here **technology preference**.*

Table 4: The completed five-layered framework of policy mix for ‘techno-centric’ subsystems

<i>Policy Change levels</i>	<i>Policy components and characteristics (modified Hall’s model)</i>				
	<i>Policy instruments</i>	<i>Policy institutions</i>	<i>Technology preference (socio-technical configuration)</i>	<i>Policy objectives</i>	<i>Policy paradigm</i>
Minor change	✓	Probably	Probably	—	—
Major change	✓	✓	✓	Probably	—
Paradigmatic shift	✓	✓	✓	✓	✓

4.1.3. The outline of the chapter

To examine this proposition, this chapter applies the new framework of policy mix on empirical results throughout two further sections. In order to contextualise

the case of EMR in a ‘full policy cycle’, section two examines the chapter proposition through a historical analysis of policy evolution during the first decade of the 21st century. As a result, that section characterises UK electricity governance in the late 2000s as the policy context in which EMR has been shaped and against which its profundity ought to be measured. Analysing policy documents and reviewing secondary material cross-checked with complementary interviews are the main empirical data sources section two rests on.

A further section focuses exclusively on the EMR policy process. Across its subsections it tries to sequentially describe the EMR formal process, briefly explore its policy components and mechanisms, and analytically identify its either changing or continuous aspects. The third section is largely built on the content analysis of almost 250 responses submitted to the DECC consultation call in December 2010, working papers and comments published by stakeholders or academic intellectuals, and 52 interviews conducted by this research. The process tracing method has been partially used to structure the argument overall. At the heart of section three’s analytical target⁹⁶ is measuring the degree as well as characterising the type of actual changes in the UK electricity policy by 2012. A subsequent section discusses the applicability of the chapter's proposition in the UK context. Finally, a summary and conclusions for the whole chapter will come under section five.

4.2. Background Study: The UK electricity policy change (2000-2010)

Policy change is not a single event, but a process over time. Given that policymaking is a ‘long-frame’ and ‘strategic’ process, it needs to be analysed in a ‘full policy cycle’. This means a wider context of long-term policy evolution and change that allows ‘operationalisation of falsifiable hypotheses’ and ‘smoothing out short-term fluctuations’ (Szarka 2010: 837). The ACF offers a minimum period of ‘a decade or longer’ for studying a policy change (Sabatier & Weible 2007: 192).

Therefore, to contextualise EMR in a time frame when its policy seeds started to get planted, and albeit ought to be measured against as well, this section focuses on an analysis of almost the last decade of the UK electricity policy⁹⁷. In order to examine Proposition 1, the chapter applies the developed framework shown in table 1 and 4 on different stages of the UK electricity policy since the early 2000s. It is worth noting that although EMR is an electricity-specific policy package, it is analytically difficult to differentiate between electricity policy and wider energy policy in the context of the UK. In fact, EMR is a result of a recent shift in policy attention towards the power industry as the main driver of broader energy targets. Therefore, the unit of analysis for this section is inevitably the overall energy policy changes. Perhaps, wherever it is distinctive, the focus of analysis has been made on electricity-specific policies.

4.2.1. De-regulation, privatisation and marketisation (1980s-1990s)

Following the election of the Conservative government in May 1979, as part of a wider paradigmatic shift, a new model of energy governance replaced the former nationalised-politicised UK energy policy⁹⁸. Central to this new model of energy governance was the idea of a ‘de-emphasised socio-economic role’ for energy⁹⁹ from a ‘national or strategic’ asset at the heart of modern society to ‘just another commodity’. Consequently, in a direct link between energy characterisation and governance, the ‘commoditised’ energy was perceived in a way that should be governed through a depoliticised-privatised competitive market rather than state intervention¹⁰⁰. In other words, the preference was to rely on market much more than on political process. Collectively, the concepts of ‘normalised energy’ and ‘marketised de-politicisation¹⁰¹’ functioned as a *policy paradigm* for the pro-market energy governance model.

Neo-liberal ideas like competition and cost efficiency were deeply embedded in UK energy governance insofar as they transcended the ideational level and were reflected in policy objectives as well. Consequently, even security and other social values like lower price energy were dismissively conceived as a ‘natural outcome’

of marketisation (Mitchell 2002). Respectively, for the UK energy system, a competitive market became the main *policy objective* and then, by far, others.

The process of ‘marketised de-politicisation’ was also reinforced by the emergence of an overarching privatisation strategy. After gas privatisation and the partially unsuccessful attempt at privatising the nuclear and coal industries during the 1980s, the ‘non-nuclear’ electricity industry became another subject of the privatisation process in 1990¹⁰². Furthermore, as a result of a ‘technocratic de-politicisation¹⁰³’, energy was seen a ‘technical’ subject that needs to be ruled by the ‘experts’ instead of ‘politicians’. Therefore, the responsibility of the state in energy planning and policy was increasingly conceived as limited to market regulation and monitoring¹⁰⁴. The pattern of energy ‘deliberative’ de-politicisation even constrained public scrutiny and political accountability of the energy system. Consequently, in 1992, the Department of Energy was officially abolished. Since then for almost 16 years, energy was the responsibility of the DTI, similar to other ‘economic commodities’ and ‘traded goods’. In addition, to ensure effective competition, Ofgem was ultimately established as an independent regulatory body. Altogether, both structural changes, i.e. privatisation and ‘technocratic de-politicisation’ in Kuzemko’s wording (2011), shifted *institutional authority* and responsibility of the UK energy sector from government to the market and the independent regulator.

From an *instrumental* point of view, boosting the competitive market was the common answer of pro-market governance to a diverse set of policy questions from security to cost-efficiency. Accordingly, the first electricity market mechanism, called the Wholesale Market ‘Pool’, came into place. Under that mechanism, all power should be virtually sold into and bought from the pool. However, there were also some marginal economic instruments like ‘blind’ energy VAT (DTI 1993) to meet very preliminary sustainability targets.

In terms of *socio-technical configuration* of the UK electricity system, pro-market energy governance had a set of inevitable consequences whereas, in theory, it

favoured technology neutrality and ‘blindness’ to any preference for the type of fuel source¹⁰⁵. By the application of the pool market, nuclear stations were perceived economically unattractive¹⁰⁶ (DTI 1995). Likewise, this process coincided with a dramatic decline in the coal industry's competitiveness because of a complex set of economic, political and legal reasons¹⁰⁷ (Pearson & Watson 2012: 15). More importantly, the initial fall in the imported gas price and its comparably lower investment risk¹⁰⁸ led to a widespread 'dash for gas' and the installation of Combined Cycle Gas Turbines (CCGT). Overall, pro-market energy governance shifted the technological balance of the generation mix (See figure 18 in Appendix B). Nonetheless, it was kept locked into fossil fuel options and other socio-technical characteristics like centralisation, scale and structure¹⁰⁹ remained intact.

In short, as part of a wider macroeconomic ‘revolution’, it is claimed that a fully fledged paradigmatic shift in energy governance took place in that period. What happened was a set of fundamental shifts at all policymaking levels and components, from the ideational level to policy objectives, which then ascended respectively to the structure of governance, market-based policy instruments, and finally affected the technology mix and socio-technical configuration. Altogether, they made new pro-market ideas deeply institutionalised within the UK energy governance.

4.2.2. The policy re-birth and modest policy implications (the early 2000s)

In 1997, when the Labour party won the election, some changes in the UK electricity policy started to emerge. The publication of a series of high profile reports, particularly the Royal Commission on Environmental Pollution (RCEP 2000), showed that environmental issues had got more political significance. This pattern led to an Energy Review in 2002 (PIU 2002). It upgraded the concern of climate change in energy policy with a set of ‘ambitious’ policy recommendations. As a conservative response, the DTI published the 2003 Energy White Paper, which highly compromised on radical aspects of the PIU report and continued with commitment to pro-market energy governance. Therefore, the

dominant liberalised policy *paradigm* remained intact. This was similar for *governance structure* as well. The PIU's recommendations for a new department were rejected by the 2003 White Paper. Therefore, no major *institutional* change occurred, except establishing some low carbon technology institutes such as the Carbon Trust and the UK Energy Research Centre.

The main important change in that period took place at the *policy objective* level. For the first time, emission reduction and affordability targets were added to the mixture of competition and security. However, the practical impact of those new targets on other levels of policymaking was constrained due to their imprecise and vague wording: '... to put ourselves on a *path* to cut the UK's carbon dioxide emission...' (DTI 2003: 11). Actually, there remained some 'wriggle room' for further negotiations and interpretations.

In terms of *policy instruments*, while the main direction was consistent with market-based mechanisms, some new instruments were introduced. Firstly, as a result of political criticism of the pool market¹¹⁰, it was replaced by a 'voluntary bilateral contracting' design in 2001: the New Electricity Trading Arrangement (NETA), which then was extended into the whole UK in 2005 and entitled British Electricity Transmission and Trading Arrangement¹¹¹ (BETTA). Secondly, in continuation of remarkable efforts to bridge economic incentives and climate targets, a set of complementary policy instruments emerged. The replacement of Non-Fossil Fuel Obligation (NFFO) with the Renewable Obligation (RO) was a clear example. Similarly the introduction of the European Emission Trading Scheme (EUETS) in 2005 intensified the UK momentum of climate policy. Apparently, both RO and EUETS were supposed fully compatible with market principles.

With regards to the *fifth* policy component, despite continuous dominance of technology-neutral policymaking, some spaces began to open up. The 2003 White Paper drew a *prospect* of future technology mix. It highlighted the role of renewable and energy efficiency, rejected the attractiveness of nuclear and coal,

and emphasised gas as a transition option. Furthermore, by the introduction of RO and the 're-emergence of the UK energy innovation system' (Winskel et al 2012: 7), a form of modest innovation policy started to emerge¹¹². Nonetheless, in practice, these changes were still marginal to mainstream fossil fuel generation. In terms of other socio-technical dimensions, the UK electricity policy was still characterised as centralised, large-scale and structured around big companies. The introduction of NETA, in particular, resulted in a 'coupled consolidation' of 'an oligopoly' and 'vertical integration' undermining real competition (Henney 2011a: 338; Henney 2011b: 53).

As such, given the level of institutionalisation, the pro-market energy governance showed a high degree of policy resilience and path-dependency. Consequently, even in the case of the *re-birth* of energy policymaking and a potentially significant change in policy objectives, they were accompanied neither by new instruments nor by change in the machinery of state. Unsurprisingly, the technology preference was also affected marginally.

4.2.3. Re-prioritisation of objectives and the process of contestation (the mid 2000s)

Contrary to the complacent presumptions of the 2003 EWP, in the mid 2000s a combination of dramatic changes in the domestic and international context of the UK energy system raised serious concerns about the 'security of supply'. As will be elaborately explained in the next chapter, the pattern of energy 'securitisation' raised a high level of public expectation for a state role in ensuring access to energy as, once more, a national strategic asset. This concern then resulted in a plethora of policy documents including the 2006 Energy Review (DTI 2006), the report published by Joint Energy Security of Supply (JESS 2006) and eventually a new Energy White Paper in 2007 (DTI 2007). Nonetheless, despite opening up some space for questioning the over-reliance on the pro-market policy paradigm¹¹³, energy security was still understood to be the natural function of a competitive energy market (FCO et al 2004; DTI 2007).

For the first time since privatisation, the hierarchy of *policy objectives* shifted fundamentally whereby energy security jumped to the top, even above the competitive market. But subsequent changes in policy components remained limited mainly because of not blaming pro-market governance. There was a very minor *institutional-structural* shift. Despite the re-politicisation pattern and increasing demand for state interference, in practice only some marginal capacities were added to the relevant departments and policy debates began to broaden out into other voices not previously involved in energy policymaking¹¹⁴. Similarly, *policy instruments* remained committed to the market-based mechanisms¹¹⁵. Alongside NETA/BETTA, a new version of RO was also introduced.

The condition for *technological preference* was slightly different. As a natural response to a geopolitically informed security concern, a clear shift occurred towards a more ‘home-grown’ and domestically produced energy portfolio. Although this strategy included renewable energy and coal as well, it was a more significant change in terms of nuclear energy, compared to the 2003 White Paper’s rejection. The 2007 Energy White Paper’s supportive approach was complemented by the Nuclear White Paper¹¹⁶ (BERR 2008). Similarly, the UK approach to the emerging CCS technology was also encouraged. Such ‘centrally planned’ innovation policy is called ‘breakthrough style’ by Winskel et al (2012: 2). Having characterised both nuclear and CCS technologies as centralised large-scale supply options, it would be apparent that there was no major change in socio-technical preferences towards either decentralisation or disruptive small-scale technologies. Furthermore, despite growing technology-specific policy rhetoric, no supportive policy was officially introduced, nor was the predominant market principle of technology neutrality seriously challenged: ‘it would be for the private sector to fund, develop, and build new nuclear power stations’ (DTI 2007).

Overall, while the energy policy paradigm were deeply ‘re-politicised’ and policy objectives were re-prioritised, the 2007 EWP kept policy advice firmly within the

boundaries of market-led energy governance. The main changes in that period were limited to the process of *securitisation* and consequent *re-politicisation*. Nonetheless, it is undeniable that such provocative set of anomalies and contradictions triggered a process of public *contestation* of existing framework of energy policy and governance.

4.2.4. Target-setting and institutional reconfiguration (the late 2000s)

With the continuation of the processes of ‘re-politicisation’ and contestation, the next chapter will explain how the strategic convergence of re-emerging climate movement with security concern formed a growing demand to re-evaluate the effectiveness of existing policy design. As a direct result, the dominant liberalised *policy paradigm* was gradually displaced in favour of a more interventionist approach¹¹⁷. Eventually, an unprecedented plethora of obligatory policies and legislations was brought about including the Climate Change Act (DECC 2008) and the ‘European-led’ Renewable Directive (EC 2007). A clear distance from liberalisation narrative then became visible in several published policy documents¹¹⁸. As an example, the UK Low Carbon Transition Plan (DECC 2009) clearly reflected the ‘culmination’ of an ‘interventionist industrial strategy¹¹⁹’ (Scrase et al 2010: 6; Skea et al 2011: 49). Instead of an entire rejection of the market’s workability, the new mixed approach¹²⁰ questioned the adequacy of market paradigm in meeting challenges on such a scale of de-carbonisation (Scrase et al 2010: 2). Though, there was also an interpretive shift in the socio-economic role of energy with the emergence of a mixture of ‘energy-climate nexus’ (Kuzemko 2011). Indeed, what had shifted from a normalised commodity to a national asset, in the mid 2000s, now was expanded to include climate issues as an indispensable part of the energy system.

Arguably, the crystallisation of *policy objectives* was one out of the two most significant changes in that period. Firstly, the 2008 Climate Change Act set a legally binding, ambitious emission reduction target. Simultaneously, the European Renewable Directive committed the UK energy system to an ‘over-ambitious’ statutory obligation to enhance the role of renewable technologies in

the energy portfolio¹²¹. Collectively, both compulsory measures formed the emergence of a ‘*climate-renewable*’ target, alongside security and affordability, albeit less concerning at that time. Indeed, the translation of policy objectives into legal obligations gave them a high level of institutionalisation and political saliency they never had before¹²².

Apparently, the second most notable shift happened at the *structural level*. To represent new system boundaries covering two ‘inextricably inter-linked’ areas of climate and energy policy at the Cabinet level, the Department of Energy and Climate Change (DECC) was established in 2008¹²³. Similarly, as directed by the Climate Change Act, the Committee on Climate Change (CCC) was formed as an independent, de-politicised monitoring body that crystallises the long-term decarbonisation targets¹²⁴. Several reviews of Ofgem’s duty also expanded its already narrow regulatory responsibilities. In addition, the UK energy innovation system was ‘remade’ through the creation of ‘several arms-length agencies’ like the Energy Technology Institute and the Technology Strategy Board (Winskel et al 2012: 9). Altogether, these institutional changes not only reflected high-level political saliency and long-term commitment to energy policy objectives, but also they marked a culmination in the process of structural re-politicisation.

Having signed the Renewable Directive and published a new series of policies, like the UK Low Carbon Transition Plan (DECC 2009a) and the UK Renewable Energy Strategy (DECC 2009b), arguably a major shift in policy discourse started to emerge towards a form of technology-specific policymaking. Consequently, Winskel (2012: 5-6) points to the construction of ‘a *serious interest* in technological innovation’ and the process of ‘*re-energising*’ the UK energy innovation system as two major changes that occurred. In terms of generation mix, for the first time a particular generation option, ‘home grown’ renewable, was understood as a dual answer for both climate and security concerns (DECC 2009b: 10). Nonetheless, this period witnessed a range of minimal *instrumental* changes, from ‘banding’ in RO to introducing small-scale Feed-in-Tariff. In practice, none of them was able to shift the technological balance fundamentally away from

locking into the fossil fuel system. Likewise, despite political temptation towards decentralised community-based energy policy due to the process of devolution and the discourse of 'localism', such ideas did not get enough institutional momentum in the context of financial recession and ambitious change imperatives.

Overall, from five levels of policymaking constructed in the framework applied here, by the late 2000s new policy objectives had been institutionalised and governance structure had shifted substantially. There were also some forms of change at the policy paradigm and policy instrument level, albeit less significant than a 'clear break from the past'. While the former implied the displacement of an ex-paradigm, a greater role for government and a mixed 'energy-climate nexus', there was no cohesive alternative interpretative framework instead. The latter, similarly, altered existing design of RO and added new mechanisms like FiT, but just in small-scale technologies, and the dominance of market-based and fuel-blind instruments was never practically challenged. More importantly, there was very minimal shift in socio-technical preference. In spite of some new technology-oriented policy narratives and marginal mechanisms, neither generation mix nor system configuration witnessed any significant alteration. It means, the then electricity system was still largely technology neutral, heavily locked-in unabated fossil fuel centralised supply, and dominated by an 'oligopoly' of the Big Six with 'cross-ownership' and a 'vertically integrated' structure. In short, that status fell far behind a comprehensive paradigmatic shift that needs to be represented in significant alteration an all policy components. Regarding the centrality of targets and new structures at the heart of the governance system, I would call this a period of *target-setting* and *institutional reconfiguration*.

4.3. The period of regulatory reform and technology delivery (2010 onwards)

Given the significant shift in obligatory policy objectives and governance institutions, a new set of practical questions began to arise: So, what's next? Who is responsible for delivery, and how? The level of puzzlement is reflected in the following quotation from a member of ECC in Parliament, when he explained the rationales behind EMR.

We have arguably the toughest decarbonisation targets in the world, enshrined in law. Is that enough? Dieter Helm tells us it is, others tell us it isn't. I'm sure it's still a point for policy controversy. ... But a more important question I think really is: to whom do you think it should be given to deliver it? Is it a government obligation? Is it a generator obligation? Is it somebody else's obligation? The bit of the puzzle I've never worked out is, it's great *dreaming up* the target, but *who* do you, actually, and *how* do you would make it happen? (Interview 53, June 2013)

In the late 2000s, as will be elaborately discussed in chapter five, the accumulative desire for policy change was a signal for an end to a long period of 'complacency' and 'over-optimism' about meeting targets and new challenges through 'business as usual' with only parsimonious instrument modifications. In fact, a combination of escalating challenges, legally binding targets and disappointing results collectively shifted UK electricity policymaking *beyond* high-level policy debates of setting targets and restructuring governance departments. Instead, in the early 2010s, the focus moved towards issues around *practicalities* and *technicalities* of an on-the-ground delivery. There was a transition from policy rhetoric and 'energy targetism'¹²⁵ (Newey 2012) to practical reforms and getting hands dirty.

The first practical shift was a turning focus on power generation as the central solution to meet overall energy objectives¹²⁶ (CCC 2008; DECC 2009). In addition to a near carbon-free with 30% renewable electricity system, growing security and affordability concerns also emerged. Consequently, a series of warning policy documents and reports during 2009-2010 addressed such electricity-related concerns¹²⁷. Ofgem's Project Discovery¹²⁸ (2009), the Treasury's Energy Market Assessment¹²⁹ (HMT 2010), and the CCC's Step Change¹³⁰ (2009)

report were the main instances. More importantly, this pattern eventually led to the Coalition Agreement (HMG 2010) which politically endorsed the aim of 'energy market reform to deliver security of supply and investment in low carbon energy'. Though, its detailed suggestions framed almost all policies that came afterwards¹³¹.

Collectively, albeit from different points of view, such important policy documents deeply disputed the adequacy of 'current market arrangements' for meeting electricity targets. That market was understood to be incapable either of attracting enough investment or of directing investment towards low carbon technologies. Thereby, a growing demand emerged for some form of reform in the power market. It was the first time since privatisation that the central concerns of electricity policy were about how to *deliver* investment and via which *technological pathways* this should be done.

Electricity Market Reform primarily seeks to meet the above concerns. Therefore, the rest of this section aims at providing an analysis of the changing characteristics of EMR. The main question here is to what extent and in which aspects EMR could be regarded as a major policy change? Has EMR fulfilled the requirements of a paradigmatic shift? It is worth noting that the results of this section are largely based on the content analysis of stakeholder comments submitted in response to the EMR consultation call (DECC 2010) and are cross-checked with 53 interviews conducted with policymakers, business representatives, consultants, civil activists and energy experts who were involved in the policy process of EMR.

4.3.1. The Electricity Market Reform White Paper (2011) and the Energy Bill (2012)

In response to the growing recognition that current electricity market design was unlikely to meet the government's electricity-specific targets, the DECC launched a consultation on Electricity Market Reform (EMR) in December 2010, which resulted in the White Paper (*Planning our electric future*) in July 2011. At the time of

announcing EMR proposal to the House of Commons on 16th of December 2010, the then DECC Secretary of State, Chris Huhne, published an article in The Daily Telegraph: “The biggest energy market shake-up in 25 years”.

...Left alone, the current market will not deliver these objectives at the lowest cost...Yet private incentives do not capture public objectives...So today the Coalition begins a consultation on a reform that would reshape this market more fundamentally than at any time since the eighties, when the Lawson reforms were the pioneer of Europe’s deregulation...By forging a comprehensive response, our mix of four inter-locking policy instruments should provide greater assurance of decarbonisation at the same time as lower bills in the long run... Taken together, these reforms can unlock private investment on an unprecedented scale... It is time to get off the fossil fuel hook and onto clean, green electricity (Huhne 2010).

Since privatisation in the 1990s, EMR was the third¹³² and arguably ‘the most fundamental’ shift in the design of the UK electricity market. It was basically proposed to reassure investors about the profitability of low carbon electricity supply investments with maximum de-risking characteristics. The White Paper was followed in order by the Technical Update (December 2011), the draft Energy Bill (May 2012), the pre-legislative Parliament scrutiny (July 2012), and finally the Energy Bill (November 2012) (review all updates in DECC (2012b)). Since EMR is yet, at the time of writing in mid 2013, an ongoing process until implementation in 2014, it is still difficult to assess the extent of further likely changes. By the end of 2013, technical details will be more elaborated and Royal Assent on the Energy Bill is expected¹³³. Indeed, it is still ‘too early to judge’ its practical consequences. Therefore, what this research means by EMR relies mainly on the published documents: the EMR White Paper (DECC 2011) and the Energy Bill (DECC 2012a).

While EMR acknowledges the ‘diagnosis’ of previous documents about the inadequacy of existing institutional design, its recommended solution consists of an over-complex policy package with a mixed characteristic of radical and incremental changes. To characterise policy change under EMR, this section starts with an analysis of four new policy instruments, as the most tangible changes EMR has brought about.

- **The introduction of a new package of policy instruments**

The EMR policy package rests on four pillars of policy instruments introduced to either replace or complement major existing mechanisms. Firstly, the Feed-in Tariff with Contract for Difference¹³⁴ (FiT-CfD) was designed to replace RO with not only a more *interventionist* mechanism, but also one more *inclusive* to nuclear and CCS alongside renewable energy. The CfD is arguably 'the main mechanism of EMR', whereby a fixed 'strike price' is determined for the different low-carbon technologies. Then, through a long-term contract, its difference with average market price is paid to or charged from the generator. Another central proposal of EMR is the Capacity Mechanism (CM). This is a security-specific mechanism ensuring an adequate flexible peaking supply¹³⁵. The third policy instrument is an Emissions Performance Standard (EPS). It functions as a 'bolstering regulatory back-stop instrument proscribing fossil fuel generation, particularly unabated coal¹³⁶' (Nigel Cornwall 2012; Newbery 2011: 6; Green Peace 2011: 5). Finally, the Carbon Price Floor (CPF) has been proposed to complement EUETS which has become gradually 'useless¹³⁷' due to the volatility of the price of carbon and the 'lack of European political commitment' (Newbery 2011: 12). Although the 2012 Energy Bill has kept the main features intact, it has also proposed a contracts counterparty body and a Cap of the Levy Control Framework (LCF).

- **Towards more intervention; a 'market-government hybrid' paradigm**

An analysis of consultation responses clearly shows that EMR mechanisms have been widely understood as a clear move away from pure market ideas towards a more interventionist policymaking. As just one example, the European Federation of Energy Traders wrote in its comments (EFET 2011:1) that 'the package, as a whole, marks a *decisive* and *irreversible* shift from market outcomes towards government sponsored solutions'. Nonetheless, it is yet to represent a complete shift in policy paradigm. Indeed, there is neither a wholesale rejection of market ideology nor a complete replacement of a cohesive alternative policy paradigm. Consequently, a new form of '*hybrid*¹³⁸' paradigm between the central governance and market pathways is emerging.

On the one hand, a large proportion of future supply is expected to be driven by the CfD and CM which are technically non-market mechanisms¹³⁹. As a result ‘these mechanisms lead to a level of state involvement not seen since privatisation in 1990’ (Exeter EPG 2011: 2), as the CEO of SSE described:

The powers in the Bill effectively give government an unprecedented power to dictate almost every aspect, ranging from *which generation* technologies are built, at *what scale*, *where*, *when*, *by whom* and *how much* they are paid. This is a remarkable amount of intervention, basically amounting to public sector procurement. (Marchant 2013)

Unsurprisingly, most free market economists criticise CfD and CM because they fundamentally shift ‘competition for customer’ to a political ‘competition for government subsidies’ (Platchkov et al 2011: 57). Such level of complain was clear when I interviewed several high profile, so-called, Hayekian and marketer economists of energy sector. One said ‘it is no longer a *competition in the market*. It is, indeed, a politicised *competition for the market*’. Another described EMR a ‘*disastrous package*’ and a ‘*miss-sold*’ financial product that ‘obviously does not work’ and it is going to ‘*fall off* the rails at some point. As an instinctive free *marketeer*, I’m certainly uncomfortable with that’ (Interview 13 and 19, December 2011). Such critical approaches have been encapsulated in the quotation below from the Regulatory Policy Institute (RPI), an important market-based think-tank.

At home, current policies and proposals have been excoriated by leading economists... Abroad, followers of UK policies must be surprised by an approach that seeks to abandon policies in which the UK has led the world, in favour of illiberal-central planning of investment, which represents ‘a big government small society’ sort of effect... which will marginalise us in Europe and of course and won't be taken up by everybody else... In general, I concur with the recent critics of EMR rightly identifying the current trend as involving ‘*re-monopolisation of power*’ and ‘*wishful thinking*’ (Regulatory Policy Institute 2011: 1).

Critics believe that by transferring responsibilities from industry to government, EMR rules out market signals substantially (Platchkov et al 2011: 59). Indeed, after the application of various measures proposed, it is difficult to envisage ‘how much of a market in electricity will be left to be contested in a normal, competitive way’. The following quotation from a former civil servant and fellow at an energy consultancy reflects this concern.

[Under EMR] The *cost structure* of the industry is going to substantially change. The aim, as I understand, is to de-risk upstream generation, low carbon generation but de-risking is just another way of saying, taking away pricing signals, *taking away market signals*. Once you've done that, the market will be small, it will be easily gamed, it will give very odd price signals, you're going to get a structure that really won't work very well. There will be *a small proportion of the market* which is making the price. Since then, what is going to be underpinning the whole system is not markets but a set of regulations... it's a sort of *a house of cards*. (Interview 48, July 2012)

On the other hand, no coherent policy paradigm has yet emerged. Indeed, despite a clear distance from market orthodoxy, EMR suffers from an 'absence of a distinct ideological direction'. Instead, its current features are more conditioned by existing contexts and practicalities and it is still heavily influenced by the legacy of the market. Not only does the title of EMR explicitly resonate with *Market* terminology, but the prospect of policy is also shaped by the aspiration of another competitive market. As one of the EMR's architects said during an interview, despite significant intervention still required to see new technologies come into the market, 'our *long-term aim* is to transition to an *electricity market* where low carbon technologies compete on cost and the cheapest win the biggest market share. Under EMR the competitive market will remain at the *centre* of energy policy BUT... (Interview 29, EMR senior member at DECC, July 2012). In a similar statement, the former member of DECC Ministerial team said:

In essence I would like to say that DECC remains and Government remains very, very committed to a *market-led approach* to energy reform, ... You can argue that it is a *market intervention*, yes obviously it is, but it is designed to offset the externalities in terms of pollution, alternatively we could ban the use of fossil fuels entirely, but this is a rude alternative ... I think in general we are not in favour of allowing people to bay other people to kill each other, but that would be I suppose an intervention in the market. *All markets are social contracts* in other words... Interview 46, December 2012).

Such a new form of 'interdependency between public and private actors'¹⁴⁰, provides a new arrangement in which the market should do whatever government wants'. As a critic of EMR said, it means the state has 'fixed the market to get the technologies it wants' (Interview 13, Economist at a leading Electricity Policy Research Group, November 2011). Thereby he predicted such a mixed framework requires 'continuous fixing' through 'fundamentally unstable' subsidies to send signals to prospective investors¹⁴¹. Whether or not different interviewees were

satisfied with such a hybrid arrangement, almost all thought that ‘it is more about persuading market to operate in a certain way in the light of *market failure* than an *ideological* commitment to regulation’ (Interview 15, Former politician and head of an energy institute, December 2011). Accordingly, a former SPAD of PM and energy policy commentator called the ‘current complex mixture’ of state-market framework a ‘very uncomfortable hybrid’.

Hybridity is, actually, to some extent unavoidable, but we need a clearer intellectual framework for electricity system to work properly... What is happening here is that private investment is constrained in every detail by a vague mix of regulation, subsidies and national political and security concerns... therefore, I would say that current electricity policy suffers from a form of *drift* and *indecision* (Interview 50, April 2013).

In sum, the hybrid nature of the current policy paradigm not only has eventuated in an ideologically inconsistent status, it also has casted a lot of doubts on further possible scenarios. Those scenarios range from a temporary hybridisation and wholesale ‘reversion’ of market logic, as the UK government wishes for a set of market-friendly solutions like auction, to ‘a permanent deviation from the liberalised trajectory’ (Keay 2012). Despite the continuing market rhetoric in place, a senior policy research fellow at Policy Exchange predicted different practical consequences of the ‘new market-government hybrid governance model’.

It is not completely stopping the market. It is diminishing the role of market and bringing market to the end. It undermines the logic of the market in providing more benefit for customers. It is not a neutral shift from one market to another; it is a lessening in the functionality of the market, because many of the main decisions are made by government and it will lead to a ‘frustrating, given-up and less proper’ market. If EMR is sustained, it will lead to the *end of the market*. (Interview 17, December 2011)

- **Beyond targetism and the ‘trilemma’ of electricity-specific policy objectives**

Despite a politically controversial debate in the process of the 2012 Energy Bill (DECC 2012a) and the subsequent amendment proposal for setting a decarbonisation target for 2030¹⁴², EMR eventually does *not* indicate any electricity-specific policy objective¹⁴³, a fact that reflects an intentional distance from what is so-called ‘energy targetism’.

Setting targets is only a part of policy process. It's perhaps a good way of challenging and inspiring people, I would say, but they can't work effectively, and, in another word, won't be relevant to policy outcomes unless you know how to meet them... if you set ambitious targets without knowing how they can be met and via which policy pathway, that won't be a *responsible decision* for a Minister to make. It's, indeed, my difficulty with being *trapped into a target-setting stage* without following further policy steps. (Interview 47, Former member of DECC Ministerial team, Conservative MP, February 2013)

In a similar statement, an analyst of energy politics criticised an over-reliance on target-setting as the end of the story, particularly in the case of UK de-carbonisation target.

What we need to understand is that setting a legal target is just the beginning in a process of *political struggle*. In the UK, I think our current problem is not a lack of ambitious targets, but we're facing a post-target policy challenge in which our existing targets, I think, have not yet been able to drive a kind of self-perpetuating policy dynamic. Look at the Climate Change Act as a clear example. It aimed to guarantee the UK's low carbon pathway by relying on legal means and a very bold piece of law. But it has so far failed, arguably, to energise a political process with sufficient momentum to reach a no-return point. (Interview 51, Former environmental campaigner and political analyst of energy governance, May 2013)

Nonetheless, EMR is, by no means, a target-free policy package. The overall design of EMR seeks to materialise sector-specific translations of legally binding energy targets. Firstly, the prospects of near-complete de-carbonisation of the electricity supply as well as 30% renewable power have predominantly inspired the expectations that EMR is to address. It is almost the same for new security concerns derived from the risk of power blackout and under-investment. As the second objective, this implies that EMR is expected to attract almost £110 billion in new investments by the next decade. Finally, the growing concern of affordability and energy cost in a period of austerity is increasingly gaining political momentum as another mainstream policy objective¹⁴⁴. Together, these three distinctive objectives shape a complex mix of competing objectives that is commonly referred to the energy policy 'trilemma' (Bolton & Foxon 2013: 2; Winskel 2012; Winskel et al 2012; Helm 2012b; Foxon 2013; Boston 2013). The interaction and tradeoffs between these multiple policy priorities form a 'multi-dimensional energy policy riddle', in McIlveen and Helm's (2010) wording, that EMR is supposed to address. Consequently, the fact that EMR attempts to '*reconcile diverging policy objectives*' has resulted in a 'convoluted, complex, messy and risky' status¹⁴⁵ (Interview 44, Head of policy at one of the Big Six, July

2013). The senior member of EMR at the DECC envisaged in an interview that ‘it is our view that Ministers need to make the ultimate *trade-offs*, because some of these trade-offs are quite big between the environment, cost and security of supply...’ (Interview 29, July 2012).

Technically, this trilemma is clearly reflected in the level of complexity EMR contains. To some extent, three out of four EMR mechanisms are primarily related to the de-carbonisation objective: CPF, EPS¹⁴⁶ and CfD. The CfD is also the core instrument for incentivising low carbon generation. In turn, the Capacity Mechanism (CM) is directed towards ensuring supply security. In contrast, EMR is still critically scrutinised for the lack of full attention to the affordability concern. The introduction of the Levy Control Framework in the Energy Bill (DECC, 2012) is seen an attempt to ‘limit the direct financial impact of EMR on bills’ (Steward 2013). Also, in 2013, the Government is going to define the scope of an exemption for energy intensive industries from the costs of Contracts for Difference (BIS-DECC 2013). Overall, the majority of people I interviewed thought that the original design of EMR in the 2011 White Paper had prioritised ‘climate and security objectives over competition and affordability concerns’ (Interviews 11, 13, 15, 17, 19, and 24). Though, this balance has changed since then, during the long policy process that still continues.

- **Towards a more state-led governance structure**

From an institutional point of view, while EMR does *not* explicitly impose any specific structural change, it clearly underpins the design of the late 2000s. Arguably, it would further shift the balance of power from market and independent regulator, Ofgem, towards government and the DECC in particular. As a senior director in Ofgem described during a lecture in July 2012, ‘EMR was likely to fundamentally change the *Government’s role* in energy generation and delivery and the arrangements would place the Government in a quasi-procurement role’. He felt that the Government’s role in EMR had landed towards the more radical end of what had been put forward a few years before in Project Discovery and that EMR now is a ‘government-controlled policy’¹⁴⁷. In a similar statement, an energy lawyer clarified this point during an interview.

I think the independent role of the regulator is now very much subordinate to DECC, it's there to primarily deliver what Government prioritises, and it's required to report every year on how it does that. There will be strategy and policy statements issued by the Secretary of State in which Ofgem will be required to regulate to try and achieve. (Interview 31, Lawyer at Norton Rose, July 2012)

By the introduction of an Institutional Framework (DECC 2012c), EMR declares the exact responsibilities of departments involved in which all are expected to be accountable to the DECC. More importantly, in the Energy Bill (DECC 2012a), EMR introduced a governmental body that is functioning as the contracts' counterparty. Regardless of further technical details, this new structure would cause a more direct involvement of state 'delving into the heart of energy policy'. Even within the DECC, setting up 'dedicated offices' for the main low carbon electricity technologies facilitated explicit government technology strategies and policies. What is more, the DECC now has a more active involvement in co-ordinating centrally diverse technology institutes and energy innovation policies¹⁴⁸.

Such strategic power of the state is not limited to the DECC's institutional boundaries. There is an increasing pattern of Treasury's involvement in energy policy as well. In addition to Treasury's control over subsidies and contracts, it also represents the political voice of Conservatives in the Coalition energy policies: 'Energy policy decisions are not made in the DECC [exclusively] – they are made in the Treasury [as well]' (Interview¹⁴⁹ 50, senior energy analyst at Financial Times, April 2013). The setting of financial limitations for the Levy Cap in the Energy Bill (DECC 2012a) and the introduction of the Gas Generation Strategy (HMT 2012) are just two examples of how influential is the role of Treasury. As another example, when I participated in an event organised by the Westminster Forum about EMR, the absence of a Treasury representative was strongly protested by attendees. They believed that every debate about EMR is inconclusive unless Treasury is playing an active role. As the former Chair of the Energy and Climate Change Committee warned, regarding the growing policy tension between the DECC and Treasury, 'the Treasury could make energy policy *unworkable*¹⁵⁰' (Yeo 2012).

- **Technology-centric policymaking and a resilient socio-technical configuration**

The return of technology-related debates at the heart of UK electricity policymaking is seen as a unique feature of EMR. Indeed, EMR represents a substantial shift in the nature of UK energy policymaking. It primarily aims at articulating technically how to achieve the targets already adopted. This is reflected in what a former member of DECC ministerial team said to me:

Well EMR is obviously a big policy change, yes, the main mechanisms is first of all it provides for the first time a serious way of encouraging all three of the low carbon electricity generating families, so gives us the means *to deliver* decarbonisation of the power sector. I think the fundamentals is exactly as I described to you, there are three low carbon families electricity generation, they each has substantial uncertainties, all options have their own economic issues and all you doing with CfD for low carbon is you're providing, first of all an *offset for the externalities*, the adverse externalities which are created by fossil fuel production... It is a *technical solution* to a policy objective, which at the last election we shared by all three major political parties, namely the decarbonisation of power sector at the least cost, So EMR is substantially about *practicality* and *delivery*, as a *vehicle for policies* it shows change in means and direction of *policy delivery*...(Interview 46, December 2012)

In fact, it is a clear shift '*beyond target-setting*' and '*institutional reform*' towards '*technology-specific*' and '*delivery-related*' policymaking. The central role of technology in contemporary electricity policymaking is also reflected explicitly in a quotation from an interview with the former DECC Energy Minister:

I am rather suspicious about the effectiveness of *target-setting* tradition in UK energy policy without having a clear *roadmap* for *delivering* them. Ultimately, meeting targets on the ground depends primarily on clarity for each *delivery technology*, not on making political statements with a *lofty and wishful ambition* which no one knows how and by whom it can be delivered... therefore, I think the main distinctive factor in EMR is, I would say, the *structure of technology*. (Interview 47, the former Conservative member of DECC Ministerial team, February 2013)

The vital importance of technology preference in EMR was also reflected in most of the consultation responses in 2011. Indeed, supporting a particular technology, albeit differently depending on the stakeholder's position, was the central part of debates about EMR. It was also central characteristics for the DECC empowerment strategy: 'In essence I accept the point that we need more *technical* skills, since we are really in EMR, absolutely in the transition from policy design to implementation and *technical delivery*' (Interview 29, EMR senior member at DECC, July 2012).

This fact is in clear contrast with a long period of ‘technology-neutral’ policymaking in the UK liberalised electricity system that resulted in a fossil fuel based electricity system. As such, EMR is ‘fundamentally a package to support’ a particular low carbon technology mix, i.e. nuclear, renewable and CCS (Interviews 8, 43). In contrast, EMR has not been primarily designed in favour of fossil fuels. Particularly, it is clearly a ‘death’ to unabated coal, whereas its consequences for gas are still controversial. Depending on further settings, there are different gas scenarios, from an entire abandonment as ‘a base load option’¹⁵¹ (Oil & Gas UK 2011: 6; BP 2011: 5) to another ‘dash for gas’ due to a so-called ‘hole in legislation’ and the design of EPS¹⁵² (Confederation of UK Coal Producers 2011: 3; FoE 2011; Greenpeace 2011; Interviews 17, 25). This concern was hotly debated during the Energy Bill process (DECC 2012a). On the one hand, the rejection of the 2030 de-carbonisation target made the ‘dash for gas’ scenario more likely. It means, in EMR, there is a direct interrelationship between debates on de-carbonisation target and which technological pathway to follow. On the other hand, the coincident introduction of the Gas Generation Strategy (HMT 2012) also increased the risk that the UK electricity system is becoming ‘locked into’ a new generation of gas infrastructure¹⁵³. An insider member of DECC Technical Expert team made it clear that preventing from another dash for gas was part of initial incentives behind EMR:

Separate two different things, the EMR is a *mechanism for delivering targets*. Yes it is a solution to how do you better support technologies which are not commercially viable without supporting them. All sorts of things are interconnected. You need investment, if you don’t say what kind of investment you want, then it would be gas. Do you want gas, oh, you want some, but you don’t want all investment to be gas. So, what you are doing to make sure that it is not all gas? If you do not say anything, it would be a *dash for gas*, we won’t meet our the targets (Interview 12, December 2011)

Even amongst low carbon technologies, it is ‘technically unlikely’ to support equally ‘every possible option available’. As a member of the Energy and Climate Change Select Committee stated in an interview, ‘the Government’s policy is based on ...the *lie* that Government is *neutral* between technologies, as it’s not’ (Interview 30, July 2012).

[Even] among those who support the government's decarbonisation targets, opinions differ about the *mix of technologies, fuels* and other measures that should be prioritised. The differences of opinion are partly due to technical and economic uncertainties, and partly due to *social and political preferences* of different *advocacy groups*. (Watson 2013)

Having analysed changes in the setting of CfD as well as some significant contextual-political shifts since the beginning of the policy process in 2011, the sixth chapter of this research will elaborate how the nuclear-renewable technological balance¹⁵⁴ in EMR has moved from a nuclear victory in the 2011 White Paper to a rather short-term gain for renewable energy in the 2012 Energy Bill. Nonetheless, further changes are yet to come, depending on any revision in the current design of the 'devilishly detailed' (Steward 2013) CfD proposal.

Apart from a substantial shift in generation mix towards a low carbon technology portfolio, EMR is changing less in other socio-technical features of the UK electricity system. Firstly, the overall direction in EMR is still in favour of a predominant centralised large-scale design¹⁵⁵: '[We do] not believe that decentralised and community energy systems can lead to significant replacement of larger-scale infrastructure' (DECC 2011: 24). This approach is also reflected in what Winskel (2012: 6) calls a 'regime-led innovation policy' that focuses on 'shorter-term deployability, cost reduction, and swifter delivery' of incumbent-centralised large-scale technologies rather than on radical/decentralised small-scale technologies¹⁵⁶. Consequently, the current low carbon 'socio-technical regime' centred on 'big technologies' is more likely to get increasingly reinforced. EMR's centralised design has been mentioned in a remarkable number of stakeholder comments and interview discussions, mainly from energy experts with a technology and STS approach (Interviews 2, 4, 6, 7, 10). As an example, the head of external affairs at Good Energy, an energy supplier, said:

We need to change the very *DNA* of our market through a more *decentralised* approach. The role of distributed energy must be recognised and promoted in the reform package. (Gill 2012)

Furthermore, this move to 'capital intensive low carbon power generation' continually benefits 'larger, vertically integrated incumbent energy companies', the Big Six. Several decades after privatisation, these big companies still enjoy an

‘oligopoly’ on more than 95 percent of the market. This concern was reflected in a part of stakeholders’ comments in 2011. They had warned about the role of EMR, respectively, in an ‘*excessive centralisation*’ of the system design and the marginalisation of ‘smaller players, newcomers, local and community-based actors, devolved areas and civil society’ (Exeter EPG 2011: 1; SEG 2011: 1; Scottish Government 2011:5; Endesa Ireland 2011: 1; EIUG 2011: 3; FoE 2011: 1; UKERC 2011: 1; NFLA 2011: 6; Ofgem 2011: 2; Flint 2012; Interviews 18, 24). This fact relates to the current hybrid nature of EMR that relies on ‘regime agency for delivery’. It creates, in Butler’s term (2013b), a ‘*revenue certainty*’ for decades to incumbent investors in low carbon businesses. Unsurprisingly, an important actor in such investment-oriented policy is a group of banks and financial institutions. As several interviewees from the civil service indicated, the position of funding agencies is now more ‘persuasive for’ and ‘influential on’ policymakers than at any other time (Interviews 43, 37, 38, DECC and Ofgem staffs, July 2012).

Finally, EMR proposals are still geared towards a ‘traditional supply-focused’ approach to energy policy and the importance of reducing energy demand has not been sufficiently addressed under EMR. Several comments from policy actors have criticised EMR for missing this opportunity for demand reduction (WWF 2011: 1; Exeter EPG 2011: 2-3; Scottish Government 2011: 17; FoE 2011: 1; CHPA 2011: 1; Eyre in UKERC 2012).

To sum up, while EMR aims to bring about a fundamental shift in generation technologies towards a low carbon mix, regardless of gas controversy, other features of socio-technical configuration would remain intact. At the end of the day, the UK electricity system is yet characterised as a centralised model, dominated by large-scale power plants, focused on the supply side and structured by big and vertically integrated utilities. Even regarding the possibility of another dash for gas, EMR might still continue with a fossil fuel based generation mix. As a Government advisor and head of a research centre on energy governance summarised:

EMR, you know, does not complement paradigmatic shift in terms of shift in *technology* and let's say *system structure*. EMR as I see, in that sense, *strengthening* the previous centralised system... Well, in terms of change in energy centralised system structure and use of technologies and also business practices, the current proposal of EMR presents, I would say, still a very little signs of policy change... I do not consider EMR a fundamental kind of reform. If EMR was to represent an actual reform, it would have been structured primarily around the goals of reducing energy demand and, similarly, stimulating technological innovation. (Interview 6, January 2013)

Regarding huge investments expected to come in place as a result of EMR, the unchangeable nature of the socio-technical system under proposal could technically lock the UK electricity system into a large-scale centralised design for further decades¹⁵⁷. This is another reason why the technical design and configuration of the power sector in EMR has attracted the attention of several spectators. The following quotation is a part of an interview with a long-experienced energy commentator and the former SPAD of PM:

The policy is damaged by lack of attention to the very rapid process of *technical change* which is reshaping the energy business. The policy sets a solution which is "*static*"... My difficulty with the EMR plan is that it *freezes* the system in aspic and, to some extent, disables it to be timely adapted with dramatic changes, we're witnessing, in market and new technology. So, in the case of any rapid technical change to what I imagine a smaller, nimbler and, possibly, more integrated energy system, the flexibility and adaptability of such a system would be highly limited due to being trapped into huge resources invested and payments committed... Trapping the UK economy in a centralised gas-dominated power system, seems to me very out-fashioned and *anachronistic*. As somebody else, Mr Yeo I think, has said before it likes using "*a fax machine in the age of the iPad*". (Interview 50, April 2013)

4.4. Analysis and discussion

Having reviewed the main features of the UK electricity policy since the early 2000s in two previous sections, this section seeks to shed light on theoretical contributions it make and to draw some lessons from the studied case. Firstly, it tries to bridge between these empirical analyses and the adopted analytical lens. This part aims at a deductive examination of the chapter proposition and proposed framework. In addition, this section will offer some lines of theoretical contribution and analytical proposition for further research. This type of contribution is derived from an inductive approach to the case study and falls

beyond literature-driven concepts that were hypothesised and encapsulated into the chapter proposition.

4.4.1. Paradigm ambivalence¹⁵⁸ and socio-technical lock-in

Having applied the proposed five-layered framework in more than a decade of the UK electricity policy evolution, it shows that despite several significant policy changes that have taken place, it is still *too early* to claim a *paradigmatic shift* in the UK electricity system. Over the last 12 years, the orthodoxy of the pro-market paradigm has been widely displaced, the socio-economic role of the power sector has been dramatically upgraded and expanded, a series of very ambitious targets have been crystallised, the governance structure has been substantially re-configured, a new mix of generation technology is expected to arise and a package of policy instruments are proposed to come in place¹⁵⁹. Nevertheless, the practical way that the electricity system operates and is structured as well as the technological outcomes that it is supposed to bring about have not significantly shifted yet. There are also a lot of doubts about how significantly they would shift by the implementation of EMR.

This research argues that there are at least two main policy components that have never shifted enough. Whilst the current design has moved far away from the dominance of market ideas, it still suffers from a form of confusing *paradigm ambivalence*. It reflects the status that has been termed differently throughout the empirical study as ‘hybrid design’ (Bolton & Foxon 2013), ‘the absence of ideology consistency’ (Butler 2013) or ‘inter-paradigm borrowing’ (Hay 2010: 22). The lack of an integrative-cohesive interpretive framework has led to a ‘policy mess’ which has widely affected other policy components of the UK energy system and governance. In addition, the main criticisms of the EMR proposal, such as ‘over-complexity’, ‘uncertainty’ and ‘inconsistency’ of the policy package, are arguably direct consequences of such paradigm ambivalence. As a senior energy expert told me:

It is a period of *fundamental uncertainty*. I would say it is similar to the ‘Kotov plan’ in chess, if you have heard about it. It is a situation that a chess player does not find a good plan after thinking long and hard on a position, and you know, inevitably and under time pressure, the player suddenly decides to make a fast move, perhaps often a *terrible one* which its consequences often was not analysed properly. (Interview 52, Former civil servant and energy consultant, April 2012)

Therefore, it seems unlikely that the UK electricity system could meet its adopted targets, unless a coherent and consistent policy paradigm not only frames, but also directs the entire governance system¹⁶⁰. Until then, a wholesale paradigmatic shift cannot be identified.

The second incompletely changed component is the socio-technical configuration of the UK electricity system. EMR aims substantially to shift the technological base of the power sector. Having assumed that it could reach the targeted low carbon technology mix despite the possibility of another dash for gas, it would not be seen as a fundamental shift in the UK electricity socio-technical system. On the basis of the current design of EMR, it clearly reflects a centralised perspective rather than a decentralised community-based system; large-scale generation technologies that are least disruptive; institutions that favour few big regime incumbents and limit real competition; and a focus on supply almost regardless of the level of demand. In spite of remarkable criticism (see responses to EMR Consultation by Exeter EPG; SEG ; Scottish Government; Endesa Ireland; EIUG; FoE; UKERC and NFLA), the UK electricity system has been *locked into* this set of characteristics for several decades. This research argues that without moving away from such system configuration, a complete paradigmatic shift is far from coming about.

This conclusion is in a direct contrast with similar studies that have tried to characterise current UK energy policy. Regardless of some differences in the time frame and the scope of research, most of them argue that the UK energy paradigm has shifted at all levels (Helm 2005; Kern et al 2013). This contrasting finding is potentially derived from either the different framework this research has applied or a longer-term analysis this research has undertaken – or even both. Figure 3 has tried to schematically *summarise* the UK electricity policy change for more than a

decade. It is worth noting that while the changing colours present an overall alteration in those policy components, they do not, and cannot, reflect the detail levels and features of detected changes at all. This is a technique that aims at merely *visualisation* and *simplification*.

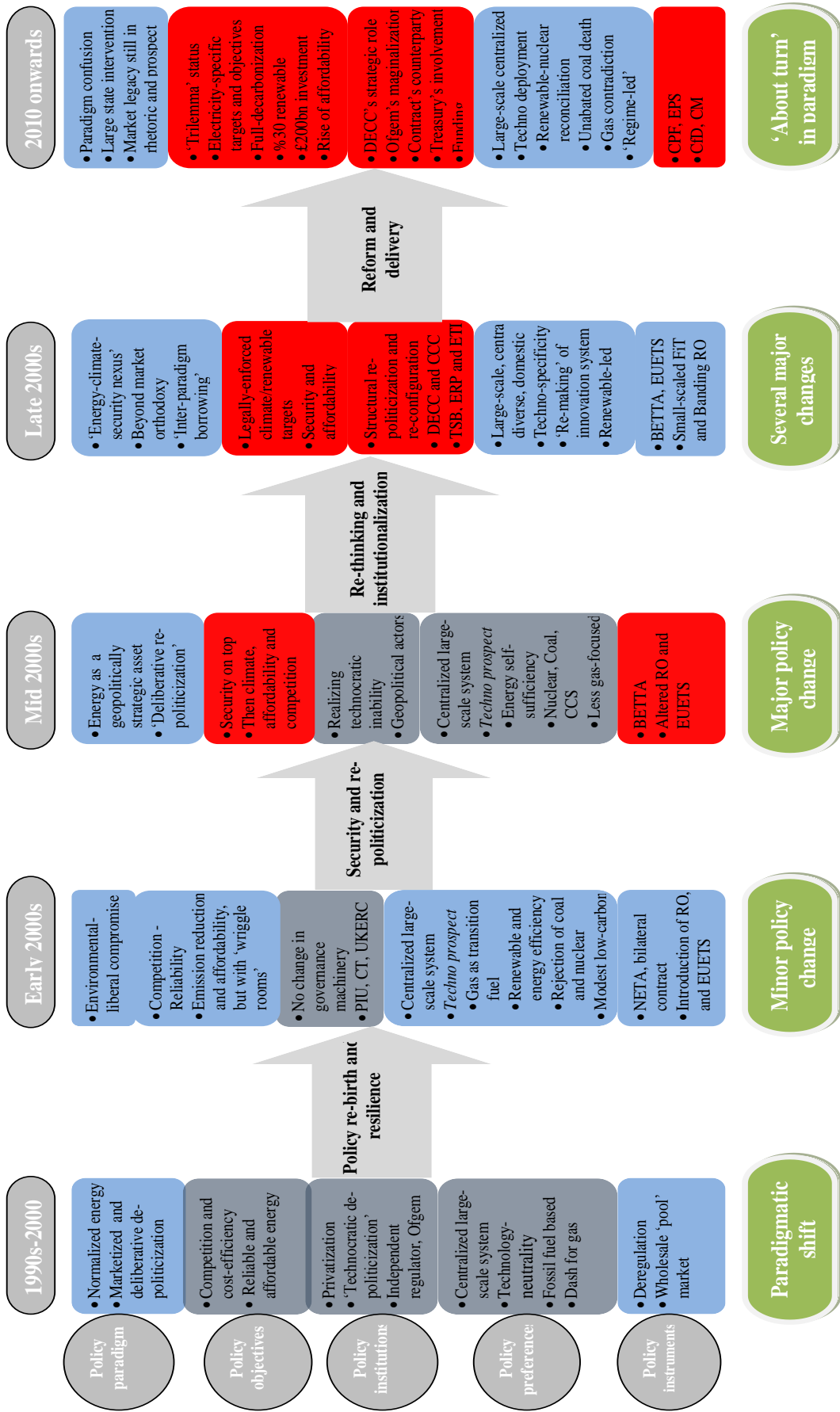


Figure 3: An overview of the UK electricity policy change (2000-2012)

4.4.2. Socio-technical configuration as a policy component

As one of the early findings, this study highlights an increasing significance of technology in the post-privatisation UK electricity policy. Particularly in the case of EMR, technology preference fell at the *heart of policymaking* process. This is approved notwithstanding a long history of technology neutral electricity policy. The analysis shows that since the re-birth of energy policy in the early 2000s, technology preference has always been an inextricable component of the electricity policy mix. Although, due to the legacy of pro-market thinking, it was highly dismissed until the late 2000s, it then became clear that there is no actual electricity policy without a serious consideration of the matter of technology. This is the case, perhaps, with respect to the nature of the electricity system as a ‘large-technical’ or ‘techno-centric’ subsystem.

Therefore, this research provides enough empirical evidence for the claim that the inclusion of a technology-related policy component, as the *fifth* component, in assessing policy change is not only *applicable*, but also *crucial*. Otherwise, any framework aiming at the characterisation and measurement of the electricity system change would miss an important, and arguably central, part of the analysis. Let us compare EMR, as an example, with the electricity policy of the late 2000s. Without taking changes in EMR’s technology preference into consideration, EMR would represent almost what came before, with the addition merely of a set of new policy instruments. However, this analysis shows that technology-specific policymaking and a commitment to a new low carbon generation mix are the substances of EMR.

The incorporation of insights from Socio-Technical Transition theory also proved useful in providing a more systematic account of technological change in electricity policy. In other words, it seems analytically *naïve* to explain the dominance of a certain type of technology compared to others, unless taking socio-technical characteristics of the system into account¹⁶¹. For instance, without paying serious attention to still dominant, centralised, large-scale features of the

UK electricity system, it would be difficult to understand why EMR is primarily in favour of nuclear energy and big renewable options like wind farms, rather than other small-scale, decentralised technologies. Similarly, analysing socio-technical configuration gives us a comparative idea about why the UK electricity policy is so different from other countries with similar policy objectives, such as Germany¹⁶². The exceptional dominance of the Big Six, as vertically integrated continental companies, in the structure of the UK electricity system, is another example. It explains why any new proposal gets tweaked in a direction that enables regime actors exclusively to benefit most from their centralised, large-scale resources and capacities. To summarise, it seems that the *choice of technology* in the electricity system is associated with policy dimensions about how the power sector is *organised, designed, structured, operated and controlled*. In other words, the *dominant design* of the electricity socio-technical system depends heavily on inherited preferences and policy directions in terms of a set of institutional arrangements like the level of *centrality, scale, structure and generation mix*.

4.4.3. The problems of measurement, hierarchy and implementation

Although this chapter supports the applicability of the five-layered framework in characterising the UK electricity policy change, it also reveals some analytical shortcomings and limitations the framework suffers from. The first problem relates to the ambiguous concept of measurement. Despite the contribution of the proposed framework in capturing different characteristics and aspects of change, it has very limited insights about how one could measure those characteristics. The original idea is that each policy component is seen as ‘changed’ once there is a clear ‘break’ or ‘departure’ from the past. Given the qualitative and relative nature of the measurement, such stretchy and elastic definition suffers from a high degree of interpretive ambiguity. As an instance, whilst this research argues that policy objectives have changed significantly, there are a set of contrasting assessments that even current legal targets are still insufficient changes to affect other parts of the policy. This approach is manifested partially in the proposals for the 2030 decarbonisation target and in another renewable target for post-2020. Proponents of such extra targets think that ‘the 2050 target is too far and the 2020 renewable

target is too soon' (Interview 25, Senior policy fellow at Friends of the Earth, January 2012). From this viewpoint, to assure investors about the direction of policy, the first one needs a more sensible, shorter-term translation, whereas the latter requires a longer-term follow up. Similarly, another group of critics argue that current institutional changes are also inadequate. Particularly, they point to the creation of the DECC and the CCC. Based on their scrutiny, none of those departments has sufficient authority to govern energy policy: the first one is politically constrained by an open hand from the Treasury over the UK energy policy and the latter's advisory position has limited its practical influence over climate policies (Lockwood 2013). The problem of measurement is also evident in identifying policy changes less significant than the extreme level of paradigmatic shift. While there is no doubt that the UK electricity policy has increasingly shifted from a liberalised model since the early 2000s, it is still analytically imprecise to identify which level of change each stage represents.

Another limitation that was unfolded throughout this study refers to the hierarchy of policy components. Since Hall's original ideas in 1993, such hierarchy has always been assumed. This is reflected preliminarily in Hall's change orders where change in policy objectives (the third order change) necessarily implies change in policy instruments (the second order change). Similarly, change in policy paradigm is assumed that involves change in all other policy components. But empirical evidences do not support such hierarchical interaction between policy components. While official objectives changed in the early 2000s, they had very minimum impact on policy institutions and instruments. This was the case even for the legally binding targets in 2008. Instead of an *immediate* change, it took several years until new policy instruments, e.g. in EMR, were introduced. It is worth noting that this is by no means dismissive of the role of targets in re-thinking process or further scrutiny. The main argument here is that their interaction is more complex and non-linear than what was supposed in advance. Such complex interrelation needs to be analysed in a longer time frame, when the consequences of new changes, e.g. new policy targets, become clear.

The period of analysis is also challenging when it comes to the notion of policy implementation. Obviously, there is no necessary compatibility between what policies are expected to achieve and the actual outcomes they provide once implemented. It certainly does not mean going back to the traditional stage-based frameworks¹⁶³ of policy process, but it warns against dismissing the distinctive role of implementation there. In modern policy studies, the importance of the implementation phase of policy has been recognised as of equal importance and interrelated to agenda-setting and formulation. In order to trace the actual outcomes of a policy change, it needs to be assessed in a '*full policy cycle*'. This is the problem that this research is faced with when it comes to analysing EMR, given that EMR is still an ongoing process and far from implementation, whereas other former changes in the UK electricity policy have been analysed with full consideration of their outcomes and consequent policy failures.

4.4.4. From 'technology preference' to 'policy preference'

The inclusion of a new policy component that represents socio-technical configuration is also consistent with what broader, i.e. non-technology exclusive, policy process frameworks suggest. Particularly, the recent version of the Advocacy Coalition Framework (ACF) (Sabatier & Wieble 2007: 195) has introduced the concept of '*policy preference*'. This concept primarily means an '*overall solution*' and actual '*policy proposal*' required to meet adopted policy objectives. Indeed, the ACF assumes that policies should not only clarify their main objectives, but also need to determine *how* and via which *solutions on the ground* those targets are practically expected to be met. Perhaps policy instruments would then be designed to facilitate those overall strategies¹⁶⁴. In a similar argument, Lockwood (2013) points to the '*preferred system configuration*' as a dimension for political sustainability of policy change. Inspired by the work of Patashnik (2008), he expands the definition of policy change beyond conventional policy components. He argues that policies are not 'politically sustained' unless a fundamental transformation in 'actor preferences' takes place. They need to 'create new constituencies, new vested interests and rewrite what is and is not politically acceptable or irreversible, eventually reaching a point of no

return'. Obviously, in 'techno-centric' subsystems, the main feature of 'policy preference' refers to the characteristics of preferred 'technological configuration' and socio-technical systems. Therefore, shift in technological system and physical infrastructure enhances the chance to 'lock-in' new policies into vested interests and preferences.

Although this chapter has applied a technology-specific translation of this concept, it seems potentially generalisable and analytically meaningful even beyond techno-centric subsystems. This means, in a non-technologic policy subsystem, that an extreme change in governance, a so-called paradigmatic shift, not only includes change in paradigm, objectives, institutions and instruments, but also should represent a change in the preference of *how* that system would operate on the ground. Depending on the nature of those policy fields, the policy preference could involve features like the main solutions, strategies, system configuration and regime structure. For further case studies of non-technologic policy changes, this research suggests developing relevant propositions to be tested in terms of the applicability of the concept of policy preference.

4.5. Summary and conclusions

With regards to the analysis presented in previous sections, this chapter has aimed to provide a set of contributions to the literature of policy change. Since providing an explanation of change dynamics is out of this chapter's analytical scope, it has mainly sought to contribute to theoretical debate about how one could characterise and measure policy changes. By applying a developed framework in the UK electricity policy since the early 2000s, this chapter has argued that even the most recent regulatory reforms manifested in EMR do not fulfil all characteristics of a wholesale paradigmatic shift in the power industry. This empirical finding contributes to and almost contrasts with recent debates about whether or not a paradigmatic shift has occurred in the UK energy and electricity policy (see Helm 2005; Mitchell 2008; Kern & Mitchell 2010; Routledge 2010; Kuzemko 2011;

Kern et al 2013). Such a conclusion, in itself, has wider international implications, given the leading role of the UK in developing a ‘British model’ of liberalised-marketised energy governance. It shows that despite a lot of alterations, the market legacy is still alive and its consequent socio-technical arrangements are yet almost resilient.

From a theoretical perspective, this chapter contributes, in part, to conceptual debates trying to bridge the gap between science and technology studies and public policy. With respect to the nature of the electricity system as a ‘large technical system’ or a ‘techno-centric subsystem’, this study illustrates that the current policy change literature is analytically incompetent to capture all characteristics of policy change in the electricity system. In particular, it points to the lack of a specific policy component to characterise changes in socio-materiality and technological features of the electricity system. By incorporating insights from Socio-Technical Transition literature, this chapter conceptualises a *fifth* policy component¹⁶⁵, so-called *technology preference*, which aims at analysing changes in socio-technical characteristics of the electricity system. For the current UK electricity system, such characteristics include centralised design, large-scale technologies, supply-focused approach and an uncompetitive oligopoly structure.

Nonetheless, in spite of important contributions from this study, it also reveals a series of analytical shortcomings and limitations in the applicability of the adopted framework. Firstly, the elasticity of the concept of measurement led to very imprecise and, occasionally, controversial conclusions. Secondly, the findings of this research display a much more complex interrelation between different policy components than the simple hierarchical one that was supposed in the framework. Finally, due to the contemporary nature of EMR, this study is unable to analyse it in a full policy cycle that would include implementation and outcomes.

Chapter Five: Policy Failure and Major Shifts in the UK Electricity Policy Mix

5.1. Introduction

Building upon the findings of previous chapter in characterising the UK electricity policy change from the early 2000s to 2012, this chapter aims to explain *why* and *how* such significant changes occurred. In particular, it focuses on the evolving role of the market policy paradigm from when it was seen as a complete orthodoxy to a process of gradual displacement that eventually led to paradigm ambivalence in the period of EMR. It shows that throughout more than a decade of very complex policy process, there has been always a relation between the level and the nature of perceived *policy failures* and the actual policy changes on the ground. As such, it points to a widespread recognition of electricity market failure in low-carbon technology delivery as the main driver of EMR¹⁶⁶. Theoretically it moves beyond the conventional typology of change drivers in policy literature based on distinctive origin and nature of impetuses. It claims that policy failure is a *relative* concept to previous policy legacies which is imposed by *policy salient* drivers and is socially and politically *constructed* and *strategised* by competing advocacy coalitions.

5.1.1. The chapter propositions: Policy failure and coalitional balance

This chapter aims primarily to answer the main explanatory research question about *how* one could explain the UK electricity policy evolution since the early 2000s. In particular, *why* that process led to the formation of the EMR in the UK 2011? Which policy dynamics influenced on its characteristics and *how*? As discussed in the Analytical Framework chapter, there is a complex set of theoretical factors in the literature for explaining significant changes in public policy. Amongst them, the latest version of the ACF has focused on a typology of

four different paths to policy change: external subsystem events; policy-oriented learning; internal subsystem shocks; and, negotiated agreement (Sabatier & Weible 2007). Given the impact of learning and negotiated agreement are limited to minor policy changes, the main contribution of the ACF for ‘non-incremental changes’ is the introduction of ‘external-internal dichotomy’¹⁶⁷. While this conceptual distinction has proved useful in large numbers of policy studies (Weible et al 2009) in providing an understanding of different *nature* and *origins* of change drivers, it does not say anything about varying likely outcomes, either in terms of the level or the type of resultant changes. From this viewpoint, actual changes in policy result from a ‘political process’ and ‘societal reaction’ triggered by certain events rather than events themselves¹⁶⁸ (Birkland 2006; Cortell & Peterson 1999; Kingdon 1995). Such situations are called ‘*periods of disorder*’ and ‘*momentums of breakdown*’ in literature implying that they *question* and *discredit* established policies, practices, and institutions and increase the receptivity to new ideas (Alink et al. 2001; Boin et al. 2005; Cortell and Peterson 1999; McConnell 2008: 557). Therefore, a piece of the literature calls for more precise theories regarding the specific parameters conditioning the impact of change impetus on public policymaking (Hall & Taylor 1996; Legro 2000; Boin and ‘t Hart 2003; Nice and Gross 2001).

Building upon the concept of ‘policy proximity’¹⁶⁹, developed by Nohrstedt and Weible (2010: 20), this research claims there is a relationship between the level and type of challenges and anomalies that change drivers impose on existing policy arrangements and the features of final policies¹⁷⁰. In other words, actual changes are framed by the extent and aspects that existing policies are ‘de-institutionalised’ from and are expected to ‘reform’ against. As such, the perception of *policy failure* is a *relative* concept as a ‘*meaningful reaction*’ to previous ‘policy legacies’ to adjust into new context. Proposition 2 seeks to bridge between policy failure and the policy mix framework developed in chapter 4.

***Proposition 2:** The characteristics of ultimate changes relate to the degree and the nature of ‘deficiencies’ and ‘failures’ that change drivers present to any of existing policy components.*

But policy changes do not occur in a ‘political-administrative vacuum’. The policy impact of change drivers is mediated not only by the nature of the change driver, so called *policy saliency* here, but also through ‘strategic social construction’ and ‘contest framing’ by advocacy coalitions. Given the complexity of policy making, recent developments in the literature argue that change drivers are neither ‘self-apparent’ nor ‘knowable’ (Kern & Mitchell 2011; Kuzemko 2011) nor even ‘certain’ and ‘unambiguous’. Therefore, they are always subject to ‘interpretation’ (Jones & Baumgartner 2012) by competing coalitions. They strategically exploit them and employ ‘persuasive tactics’ to impose meaning on them in terms of causes, implications and policy alternatives. It means in the absence of a pro-change advocacy coalition, as Nohrstedt and Weible (2010: 13) predicted, it seems unlikely that new problem definition and credible solutions could gain prominence, even notwithstanding an intrinsically policy salient change impetus. Drawn from these insights, this research develops following proposition.

***Proposition 3:** The level of policy impact of a change impetus is conditioned not only by its policy saliency, but also by coalitional balance, in favour or against policy change, and their strategies.*

5.1.2. Outline of the chapter

Similar to the structure of previous chapter, the next section reviews almost the first half of the last decade when despite the emergence of some challenges, the dominance of the market paradigm in the UK electricity policy remained almost intact. Further section explains how the situation started to change from the emergence of some degree of contestation towards the status of fundamental displacement. Nonetheless, it tries to illustrate why such strong process of market discrediting did not lead to a wholesale paradigmatic shift, at least by late 2012. Subsequently, the second last section is dedicated to a discussion and analysis of

the chapter findings and their theoretical implications. Finally, section five summarises the main points of the chapter and ultimate conclusions.

The findings of this chapter are again based on a combination of reviewing secondary materials, analysing the content of almost 250 responses submitted to the DECC consultation call in December 2010, working papers and comments published by stakeholders or academic intellectuals, and 53 interviews conducted. Nevertheless, as analysis proceeds towards the period of EMR, the greater analytical weight is attached to the original evidences like interview materials. Whereas, the analysis of policy changes in the early 2000s, by contrast, is largely based on policy documents and some secondary studies. Likewise, it is the case for analytical distinction between electricity and energy policy. Whilst their changes are hardly discernable in early stages, there is clear shift towards an electricity-specific policymaking since the late 2000s. Overall, throughout the sections, both the unit of analysis and the source of data have been inevitably evolved.

5.2. The period of market orthodoxy and its resilience

5.2.1. The dominance of liberalised-marketised policy paradigm (By 2000s)

For several decades under Keynesianism, the UK electricity system was characterised as a nationalised-politicised energy policy¹⁷¹. The monopoly of the Central Electricity Generating Board (CEGB) with an understanding of socio-economic role of energy as a vital ‘public good’ with ‘national importance’ showed how suspicious the Welfare State was of the adequacy of market in power sector. The role of State in energy policy was even reinforced by the 1970s oil shocks¹⁷². Nevertheless, criticisms on the ground of ‘managerial inefficiency’ and ‘cost ineffectiveness’, particularly in nuclear and coal industries¹⁷³, disputed the ‘efficacy of government action’. As a part of wider pattern, the accumulation of

policy failures, particularly the subsequent economic recession, was discursively constructed as the ‘failure of Keynesianism’ (Lawson in Kuzemko 2011: 98).

In return, as a part of a wider paradigmatic shift, a new model of energy governance came to dominate UK energy policy¹⁷⁴: ‘the *new world* model had come to replace the old model’ (Hayes & Victor 2006: 322). Theoretically it was largely grounded on ‘neo-liberal economics’ and ‘rational choice’ governance approaches. Although such ‘economistic’¹⁷⁵ ideas had existed in the energy literature pre-1980s¹⁷⁶, they got practically ‘vocalised’ then following the election of Conservative government in May 1979. As a ‘top-down’ process of change, an influential advocacy coalition, led by the Prime Minister Thatcher and Lord Lawson¹⁷⁷, the then Secretary of State for Energy, transferred the liberalised paradigm into the UK energy policymaking. Central to that advocacy coalition was an epistemic community of ‘new right’ economists¹⁷⁸, inspired by the work of Friedrich Hayek and Milton Friedman, who ‘crossed over’ into political positions in the Ofgem and DTI¹⁷⁹. The Prime Minister is quoted as saying that energy departments should be always directed by ‘*one of us*’¹⁸⁰, indicating leading market economists. In addition to research institutes like the Institute of Economic Affairs and the British Institute of Energy Economics, other departments like the Treasury and the Bank of England were also important members of that policy coalition¹⁸¹.

By this, the Conservatives aimed at changing the state’s functions in energy policy¹⁸². They sought to ‘roll back the frontiers of the state’ (Thatcher 1998 in Pearson & Watson 2012) as a response to ‘governmental and bureaucratic failures’. As Nigel Lawson clarified in his Parliamentary debate on Oil and Gas Bill in 1982, he believed that ‘the proper business of Government is not the government of business. No industrial corporation should be owned and controlled by the State...’ (Lawson 1982). Consequently, as described in previous chapter, a liberalised policy paradigm emerged in which energy was seen as a ‘normalised commodity’ that needed to be governed merely by a depoliticised competitive market. Regarding the coincidence with an extremely benign contextual condition¹⁸³, the British energy marketisation was understood widely,

even internationally¹⁸⁴, as an absolute success that had achieved what its architectures wanted: 'so much in so little time'¹⁸⁵. Consequently, it became deeply institutionalised in all aspects¹⁸⁶ of the UK energy policy and shaped what seen as 'political orthodoxy'¹⁸⁷. By then, the status of 'hands-off state' made it 'reluctant' to any form of energy policy making. Thereby, it left the government with a visible lack of experience and competence in energy policy, which had some implications later¹⁸⁸.

5.2.2. Early climate policies and compromise

Whilst for few years after the election in 1997, New Labours continued with a strong commitment to the pro-market paradigm, they were soon faced with a series of energy challenges. The depletion of UKCS resources, an increase in oil price and a series of industrial disputes in the fuel sector collectively signaled an end to the 'golden period of benign context'. Similarly, there seemed little opportunity to replicate previous 'easy gains' in emission reduction¹⁸⁹, particularly in the period that climate issues were seen more politically salient. Although, environmental concerns had already entered the UK energy policy since 1990s¹⁹⁰, they got vocalised following the pre-election pledges of Labour to put environmental concern 'at the heart of policymaking', not as 'an add-on extra'¹⁹¹. As a result, the environmental advocacy coalition was empowered not only due to a louder voice in British politics, as was evident in the report of Royal Commission on Environmental Pollution (RCEP 2000)¹⁹², but also as an outcome of European and international agreements¹⁹³. Consequently, with respect to the nature of climate change as a market failure¹⁹⁴, environmental movements called for a more active role of government in meeting climate targets.

Nonetheless, the climate politics was unable to shake the foundations of British faith to the market. The dominant pro-market paradigm proponents were well able to 'see off challenges' through downgrading them from paradigm discrediting to the level of 'problem solving'¹⁹⁵. Given de-politicised governance departments, the existence of an influential market advocacy coalition¹⁹⁶ as well as a form of 'public disinterest' in energy and climate policy, the environmental advocacy

coalition constituted only a ‘*moderate*’ change imperative which was eventually compromised by the Labour government¹⁹⁷. As a result of such compromising strategy, liberalisation and environmental concerns were seen as intrinsically consistent. The practical meaning behind that idea was that the competitive market is adequately able to meet all policy objectives including climate targets. The quotation below from my interview with a senior member in UKERC and RCUK displays how market-based mindsets resisted against any likely significant shift.

The neo-liberal version became dominant in 1990s and climate change policy certainly does not find it easy. Not because climate change policy is inconsistent with it because neo-liberal concept recognises the market failure and recognises that climate change is a serious *market failure* that government needs to *do something* about it. But if you are committed to the neo-liberal you always are looking for some reasons to show that firstly the climate change is *not a serious* issue and secondly that you could deal with it through *very light touch regulations* led by the market which at the moment have *not been effective*. It is very similar to throwing old policies at new problems, I would say, without refining the whole system and structures (Interview 5, November 2011).

As shown in previous chapter, by publishing a series of policy documents like the 2002 Energy Review and the 2003 Energy White Paper, some modest and vague shifts in different policy components, mainly in objective levels, came about. Whilst this development marked the *return of the State* into energy policy, its role was seen still *secondary to* and in an absolute *consistence with* the continuous centrality of the market. Nevertheless, such minor changes opened up some *windows of vulnerability* against more credible critique and scrutiny of dominant paradigm in the future. Unsurprisingly, setting even imprecise targets not only made climate change politically salient, but also pushed the governance system under the burdens of accountability. More importantly, the formation of a *low-carbon advocacy coalition* in itself was a crucial base for further developments. Since then, it was expanded by the creation of a cluster of low-carbon industry and research institutions like the Carbon Trust and the UKERC¹⁹⁸. It was also financially reinforced by getting accumulatively subsidised with supportive initiatives like the RO and EUETS. A senior board member of UKERC and a former Green politician marked this period as the ‘*birth period*’ of a then stronger climate policy that appeared later in 2008 onwards. Though, in contrast to following quotation highlighting the full commitment of New Labours to climate

change as the main change driver, this research has challenged such strong deliberation, at least in early stages.

The low carbon commitment, which this country now has, dates back to the process of forming climate [coalition] and low-carbon policy which really got on the way with the new Labour government in 1997 when there was no climate change program before that date. It led by the government by creating new institutions and taking the agenda forwards... Supposedly the single most important issue was the commitment of Tony Blair to the climate change agenda, and it insured that we had a high profile policy agenda and we had a number of legal and institutional innovations. The creation of CT, EST, CCA, various industry-related initiatives like ETI, and emphasis on innovation through the TSB, and then creation of CCC and DECC and review in Ofgem. So the government was *very active* and brought forward lots of institutional change (Interview 15, Former politician and head of an energy institute, December 2011).

5.2.3. Crisis securitisation and energy re-politicisation

Since the early 2000s, the UK energy system was facing with a series of contextual shifts that potentially put the security of supply on risk. That concern culminated when the status of energy ‘self-sufficiency’ was replaced by an import dependency of energy sources. It was even worse for electricity sector due to the lack of investment and a ‘tight demand-supply balance’. Nonetheless, such challenges were still understood as consequences of continuous role of ‘statist’ agents¹⁹⁹ in international energy market and thereby the common answer was always a more expansion of competitive market. Ironically, such simplified perspective was contested in the mid 2000s, in the wake of several geopolitical events like the re-nationalisation of Russian energy sector and the Russo-Ukrainian conflict in gas transit. Indeed, they were understood as significant challenges to the universality of the pro-market ‘British model’.

Concern about security of energy supply, though largely driven by global geopolitical developments²⁰⁰, revived debates about the UK national energy strategy. They propelled energy supply from being a matter in the commercial realm to being the focus of political debates around state responsibility. The *construction* of such concern as a national security threat, akin to the 1970s oil crisis or even the period of Cold War, broadened out energy debates beyond the borders of expert circles. Since it was widely mediated by the media and

politician, it raised a high-level of *public deliberation*²⁰¹ and political call for an urgent state intervention to ‘*do something*’. Therefore, a process of ‘re-politicisation’ of energy issues started to publicly emerge. A board member of Energy UK described his personal experience of the role of media and politicians in energy re-politicisation:

In 2003 Things began to happen. The Russians had a dispute with the Ukraine over paying the gas bill and threatened to cut them off. The lights went out on the eastern seaboard of the United States and that included New York, the lights went out in Italy because a tree fell down in Switzerland and knocked out the line that was absolutely critical to Italy’s power supplies. The lights went out in Denmark and then most importantly, the lights went out in this area, part of central London for about 45 minutes one evening and all hell broke loose...that incident caused the *largest number of phone calls* I’ve ever had to my office and the calls from the journalists went on for three weeks. The BBC broadcasted a *dramatised documentary* ‘IF the lights go out’. That was far more than any controversy over the electricity pool, over privatisation itself, or indeed anything else that I can think of. And it tells you that security of supply actually is a big issue for *journalists and politicians*. But this is the starting point for all of the industry’s problems and opportunities; this is about the ‘trilemma’ as it’s called now. (Interview 27, July 2012)

As such, concern about energy security was thought as a short-term, urgent and tangible challenge. It was highly controversial for both public and politicians, much more than the public concern that climate change raised in the early 2000s. Nevertheless, as shown in previous chapter, it never transcended the level of policy objectives and rhetoric towards imposing a substantial overhaul on the UK energy governance. Therefore in that period, no clear shifts in policy solutions and measures were observed. In the absence of a *distinctive* advocacy coalition associated to energy security and proposing credible policy solutions²⁰², the pro-market advocacy coalition was well able to dampen increasing political pressure and criticism. By constructing insecurity concern as a result of ‘unpredictable and exogenous’ events²⁰³, the market advocates addressed emerging challenges out of market responsibility and argued that the UK needed to firmly continue with the process of energy marketisation. Nonetheless, in addition to necessitating the entrance of the state in energy policy, such big anomalies revealed the lack of capacity of de-politicised technocrats in dealing with similar complex challenges. Following two quotes from the head of energy policy in the Green Alliance and Scottish Government summarise the unique role of security in the *revival of energy policy*²⁰⁴.

The concern of security, as the basic philosophy of the state, publicly *legitimised* state intervention. We certainly did not have any form of energy policy without a very big *scare of security* (Interview 14, Policy research fellow at Green-alliance, December 2011).

Energy policy objectives were neglected and the politician relied on the market. Just when the problem was cleared about the gas supply in the North Sea and problem in import ports, UK government realised that *market may not work properly* in some cases and stronger mechanisms including *interventions* are required. This was a *significant policy change* resulting from security of supply concern (Interview 1, Scottish energy directorate and member of UKERC advisory board, November 2011).

5.3. The process of market demission²⁰⁵ and paradigm ambivalence

5.3.1. A strategic climate-security convergence and the market contestation

In the second half of the first decade of 21st century, there was a growing suspicion about whether or not current policies are adequately able to meet carbon reduction targets. In the wake of insecurity concern, the low-carbon advocacy coalition brought back climate targets as another example of policy failure²⁰⁶. In several documents, climate and renewable policies were framed in terms of their significance for security of supply (FoE 2008 and 2011; Conservative Party 2009). As an Emeritus director of an energy and environment research institute summarised, 'greens see low carbon as leading to security, not undermining it' (Interview 10, December 2011). Such discursive exploitation of security for climate issues is still evident also in the case of EMR.

Friends of the Earth believe that energy security is essential not only in its own right, but also as a necessary condition for public acceptance of the changes needed to achieve a low-carbon energy system (FoE 2011: 3).

Thereby, a complementary mixture of evocative security concern coupled with failed climate targets provided a high degree of *policy saliency* that they separately never had before²⁰⁷. Together, these 'two immense challenges' (Blair in DTI 2006: 4) showed a remarkable level of 'political resonance' and a strategic

convergence in *re-framing* crisis narrative. Kuzemko (2011: 195) points in such process of ‘narrative appropriation’ as a change strategy undertaken widely by environmentalists. Several high profile reports warned about harmful consequences of an over-reliance on market²⁰⁸ and marginal state’s role in energy and climate policy (IEA 2007: 176; Foxon et al 2005: 23; Stern 2006). By providing a new perception of the challenge’s tone and scale as ‘the greatest market failure the *world has seen*’ (Stern in Benjamin 2007), they substantially questioned the *credibility* of market paradigm for tackling climate change. It was arguably understood as *an end* to the ‘*market orthodoxy*’²⁰⁹. The concern was being officially acknowledged by a series of reports such as the UK Parliamentary Committee report in 2006. It claimed that both national and international contexts show that meeting climate targets needs more urgent policy interventions (HCSTC 2006). As a revenge to the dismissal of the 2003 climate targets by DTI and Ofgem²¹⁰ (Kuzemko 2011; Lockwood 2013), an increasing number of calls for a ‘tighter long-term target’²¹¹ and an institutional reconfiguration gradually emerged.

This pattern was firstly reinforced by the Big Ask campaign led by Friends of the Earth for a binding legal target, the Climate Change Bill. Regarding a dramatic increase in public salience of climate change in that period of time²¹², the campaign was quite successful in mobilising a large number of civil society groups and publicly influential people²¹³. What’s more, several interviews with representatives of the main green NGOs revealed that by that time, compared to the early 2000s, a series of reproductive dynamics had given a ‘louder political voice’ and wider policy impact to the low-carbon advocacy coalition²¹⁴ (Interview 14, Green Alliance; Interview 11, RSPB; Interview 25, FoE).

Secondly, as the result of an empowered campaign, a large number of politicians also gradually got involved²¹⁵. Climate change was then mentioned in the Queen’s Speech in November 2006 and was announced by the PM Blair as a priority. More importantly, the conversion of Tory leader, David Cameron, towards supporting the campaign fundamentally shifted the *political balance* in favour of

climate policies. As part of a wider political strategy of 'modernisation' and 'detoxification', the New Conservatives decided to remake the party's public face and identity. Despite traditional Tories' skepticism towards climate science, they deliberately added values like 'liberalisation and greenery' and launched a new electoral slogan: 'Vote Blue, Go Green'. Given the emergence of a kind of 'party competition' on climate change with the Lib-Dems, who had been already in favour, it pushed the Government for more radical decisions²¹⁶. Consequently, as most interviewees agreed, that pattern led to a form of cross party '*political consensus*' in support of climate target²¹⁷, as a former green politician and head of an energy institute highlighted during an interview:

Very interestingly and unlike the other countries it never became a party political issue. So the climate change passed by the force of the *entire major parties*. [Devolved areas like] Scotland played a very important role and Scottish government has been even more in favor than the UK government is and has it adopted more ambitious targets etc...So we have a remarkable degree of *political consensus* led by government by creating new institutions and take the agenda forwards. Very interestingly I hardly ever go to meetings now that these issues are discussed where anybody at the meeting is prepared to *publicly* raise doubt about climate change. All of those meant that the reduction of carbon emission became one of the principal drivers of energy policy in the UK (Interview 15, December 2011).

Another important driver was changing the perception of '*climate economics*²¹⁸'. The Stern Review (2006), in particular, was widely persuasive in providing a cost-effective presentation of climate policies. It was not only understandable for market economists in Treasury, but businesses also realised that it could benefit from low-carbon technologies (Interview 14, Policy research fellow at Green-alliance, December 2011). As it is evident in following quote, the issue of climate change gets gradually appropriated as a commercial matter.

Also Stern report was very important in *belief change* because of its way of explanation of costs of climate change by *economic justification*. As a result, while the neo-liberal ideology is strong in the UK, it does not led to the rejection of climate science and the UK has [arguably] stronger climate change regulation than any other country in the Europe (Interview 1, Former Scottish energy directorate and member of UKERC advisory board, November 2011).

The introduction of policies like the European Emission Trading Scheme EUETS was also important in shifting the mindset of business sector about climate economics. In my interviews with two members of the CBI's energy and climate

change group, they highlighted the collective role of both economic justification and regulatory policies as ‘reference points’. They changed the ‘game rules’ and created a ‘positive loop’ for businesses to find some ‘windows of *commercial opportunity*’ within the new climate policy space (Interviews 35 and 41, CBI energy and climate change group members, August 2012). In response business groups like the CBI and the TUC chose to ‘embrace’ climate policy rather than ‘resisting against it’ (Interview 41). By the introduction of several initiatives like Ethical Investors²¹⁹, the Carbon Disclosure Project (CDP)²²⁰, Corporate Leaders Group on Climate Change, and signing Climate Change Taskforce²²¹, the British business sector also played a remarkable role in campaigning for the Climate Change Act in 2008 (Interview 38)²²². This overall support should be seen, albeit, in addition to some businesses who had directly benefited from low-carbon technologies such as renewable and nuclear²²³. Though, the business sector’s shift towards interventionist climate policies also inevitably reinforced the process of re-politicisation. It was arguably the beginning of a ‘corporate-government nexus’²²⁴ which then culminated in the case of EMR, as discussed in chapter before.

When, going along with that, it has been a more important incentive for businesses, to get involved in energy efficiency and renewables that is created an *industrial coalition* around renewable and low-carbon transition. The Big Six generators were being involved in that. They have changed their portfolio substantially. Obviously the renewable companies spun up and nuclear lobby became active, and they created a kind of big *political backlash* ... and you could see a beginning of an *advocacy coalition* around that business sector and it is actually very remarkable that a body like CBI has never challenged the climate change objective. (Interview 35, Head of energy in a leading lobby group for UK businesses, August 2012)

Altogether, these dynamics expanded the coverage and inclusion of the low-carbon advocacy coalition from just environmental NGOs to a wider set of members including scientists, politicians and businesses. Ultimately a ‘widespread *political will*’ for tackling climate change was shaped²²⁵. As discussed in previous chapter, by the introduction of the Climate Change Act and the creation of DECC in 2008, policy change at that period of time was manifested in a set of *legally binding targets* and *institutional reforms*. While the UK already had emission reduction targets, the introduction of such ‘bold piece of legislation’, in Lockwood term (2013: 6), reflected primarily the sense of *failure* in existing, albeit largely

market-based, climate and energy policies. In fact, the CCA had significant implications for the whole government as a '*dirigiste* in an era of liberal policymaking'²²⁶.

5.3.2. The policy feedbacks of new targets and institutional reconfigurations

At the time of enactment, the CCA was understood as a way of locking the UK energy policy in emission reduction targets through legal means and new institutional landscape²²⁷. Since adoption, it also shifted the direction of public and policy debates towards solidifying the low-carbon metaphor²²⁸. Although such strong legislation provided, to some extent, a safeguard around the targets²²⁹, soon after, it became clear that 'legal lock-in is never complete' (Lockwood 2013: 47). As Szarka (2010: 849) highlighted, there was an 'unresolved tension between ambitious targets and modest means'. In similar statements, such *imbalance* policymaking in the post-target era was widely criticised by different studies as 'hot air and cold feet', in reference to the mismatch between 'high political rhetoric' of climate change and 'cautious policy implementation' (Lorenzoni et al 2008: 113-119; Lockwood 2013: 15). In the one hand, the centrality of targets, which was then enshrined in 'law', to current climate governance made it very difficult to be changed or neglected. Not only because it required 'repeal', which was time-consuming, but also entailed huge *political costs* and unintended policy implications. An interview with a senior civil servant at DECC, who was then directly responsible for the EMR, made it clear to me that, regardless of legal consequences, it is still politically expensive for the government to impose a substantial move from binding targets.

The carbon budgets and the climate change goals equally are statutory goals set out in the Climate Change Act previously. I would argue if you get close to missing those targets you are likely to be *judicially reviewed* and I'm sure some members of today's audience²³⁰ will be in the lead in making sure we were held to account for that, but equally the *political cost* I think is incredibly high of missing your climate change [and renewable] goals, so just to give you a sense, I don't think there is a sense that we can simply wait and *revise* these targets later on and equally, I would argue, that's not just because we have *statutory targets*, that's because we have an incredibly pressing goal which is to try to help globally to tackle climate change which is just something that the UK Government has made very clear it thinks it needs to do. (Interview 29, July 2012)

On the other hand, since there was no explicit ‘enforcement penalty’ for missing binding targets, environmentalists have always been concerned about policy risks in the way of the targets. The then head of climate change in WWF warned that the Climate Change Act would be ‘withered by neglect’, if it was left on its own (Allott 2012). From this viewpoint, the adoption of a target is only the beginning of a process of change, as shown in chapter before²³¹. Otherwise, the targets and the political deliberations behind them would not be necessarily translated to practical strategies and actual outcomes.

The main engines of further changes were at the heart of the CCA itself: the introduction of carbon budgets and the establishment of CCC. While the budgets were set to strategise the way of meeting 2050 target, the CCC was expected to provide advices and recommendations for government. By the time of writing, four carbon budgets have been passed and the CCC’s reports have had a remarkable role in scrutinising government policies and pushing it under accountability. Although some members of environmental movement still criticised the lack of enough authority and real political power in the CCC (Interviews 25 and 51, the members of FoE and former environmental campaigner), its remarkable role in ‘crystallising’ the long-term direction of energy policy was acknowledged by a wide range of interviewees and some academic literature (Lockwood 2013; Hill 2009).

Meanwhile, another important part of institutional reconfiguration was the re-birth of a state level energy department, the DECC. Although this was largely derived from the PM Brown Cabinet reshuffling and the climate commitment of Ed Miliband prior to the CCA, its creation was also accelerated by political consequences of the CCA. By representing the whole government responsibilities in the CCA and linking energy and climate policies ‘under the same roof’, the DECC not only has ‘*balanced up* different policy objectives’, but also has represented ‘broader change in policy thinking’ (Interview 1, Former Scottish energy directorate and member of UKERC advisory board, November 2011). In other words, the creation of the DECC fundamentally shifted the way that energy-

climate policy trade-offs arise and officially announced the strategic role that government is expected to play. Nevertheless, there were still some sceptical views amongst interviewees from some environmentalists who thought that the DECC is still more dominated by ‘neo-classical economists transferred from the DTI’ than ‘others from the DEFRA’ (Interview 11, Senior planning policy officer at RSPB, December 2011; Interview 5, Senior member in UKERC and RCUK, November 2011). Likewise, some critics pointed in the lack of full and exclusive power of the DECC over energy policy. For them, the open-handed Treasury has yet constrained the UK energy policy within the borders of the market (Interview 51, Former environmental campaigner and political analyst of energy governance, May 2013). Despite such reservations, most of whom I interviewed, from different perspectives, highlighted the remarkable impact of ‘political re-structuring’ of the energy institutions on further policy changes²³². As an instance, a market economist of the Conservative think tank Policy Exchange, evaluated, albeit criticised, the whole structural shifts for re-politicising and far distancing from the logic of market.

The appearance of CCC, the Climate Change Act in general but particularly creation of CCC has really driven a *long-term planning approach* to the UK energy policy. They produce reports, they set targets, and there is where we should be in the future. I am talking about a *whole approach* of knowing what energy system should look like in the next decades ahead. That is given emphasis by CCC. That needs a backdrop, needs a set of arrangement by the market which has been always criticised by some that cannot deliver a certain amount of renewable, certain amount of nuclear and a long-term plan that CCC has set out, because the *market cannot deliver* this level of certainty... Similarly, the creation of DECC has changed the *whole balance of policy* making in energy. When I was working in the Treasury, I headed energy policy in the Treasury, and at that time DTI did energy policy and DEFRA did climate change policy. The dynamic balance of policy making was more towards understanding *the market*, the benefits of the market, and I had been surprised if EMR would be emerged from that machinery... Because DECC has bring them together, it has removed the energy policy *veto* over climate policy and I believe there is a *dominance of climate* over other energy objectives. Also I would categorise it as being a large step towards more *centrally planned* energy system (Interview 17, Senior policy research fellow at Policy Exchange, December 2011).

In parallel with British targets, the UK energy policy was “hysterically shocked”, in Henney’s wording (2011a), by the imposition of the European Renewable Directive²³³. As civil servants within the Energy Department claimed, ‘nobody in energy sector was expecting the mandatory level of the obligation. We suggested %15 of electricity rather than the whole energy’ (Interview 39, Former DECC

Energy team senior member, August 2012). According to the speculation of a former member of the DECC energy team, the Directive was conceived as ‘an immediate surprising decision because, at the time of signature I guess, Tony Blair was not realising the consequences of what he had personally signed without consulting anybody else²³⁴’ (Interview 42, Former civil servant at DECC, August 2012). As a result, that signature not only brought the government under the burden of an international statutory obligation²³⁵, but also entailed huge political and economic implications as well. As a current member of the EMR Technical Expert Panel highlighted, it arguably changed substantially ‘the way of thinking about low-carbon support’. Because of what he called the ‘deterministic philosophy’²³⁶ behind the Renewable Directive, other market-based instruments, particularly the RO²³⁷, were practically ‘taken over’. (Interview 12, Government advisor and the EMR Technical Expert Panel, December 2011). On the other hand, its shorter time-frame compared to 2050, provided it with a ‘catalytic impact’²³⁸, in accelerating progress towards low-carbon target. Since then, the government was responsible for meeting a mixed ‘*low-carbon/renewable*’ target. Consequently, the EU Renewable Directive undermined the central role of the market and, in return, necessitated some forms of state interference. The next chapter will discuss how the CfD then re-framed the role of State as a ‘*price fixer*’.

To sum up, by the late 2000s, as climate policies proceeded, more interventions were required. The process of increasing intervention showed that if security concern *legitimised* state intervention, climate policies gradually represent, in Henney’s term (2011b: 51), ‘the *death knell*’ of competition²³⁹. Such shift in the perception of the climate change nature, from a function of market to a policy failure and then towards the demise of competition, was reflected in several responses to the EMR consultation call. As two contrasting instances, the Cambridge Electricity Research Group and Prospect²⁴⁰, the largest union of the UK professional engineers, noted a huge shift in the level of intervention presumed to be required. Though, while the first criticised, the latter endorsed that.

One effect of the developments during the 2000s is an apparent *emerging (deep) conflict* between the agendas of *liberalisation* and the *environmental agenda*... There seems to be an increasing risk of environmental agenda unrolling the liberalisation agenda and pushing us back towards centrally planned power system... (Cambridge EPRG 2011: 7).

We believe that the original concept that *light-touch regulation* was only a stopgap before full competition could be introduced was a delightful *intellectual fantasy*. The benefits of competition to [climate change] can only be achieved by clear and *robust intervention* to set a market with clear understanding of the desirable outcomes for the consumer... The original concept has lost what relevance it had to consumer aspirations (Prospect 2011: 3).

This substantial move away from market paradigm was derived mainly from the *practicalities* and the risk of *policy failures* rather than from ideological stances. A decade of disappointing experiences in meeting policy objectives not only disputed strongly the previous faith in the market, but also enhanced the *receptivity* to new ideas and concepts. As a long-experienced civil servant, who was a senior member of the DECC energy team during 2008-2009 observed:

I do not agree that new Labour had ideological approach to intervention. Over-emphasising of ideological stance is not acceptable, while Ed [Miliband] was rather ideologically neutral and reacted to *practicalities*... Intervention was not an objective in its own. It was an *unintentional side-effect* of environmental mainstream and financial collapse increasing *political risk* of missing the targets... Energy policies did change, when there was *absolutely no alternative*'. (Interview 39, August 2012)

5.3.3. Financial crisis and a widespread mistrust to market agencies

In 2008, the largest international financial crisis since the 1920s began to appear. As one of the policy narratives that emerged, the crisis was interpreted, to some extent, as an overall fault of the market system and 'capitalism'. Unsurprisingly, the UK energy sector was also influenced by that overall pattern. The crisis was represented, or at least coincided, in energy with a sharp increase in energy prices²⁴¹ and consequent growing concern for fuel poverty²⁴². In such a critical context, the first DECC Secretary of State, Ed Miliband (2008: 4) was of the first official positions that acknowledged a 'markets-only' view of energy policy on its own is no longer 'enough for a successful energy policy'. In return, he called for 'a more strategic role for government' alongside what he called 'dynamic markets'. As part of a widespread mistrust to the market agencies at the time, he also implicitly convicted electricity companies and independent regulator, Ofgem, for missing the targets and the lack of real competition: 'I remember having a

discussion with John Mog and Alastair Buchanan who were worried that the government kept, they, Ed Miliband had a way of describing all energy companies as *greedy* and the regulator as *incompetent*'. It was said by the former DECC Energy team senior member:

Ed arrived in the context of public anger over energy price increase, financial problem, and, I mean the shift in policy had started under Ed Miliband. So, so there was a sense in which Ed Miliband had kicked off the process by making this speech and by asking for options on what was the strategic role of government. And there wasn't much, sort of, detail behind this to say what he actually meant. And so he was pressing us *internally* within the department to come up with options as to, you know, what should be the strategic role of government? And, so, we presented him with a series of options, the most extreme of which was what we call the single buying agency... And so in, this must've been early, first quarter of 2009 we had a, sort of, serious debate with him about the single buying agency model in the electricity market. He, sort of *backed off* at that point and didn't, sort of, say I must run with this, he just said well, I want to *think about this*, as it were. I think, he knew that he was only going to be in power for about another year. And I think he was concerned about launching a fundamental reform of, of the electricity market with only a year to go... (Interview 39, August 2012)

Another former DECC civil servant, who was working at the time of interview in Ofgem, characterised that status as rather a form of 'revenge of liberalisation'.

I would argue he [Miliband] had rather sympathy with the legacy of Labour left in concerning about an oligopoly privatised sector. To differentiate himself from the former energy minister, John Hutton, as a market-oriented and nuclear fan, Ed started a process of *substantial re-thinking* which in the context of financial crisis and policy failures, it was understood, I would say, as rather getting '*revenge of liberalisation*' in energy that, unlike many other sectors, had still remained intact since the Labour power in 1997 (Interview 42, August 2012).

The critical approach of the Labour government to the Ofgem raised several tensions between them. This conflict escalated in the Project Discovery report (2009) when, as some former civil servants thought, the Ofgem intended to respond to Miliband's blame and to 'get ahead of the government' not only to 'position themselves in that way', but also to politically push responsibilities towards the Labour government (Interviews 38; 39; 41; 43). In response 'the Government stepped in', in a number of instances and drove recurrent reviews in the role of Ofgem. Though, Labour's concern appears to continue to today. As their Shadow energy secretary, Caroline Flint (2012), declared 'the time has come to say *goodbye to Ofgem*' and to replace it with a more '*trustworthy regulator*'. She criticised Ofgem for failing to "get tough with the energy giants" and to deal

with the challenge so-called the ‘Big Six *profiteering*’ (Macalister 2011). A long advisor of the Government described hidden intentions behind such a conflict:

Project Discovery irritated the government because Ofgem clearly thought the government was not taken this problem seriously, Ofgem said look you had three white papers in 2000s but nothing is happening, *get serious*, these are the problems and the Government, the DECC, said hang on a minute, Ofgem is going to influence us, so tension bet regulators saying something has to be changed, and the government is saying yes, but *we decide* what is, we want to decide what should change (Interview 12, DECC Expert Panel Team, December 2011)

Arguably, the legacy of such high level of mistrust in big businesses is still alive. I realised the fact when I interviewed some high profile figures in private sector. For a board member of Energy UK, the biggest trade union of energy providers, ‘continuous mistrust to big companies is yet an important challenge’ (Interview 27, July 2012). The head of energy policy at one of the Big Six criticised current government that, due to the lack of public trust, ‘even Tories sometimes try to publicly pretend that are opposing big companies’ proposals’ (Interview 44, September 2012). In one of the most recent evidences, a joint study by the Glasgow University Media Group (GUMG) and Chatham House showed that most people still think the energy companies are in the ‘corruption’²⁴³ (Froggatt et al 2012). Similarly, according to the YouGov poll as of 2013, the energy industry was nearly ‘as hated as the banks’ (Hawkes 2013). It argued almost 76 percent of the nation wanted the Government to do more to ‘crack down on the sector’. In return, the current Energy UK chief executive, argued that ‘energy sector must make *public trust* the number one priority’ (Knight in Weber 2013). Inspired by such critical context, the continuous ‘oligopoly’ of Big Six in the UK electricity market has been widely criticised as another example of *improper* market functioning and the lack of ‘real competition’²⁴⁴.

The financial crisis also undermined the effectiveness of market based instruments in attracting investments. Under the context of austerity, some tax-based mechanisms like the EUETS and CPF almost technically ‘collapsed’ and the risk of investment increased. Likewise, the economics of the RO was no longer seen attractive, particularly in meeting new renewable obligation. Consequently, to

prevent huge political cost of missing the targets, the state was inevitably expected to ‘step in’ to assure investors for long-term investments (Interview 43, SPAD of former DECC Secretary of State, August 2012). As a former civil servant said, ‘ministers decided to gain much more power to fulfil their responsibilities. It was, in my view, a *practical* decision more than an *ideological* one’ (Interview 42, the former member of DECC energy team, August 2012). Altogether, these factors illustrate the multiple impacts of financial crisis in discrediting the already shaken belief in the self-fulfilment adequacy of the market. Even though some critics argue that the potential of such widespread collapse of the economy in a wholesale paradigmatic shift has been ‘wasted’ (Pemberton 2013), the public perception of *market failure* imposed a significant impetus for energy policy change. However, the financial crisis has also had some undermining consequences for climate and renewable policies, we will discuss later.

5.3.4. The recognition of electricity market failure in technology delivery

With regards to the emergence of accelerated change imperatives in the late 2000s, the focus of all suggested strategies moved towards *technology delivery* in power generation as the central solution to meet energy objectives (CCC 2008; DECC 2009). Having assumed that electricity is going to form a large part of our future energy mix²⁴⁵ and potentially play a much wider role across the economy, electricity policy was then conceived as at the 'heart of two faceted energy policy objectives' (Interview 18, Senior director at CCC, December 2011): reducing carbon emission and renewable provision. In the one hand, while there was no electricity-specific binding target, the CCC's main scenario presented in the Fourth Carbon Budget (CCC 2010) implied a substantial de-carbonisation of the electricity sector (see figure 7 in Appendix B). From this point of view, the de-carbonisation of large-scale electricity supply was the main feasible way of reaching low carbon targets (Interview 29, EMR senior member at DECC, July 2012). But the volatile design of EUETS, as the main mechanism, was seen as, by no means, sufficient for such a ‘zero carbon’ aspiration²⁴⁶.

On the other hand, the signing of the EU Renewable Directive imposes an ‘over-ambitious’ 15% target to the whole UK energy sector. Again, the ‘lead scenario’ here expects a minimum of 30% renewable electricity by 2020s, which is unlikely to be achieved under the current incentivising mechanism, the RO²⁴⁷.

Furthermore, despite a decline in geo-political insecurity concerns in the late 2000s²⁴⁸, a set of new electricity-specific security issues has started to grow. Whilst by then, it was largely taken for granted that lights will stay on, a set of supply scarcity concerns emerged. A combination of decommissioning a large proportion²⁴⁹ of current nuclear and coal power stations, the growing role of intermittent renewable resources, which perhaps requires a level of excess supply investment, as well as an increasingly reliance on electric power necessitated an urgent huge re-investment in electricity infrastructure. Otherwise, a clear risk of ‘*capacity crunch*’ and inevitable ‘*blackout*’ is expected in the next few years, though it is still unclear ‘how at risk we are’²⁵⁰ (Ofgem in Gosden 2013; Marchant 2013b). Like meeting targets, tackling new security concerns was also understood as the challenge of *technology delivery*. To achieve this task in a period of financial crisis and austerity, as described by a member of Energy and Climate Change Select Committee of the Parliament, it is ‘the biggest infrastructure challenge this nation has ever seen’:

The *biggest challenge* that we’ve seen, I think in infrastructure development, I think probably that this nation has ever seen, we’ve never had what we are looking for now in such a short space of time, 110 billion into the electricity market, 200 billion coming on stream in the next decade. That is an incredible ask at a time when there is such financial uncertainty in Europe, when there are increasingly attractive markets for developing infrastructure and capacity elsewhere in the world (Interview 30, July 2012).

Such a Herculean task²⁵¹ of re-investment is getting even tougher given the need to replace conventional market-friendly options, e.g. CCGT, with more expensive and risky low-carbon generation technologies (for generation mix scenario by 2050, see figure 10 in Appendix B): ‘Things are going to be extremely, extremely tight. And then, of course, it’s not just about old capacity, it’s about low carbon capacity’ (Interview 53, Conservative MP in ECC Select Committee, June 2013). Indeed, in Kenendy’s term, it is left to the power industry again to ‘pay a large

proportion' of the cost of low-carbon targets (see figure 11 in Appendix B). Insofar as even some members of pro-market coalition argue that current mechanisms are unlikely to fully address such huge investments. Though, regardless of low-carbon ambitions, it has been controversial whether or not electricity market could deliver capacity re-investment²⁵². However, the level of investment concern is clear in the statement made by a board member of Energy UK during an interview, whilst he still believed that market would deliver conventional capacity re-investment is :

You don't necessarily need Electricity Market Reform to replace your closing power stations. We've been doing that for a long time. There's nothing terribly magical about that, but what we are trying to do is to bring *new types* of generation into the market place and it's generation which is usually more *expensive* than the participants would choose to build if they had a completely free hand and it's *riskier* and that has an effect on investors. It is roughly about £200 billion, not just for power stations but for all the other things that go with them. This is about double the rate of investment that we've been accustomed to, and of course it's coming at a time when raising money is a bit more challenging than it used to be and investors are very cautious about where they put their cash. Somebody said a year or so ago; it's like building two new Channel Tunnels every year. This is a pretty big call and *extraordinary steps* have to be made to make sure that that money comes into the UK to deliver the objectives that the Government has (Interview 27, July 2012).

To sum up, the UK electricity system was seen to be heavily locked-in to unabated fossil fuel generation, suffering from the lack of real competition and dominated by Big Six 'oligopoly', threatened by a serious risk of under-capacity and thereby blackout, and designed technically improper to incentivise sufficient low-carbon investment. Furthermore, the main regulatory low-carbon instruments, i.e. EUETS and RO, have not been as effective as hoped to incentivise adequate investment in low-carbon technologies²⁵³. Consequently, none of the trinity of low-carbon generation technologies, i.e. nuclear, renewable and CCS, could readily deliver as required. This status would ultimately lead to a *severe security challenge* and the *miss of both* inter-related sector-specific targets: full carbon reduction and %30 renewable obligations. McIlveen and Helm (2010) described such complexity surrounding electricity policy as 'a tangled web' and a complicated 'policy riddle'.

A series of warning policy documents and reports during 2009-2010 addressed these concerns including the Ofgem's Project Discovery²⁵⁴ (2010), the Treasury's Energy Market Assessment²⁵⁵ (2010), the CCC's Step Change²⁵⁶ (2009) and the CBI's Decision Time²⁵⁷ (2010). Collectively, albeit from different points of view, they diagnosed that the 'existing market arrangement is *unlikely to deliver*' the UK electricity targets. Thereby, a growing demand for some forms of *inevitable market reform* emerged. Even though in pre-election context, Labour deliberately 'had stepped back from fundamental change'²⁵⁸; they concluded that 'whichever Government would have been elected in 2010 would have had to embark on EMR'. (Interview 30, Member of Energy & Climate Select Committee, Labour MP, July 2012). By contrast, the Coalition Government aimed strategically at tackling that challenge from very early stages in the Coalition Agreement²⁵⁹ (HMG, 2010). As one of the main renowned Tories in energy policy said to me, their proposed reform in the EMR dated back to the Conservative electoral campaign (Interview 47, Former member of DECC ministerial team, Conservative MP, February 2013). A senior civil servant in the DECC EMR team, who was in the Cabinet Office when I interviewed him, explained how significant a sense of failure amongst the Coalition Government was when they decided to put forward the EMR proposal. Though, his focus in quotation below is merely on the failure of climate policies and is rather against Labour's claim of policy continuity.

[Although] before 2009, we had actual climate policies, but there were practically *insufficient* and *less effective* than what government hoped and it was proving that meeting the targets are more difficult than what government thought before. And therefore government got *disappointed* and I think it was a very *important driver* for the EMR. Because the previous government did not seem to realise the way in which the electricity market was set up was going to militate against reaching these targets and I think the present government has *realised quite quickly* that we need a *fundamental reform* of the electricity market, while there is some people who think that reform is not going far enough... So all of the previous policies had been shown as being *unsatisfactory*, they reformed the market in 2001 but it made a mess of it, so they set up EUTES which produced an unsatisfactory carbon price, they had RO which turned up to be very poorly designed.. so almost every policy that they had tried wasn't going to work or won't going to do it in a reasonable cost, so they had to change that, so this caused a lot of *pressure to change* it, if they may not change it, it would be politically difficult to persuade that previous government made mistakes (Interview 21, DECC EMR team member, January 2012).

In short, a widespread recognition of *failure* in electricity system from different players with potentially diverging perspectives drove a fundamental shift in

electricity policy. A combination of change impetuses including a new form of insecurity fear of ‘capacity crunch’, the risk of missing legal targets and international obligations, and the emerging concern of increasing fuel poverty and market mistrust led to an overall agreement that current arrangements, by no means, are ‘fit for purpose’. It became clear that, in Henney’s wording (2011a: 339), ‘power and politics are inextricably entwined ’ and electricity industry is a ‘classic case of *contrived competition*’. Thus one of the technical architects of the EMR who recently left the DECC pointed to a ‘*universal feeling*’ of the failure at that time.

I really want to take you back to that point in sort of 2010 where the Department was asking itself the question, you know, do we believe that the market arrangements we have are fit for purpose? And, I think generally there was a kind of *universal feeling* that what we have at the moment was *not going to deliver* the sorts of things that we hoped for in terms of decarbonisation, security of supply and indeed cost... Well, first of all we have looked very hard at the incentives inside the market, and I think it’s a generally *shared view* amongst us, ourselves, politicians, the industry, the regulator and Civil Society, that all of us believe some kind of *intervention is needed*. (Interview 29, the then senior member at DECC EMR team, July 2012)

5.3.5. The accumulative complexity and policy paralysis

In response to such ‘universal feeling’ of the failure of existing market arrangements, the original design of the EMR reflected a large tendency towards a ‘politically determined’ style of policy making. A market economist, albeit a critic of the EMR, described it as ‘an admission of *defeat* for economic rationalism and sensible low cost economic policymaking’ (Interview 13, Economist at a leading Electricity Policy Research Group, December 2011). Such a government-led policy package has been largely contested by business leaders:

I wonder sometimes whether the Government actually really does think that it’s still got a CEGB out there and that all it really needs to do is to decide *where* that £110bn is going to be spent, *who’s* going to do it, *where* and *when*. (Interview 44, Head of energy policy at one of the Big Six, September 2012)

Nevertheless, given technology delivery was central to the EMR proposal as shown in previous chapter, soon after it became clear that the DECC does not have enough capacity to design such complex and technical policy package. In fact, despite some institutional improvements since the inception, the policy

capacity of the DECC was critically scrutinised by a wide range of long-experienced civil servants and energy experts. From whom I interviewed, they thought that the DECC is still suffering from the legacy of ‘de-skilled and de-politicised’ energy departments that were dominated by ‘young economists’ who has no enough knowledge about ‘the history’ and ‘the complexity’ of electricity policy (Interview 22, Former Board member of London Electricity, January 2012; Interview 16, Former civil servant and researcher in an energy consultancy, December 2011). As a personal experience, the current head of energy policy in E.ON, one of the Big Six generators, told me his feeling of ‘*institutional danger*’ after working within DECC for sometimes.

I spent some time in DECC on secondment last year so I am concerned about some *institutional danger* I believe which DECC has in delivering EMR, where electricity market reform is of mostly *economics* and *technical* side and both sides have to be right. And, DECC is populated by civil servants who don’t have technical knowledge and this is all about electricity so there is a considerable institutional risk due to DECC not having enough *technical in-house expertise*... So I think there’s perhaps a bit of *disconnect*. The Secretary of State recognises he’s got lots of power under EMR but I don’t see within DECC, at the moment, the equivalent of the CEGB planning team who’s actually figuring out how to *maintain* and *deliver*. (Interview 33, Director of energy policy in one of the Big Six, August 2012)

To cover such lack of ‘in-house expertise’ and ‘qualified staff’, the DECC opened up the policy process beyond official calls for consultations and policy learning²⁶⁰. By establishing several platforms like Expert Panels, Working Groups, Stakeholder Events and other communicating forums (see DECC 2013b), a wide range of stakeholders within electricity sector have become ‘informed of and involved in EMR progress’. Though that it is albeit controversial how balance those voices have been heard²⁶¹. Nonetheless, regarding the central role of businesses in technology delivery and investment, the EMR was heavily influenced by the industry. Current studies also illustrate how influential is industrial lobby compared to others, such as environmental interest groups (Butler 2013). Below is another quotation from one of the EMR main technical architects that reveals the rationale behind the introduction of the Collaborative Development Process aiming at having the industry and financial bodies on board alongside civil servants.

We want to move decision making though out of Government, out of the civil service in effect, and *into the industry* where they have more *expertise* around ...of different kinds of *technology*. We need to work intensively with the industry to try and design the right systems and processes, not only to get the right policy answer but to make that policy answer work *on the ground*... And, I think in essence I accept the point that we need more *technical skills*. I think frankly we also need more commercial [and funding] skills inside. (Interview 29, EMR senior member at DECC, July 2012)

Such level of state-business interdependency, in previous chapter, was described an ‘uncomfortable hybrid’ of government and market drivers. As discussed, it reflected a lack of intellectual coherency, what was so-called *paradigm ambivalence*. By studying the policy process that led to the formation of the EMR, this chapter explains *how* and *why* such ambivalence emerged. It shows that shift in predominant policy paradigm was primarily driven by the practicalities of policy failure than the emergence of a coherent alternative paradigm. The fact was reflected in contrasting understanding of the nature of EMR. Whilst the Government called it ideally ‘a long term *transitional strategy*’ from huge inevitable intervention to the aspiration of a ‘low-carbon competitive market’ (Interview 47, Former member of DECC ministerial team, Conservative MP, February 2013), others saw it as a ‘Dictators Bill reversing the *entire process of liberalisation*’ without any ‘exit strategy’ (Interview 53, Conservative MP in ECC Select Committee, June 2013). Consequently, such confusing mixture of policy frameworks raised a huge level of complexity and undermined the ability of quick decision making. The fact was mentioned by the representative of businesses. Similar to what I heard from the CEO of REA, the head of energy policy at one of the Big Six pointed out:

You can either set the market, let the market run, or you can actually say exactly what you want, but to sort of somehow tread the path in between, it’s almost like having a CEGB but operating it by remote control with a great big instruction book, it’s not very straightforward... the Government does not want to exercise total control but it does want to achieve all the outcomes set out above. The result is a *mess*. As such, I feel we’re in a state of *paralysis* (Interview 44, September 2012).

As a result, the EMR policy process turned into a long and evolving process that, by the end of 2012, still continued. It started officially more than three years ago, following the signing of the Coalition Agreement. But the introduction of the EMR White Paper in 2011 was not the end of the story. Unsurprisingly, by the

late 2012 when the Energy Bill was announced, several shifts in the original context of the EMR had occurred and the focus of policy had evolved over time.

The main change relates to the shift in the balance of ‘trilemma’ in policy objectives. There have been always massive trade-offs between climate/renewable policy, security of supply and cost for consumers which has made it very difficult to get a good landing between those three seemingly ‘*irreconcilable objectives*’. Firstly, since 2010-2011, a new generation of insecurity risk has got more prominence. Whilst the UK had a ‘*lucky escape*’ from capacity crunch in the late 2010, due to the economic downturn and corresponding drop in energy demand, it seemed then very ‘fast approaching’. The warnings of the regulator and some industrial analysis (Marchant 2013) shifted the political debate on to the question of security. It was even reinforced by a ‘Conservative pragmatism²⁶²’ when the then DECC Energy Minister in 2012 addressed ‘security of supply as top priority’ that needs ‘*immediate action*’ (Hayes in Newton 2012).

Likewise, an escalation in the number of citizens deemed to be in fuel poverty gave the affordability objective an increasing political relevance. As an interview with the head of energy policy in Consumer Focus revealed, a growing advocacy coalition of new members including ‘energy intensive industries, consumer representatives and tax payer alliance’ is gradually emerging (Interview 40, August 2012). A long experienced energy expert also confirmed change in the nature and policy saliency of affordability concern.

There are a lot of new members, while the concern of energy bills has been used already by competition-oriented coalition. Affordability is rather a new concept. What was important in the beginning of privatisation was not affordability. It was more about liberalisation and efficiency. So far affordability hasn’t been tremendously important but it will become important ... so it passive, I say, in essence (Interview 27, A board member of Energy UK, July 2012)

Its political importance was also reinforced by publishing some studies highlighting the impact of low-carbon policies, particularly the EMR, on consumer bills and industrial competitiveness in the era of austerity (Platchkov et al 2011; Consumer Focus 2011; EIUG 2011; CBI 2011). Therefore, it seems that ‘affordability is now very much more important than it was when the EMR was

initially introduced' (Interview 44, Head of energy policy at one of the Big Six, September 2012).

More importantly, soon after the 2010 election a political tension over climate/renewable policies became gradually clear. It was firstly revealed within the Coalition Government over the Fourth Carbon Budget in 2011 and then was reflected in the cabinet reshuffling in 2012²⁶³. By late 2012, the tension culminated in the case of the 2030 de-carbonisation target in the Energy Bill and renewable-gas dispute²⁶⁴. As a Conservative MP described, it seems that 'the UK is reluctantly *dragging* its feet over climate change issues' (Interview 34, Aug 2012). Nevertheless, policy debate over climate and renewable is increasingly '*divisive*' now than the election era in 2010, not only within Government partners, but also within Tory party itself²⁶⁵. There was also a decline in public climate support compared to other priorities (see figure 22 in Appendix B). Building upon the consequences of financial crisis on climate costs and the emergence of unconventional resources, a growing *divergence* between climate/renewable targets and security and affordability appeared²⁶⁶.

Collectively, such shifts in the relative importance of different policy goals were contested between the Coalition government partners and across different departments. Consequently, the original political consensus over the EMR proposal was relatively disputed. To balance between multiple change drivers, further layers of complexity also were added to the already convoluted EMR package²⁶⁷. Therefore, taking long-term decisions about detail mechanisms of the EMR became even more difficult. Several interviewees characterised that period of electricity policy as '*drift*' and '*indecision*' (Interview 50, Former SPAD of PM and energy commentator, April 2013; Interview 37, Ofgem Wholesale Market, August 2012). A Tory member of the Parliament ECC Select Committee described how difficult it was getting to a decision that could satisfy everyone and meet different objectives²⁶⁸.

You can construct beautiful policies, I can do beautiful policies, if they *can't be delivered* politically, then there's no point in them.... At the end of the day, we have to *compromise*

on almost everything we do, and sometimes that the compromise you end up with can look *extremely messy*. I mean I'm the first to admit, even though I'm a Government MP, that EMR is *fiendishly complicated*. It's plasters upon plasters upon plaster to fix the unintended consequences of previous plasters... And I think what we've got here is DECC, BIS, the Treasury, 105 backbenchers and Number 10, playing around with this in relation to a bit of a mix up and nobody really controlling it, nobody really being able to deliver something that has that *long term message* and *assurance*. (Interview 53, Conservative MP, ECC Select Committee, June 2013)

Overall, since work on these policies began, the world had changed. The resultant policy package was an increasingly complex 'meshed up set of measures' that were very difficult to fit together. What I found from the debates in a very recent Westminster Forum I had participated was that policy community was very suspicious about whether the current EMR is still fit-for-purpose. What another MP from the ECC Select Committee said illustrates how fundamental is the debates around EMR.

I think we started off hoping that we could differentiate ourselves by having a policy package which would take policy risk away from the investor, I think we are discovering *how hard* it is to achieve that.... And in fact one of the things we did in the energy Select Committee, when we're doing pre-legislative scrutiny on EMR, the first question we considered was do we recommend *tearing this whole thing up and starting again*, or are we too far down the line and do we make recommendations to try to make it work... Yes, a major re-evaluation of policy now would be an embarrassment, but we need to get out from the mess that has *paralysed* the policy into *inaction*. While energy policy requires a constant balance of different interests and risks over time, but what is clear for me is that such a complex situation is not unlocked by *halt* and *indecision*. (Interview 30, April 2013).

5.4. Analysis and discussion

Having reviewed the overall pattern of policy change in the UK electricity policy since the early 2000s in two previous sections, this section seeks to shed lights on theoretical contributions and to draw some lessons from the studied case. Firstly, it tries to bridge between these empirical analyses and the adopted analytical lens. This part aims at a deductive examination of the chapter propositions. In addition, this section will offer some lines of theoretical contribution and analytical proposition for further research. This type of contribution is derived from an inductive approach to the case study and fall beyond literature-driven concepts that were hypothesised and encapsulated into the chapter proposition.

5.4.1. Policy failure and the level of reconcilability

On the basis of the analysis of recurrent changes throughout more than a decade of the UK electricity policy, it could be argued that the legacy of energy liberalisation and marketisation has always constrained the policy impact of different change drivers. As a result, the level and type of policy changes have been limited to the degree that existing arrangements were seen in an absolute *irreconcilability* with new requirements. As mentioned before, change was driven mainly by *practicalities* than ideology or alternative paradigm. In the early 2000s, while the emergence of early energy challenges and the rise of climate concerns marked an end to the previously ‘benign context’ and thereby revived energy policy, the level of actual transition in policy was highly compromised. The main reason was that such level of anomaly was not understood fundamentally *irreconcilable* with market based governance. Eventually very modest and imprecise shifts in objectives and new instruments were seen sufficient to compensate *market failure*. It was almost the same in the case of huge insecurity concern in the mid 2000s. Whilst it brought back energy issues at the heart of public and political debate, the perception of seeing challenges *exogenous* and *temporary* prevented from imposing the allegation and responsibility of *failure* to existing policies and governance system.

But the situation started to change when, in the context of securitisation and re-politicisation, the minimal climate policies were gradually proved unable to meet the UK targets. The *accumulation of failure* evidences shifted the balance in favour of more radical alterations. Since they were understood as consequences of low political commitment to targets and technocratic de-skilling, they led to the emergence of ambitious targets and institutional reforms. Soon after, in the context of financial crisis and renewable targets, another version of *failure* became apparent. If the UK was expected to meet its climate/renewable targets, the then market arrangements could not *deliver technologies* required. It was highly reinforced by the intensification of under-investment concern and the increasing risk of power *capacity crunch*. Likewise, the growing debate around energy price

and affordability expanded the sense of *market deficiency* across the sector insofar as it became almost an inescapable conclusion for all advocacy coalitions involved. Such multi-faceted perception of *failure* in electricity market imposed a huge change imperative that ultimately led to the status of paradigm ambivalence in the EMR.

To sum up, this study shows that in the context of market paradigm dominance with no remarkable alternative, the interpretation of *deficiency* and *failure*, derived from practicalities on the ground, is the ultimate driver of change. They de-institutionalise established policies and practices and thereby open windows of receptivity to new ideas. Without questioning and discrediting the adequacy of existing policy components in meeting new requirements, the legacy of dominant paradigm would be able to dampen new challenges by minor adjustments and compromises. In other words, the more *irreconcilable failure*, the greater likelihood of policy change. Without denying the different typologies of change driver in the literature, this research moves beyond those theories and highlights the role of failure perception as the main factor conditioning the level and the type of actual policy changes, as hypothesised in Proposition 2.

5.4.2. The nature of change drivers and their policy saliency

As discussed in the Analytical Framework chapter, the policy impact of a change impetus depends on a combination of its nature and political process it triggers. Although the existence of the latter is essential, this mixed effect, by no means, is dismissal of the crucial role of driver's *policy saliency* drawn from its intrinsic characteristics. Throughout this study, it was revealed that different nature of change drivers show distinctive potentials for the subsequent process of framing contests and societal reactions. As Boin et al (2009: 98) argues some change impetuses '*hit at the heart* of existing policy domains, espousing *deficiencies* and *failures*'. It is evident in a comparison between the policy saliency of climate change and security concern. Whilst climate change was being increasingly seen important not only for public and environmental NGOs, but also consensual for all political parties and business unions; its exclusive policy impact was highly

limited and easily compromised. It was largely because of its natural characteristics as ‘intangible’, ‘global’, ‘non-immediate’ and ‘long-term’ challenge. In a similar conclusion, Lockwood (2013) calls it politically ‘valence’ not ‘salient’. Though, the situation became different, in terms of the level of urgency and political commitment, when the targets enshrined to the law. By contrast, security concern was intrinsically understood ‘urgent’, ‘nationally evident’, ‘historically meaningful’, politically ‘provocative’ and highly ‘visible’ for the public and policymakers. Unsurprisingly, the emerging concern of affordability and energy price was then proved as the most ‘popularly understandable’, highly ‘tangible’ and politically salient change driver which was universally important beyond the boundaries of energy sector. As such, the recent constructed divergence and conflict between climate cost and energy price undermined the political support for climate and renewable policies.

While this research found the different policy saliency of change drivers, it has not developed an explicit theoretical proposition about the characteristics that cause such varying policy impacts. It seems still something missing in the literature as well. Despite the introduction of ‘geographical and policy proximity’ concept by Nohrstedt and Weible (2010), it has remained yet under-theorised which features enhance the policy saliency of change drivers. The literature of focusing events (Birkland 1997; Kingdon 1995; Zahariadis 2007; Hermann 1972) presents a set of ‘politically symbolic’ features that are important in attracting attention to an event. They include surprise, suddenness, threat, uncertainty, urgency, visibility, scale, the level of anomaly and exclusiveness. The policy saliency of a change driver could potentially be studied in further research.

5.4.3. Policy context, contestation and alternative design

In order to impose the perception of failure on a policy and thereby accelerate a significant change, the intrinsic policy saliency of change impetus is only a part of the story. It would never lead to a significant change in public policy, unless it is politically mediated and strategically framed by active advocacy coalitions. The role of pre-existing coalitional balance is not albeit limited to the contestation

framing; it also depends on policy alternatives designed and offered by pro-change coalitions²⁶⁹. In the early 2000s, when a set of ambitious policy recommendations were suggested by the PIU report, they were seen as ‘steps too far’ by policymakers. It was partly because of the lack of coalitional balance in favour of climate policies. The still dominant market paradigm that was being supported by a powerful advocacy coalition of politicians, businesses and civil servants was able to *frame* emerging climate challenges as something compatible with market ideas. By presenting it as a market failure, they claimed that it could be met simply by ‘light-touched regulations’. Therefore, early climate movement, by no means, was able to challenge the predominance of market paradigm. By contrast, geopolitical security challenges were *constructed* by the media and politicians as national security threats. Thereby, they substantially re-politicised energy policy. Nevertheless, the continuous dominance of liberalised thinking and market instruments in energy sector resisted against a fundamental overhaul in energy policy. As shown before, in the absence of a pro-change advocacy coalition with credible policy alternatives, the ‘likeminded’ energy departments framed security challenges in the way that affected established policies only very minimally.

The coalitional balance shifted when the growing climate advocacy coalitions started to frame both challenges collectively as *accumulative* evidences for policy failure. It was the starting point of a process of *market contestation* by a wide range of energy policy stakeholders²⁷⁰. The establishment of new departments also embodied such new constructed nexus implying that ‘energy and climate are inextricably intertwined’. The strategic exploitation of financial crisis and the challenge of fuel poverty by that coalition, as other evidences for market discrediting, facilitated a significant move away from market-based policymaking in the EMR. Nonetheless, whilst their contestation was able to fundamentally displace market paradigm, the absence of an alternative paradigm led to a status of ambivalence and uncertainty.

Overall, empirical evidences in this study highlight the complementary role of pre-existing *policy context*²⁷¹, including coalitional balance and their strategies, in the exploitation of policy salient change drivers, as proposition 3 formulated. Furthermore, this research also contributes into the emerging literature aiming at bridging between two already mismatch realms: *policy narratives* and the literature of *policy process*²⁷². In recent developments, different studies claimed that ‘the inclusion of policy narratives as a causal variable in the policy change process is not only helpful but also *critical*’ to enhance its ‘*explanatory power*’ (Shanahan et al 2011: 536; Nowlin 2011; Nohrstedt 2011). Since their focus was particularly in the ACF, they describe policy narrative as a *coalition strategy* to policy change²⁷³. As such, a strategically constructed policy narrative²⁷⁴ is expected to frame the contestation of ‘interpretative hegemony’, to provide ‘evidence of failure’ and to add ‘credibility’ and ‘legitimacy’ to policy alternatives (Kern 2012; Fischer 2003; Hall 1993; Nohrstedt 2011). Having analysed the role of different framing in policy changes, this research observed how a resonant combination of policy narratives could impose the perception of multiple failures on a policy paradigm²⁷⁵. Nonetheless, this study shows that even if a set of contestation strategies lead to discrediting established paradigm, they are not necessarily capable to fully replace old governance model. The emergence of paradigm ambivalence was a clear example. It reflected a state of ‘fundamental uncertainty’ in dominant paradigm that thus led to a form of ‘paralysed’ policymaking²⁷⁶. This finding triggers another conceptual debate about which characteristics are required for a policy narrative or a mix of narratives, as evident in this case, to result in a wholesale paradigmatic shift. Perhaps, it could be studied in more detail later.

5.4.4. The heterogeneity of advocacy coalitions and different policy weight

As an important finding, this study sheds light on the black box of advocacy coalitions involved. Contrary to the initial ACF’s presumption about the ‘homogeneity’ of coalition members, it reveals that, in this case, different members of advocacy coalitions showed different levels of *policy weight* and

influence on electricity policies. By this, this case study not only confirms the concept of heterogeneity of coalition membership (Weible 2009: 130), it also draws an analytical linkage between different types of policy change and the most influential members in changing policies in each level. Empirical evidence reflects that there was a wide range of diverse policy actors who had participated in the process of UK electricity policymaking. Indeed, advocacy coalitions here included representatives of political parties, ministers, governmental departments and civil servants, businesses and trade unions, academia and energy experts, consultancies and think-tanks, NGOs and civil society as well as media and journalists. Perhaps, each of those heterogeneous members were distinctively characterised based on the political resources they equipped with and the level of policy influence they enjoyed from.

A very interesting observation showed that throughout various stages of the process of UK electricity change, different coalition members played different roles and presented different levels of policy weight. For example, in the case of EMR as a delivery-focused and technology-specific policy proposal, there was evident a high level of influence by businesses, technical analysts and civil servants in designing its ‘devilishly complex’ mechanisms. It became clear particularly from interviews with some representatives of environmental NGOs and senior academics. Both were complaining from being marginalised by business lobbyists in the process of EMR (Interviews 6 and 7, two lead academic energy experts; Interviews 14 and 25, two representatives of Green Alliance and FoE). Throughout this research, I have heard similar statements to the quotation below:

EMR is not representing too much ideological change ...In fact, here I would say, *technicality* prevails *novelty* and *ideology*. So, in the EMR policy process, technical consultancies and business lobbies have been seen more influential than academia and NGOs. Though the latter are also involved in the process, they’re always invited to policy meetings, they’re constantly publishing their comments, but in reality their voices, I think, are not seriously heard here (Interview 6, Government advisor and head of a research centre on energy governance, January 2013).

It was substantially different in the case of the Climate Change Act in 2008. It was driven largely by a productive combination of environmentalists and politicians.

While during that period of time political actors at ministerial and parliamentary levels officially supported and voted for such significant shift in policy objectives and institutional levels, the role of civil society and academia was crucial in initiating those ideas, framing solutions, convincing policymakers and shifting public opinion. This contextual explanation suggested that depending on which component of UK electricity policy was about to change, there was a particular group of actors who were then more influential than others. This conclusion opposed such simplistic claims that explain changes in electricity policy only based on the central role of big businesses or constantly driven by politicians. Instead, it provided an understanding of the links between the level of change and the policy weight of coalition members. As an evidence, a former member of DECC ministerial team divided the EMR process into two political and technical stages with different actors: ‘So firstly the policy objectives were clearly politically agreed and then technicalities were agreed in iteration between civil servants, academics, politicians and international experiences’ (Interview 46, Former member of DECC ministerial team, December 2012). Table 5 suggests a conceptual linkage between different levels of policy change and the most influential policy actors in this case study. It is, perhaps, a good starting point for empirical examination in further research as well.

Table 5: linking the most influential policy actors and different policy change levels

<i>Policy components</i>	<i>Important factors and political resource</i>	<i>Influential policy actors and coalition composition</i>
Policy paradigm and policy objectives	<ul style="list-style-type: none"> -Ability to shape public opinion -Policy narrative construction and appropriation -Legitimacy and academic credibility -Impartiality and public acceptance 	<ul style="list-style-type: none"> -Idealist NGOs and civil society -Academics and Epistemic Communities -Media and press -Wider influential subsystems like financial market

Policy objectives, institutions and preferences	-Public engagement capacities e.g. campaigning, media power, lobbying and establishing a ‘national conversation’	- Political campaigners
	-Ministerial and parliamentary level -Access to political authorities and policy making venues -Political lobbying -Negotiation capacities and building consensus and compromise	-Political parties -Ministers -Senior civil servants -Other political authorities
Technology preferences and policy instruments	-Analytical credibility -Technical analysis -Modelling and simulation -Lobbying capability -Technological innovations -Policy entrepreneurship - Bureaucracy	-Delivery businesses and lobbyists -Middle range civil servants -Policy specialists and consultancies -Think tanks and advisory bodies -Instrument constituencies -Socio-technical niches and technology developers -Policy brokers -Regulators

5.4.5. The accumulative process of change and paradigm incoherency

By reviewing the process of change for more than a decade, it seems that policies change gradually and evolutionary over a long period of time. They are often a reaction to unintended consequences of previous policies rather than complete disconnected shifts. As such, policy change is not a ‘single event’. It is an interrelated ‘process’ characterised by both ‘path dependency’ (Pierson 2000) and also ‘policy feedbacks’ (Patashnik 2008). While some changes are incremental and minor, at the same time they are bases for further changes²⁷⁷. Collectively they make an *accumulative change process*. For instance, while the vague targets and marginal low-carbon mechanisms seemed disappointing at the early 2000s, they triggered a further stage of policy change either by introducing targets as a point for evaluation and scrutiny or by empowering low-carbon advocacy

coalition through financial subsidies and cluster building. Similarly, although security challenges did not eventuate in a set of remarkable shifts in policy components, the resultant re-politicisation legitimised greater role of government and re-awakened public attention to energy issues. That context then facilitated change in the state machinery and political support for legally binding targets in 2008. The *chain of actions* was accelerated by the policy feedbacks of such strong legislations and institutional reforms. They marked an intensive process of ‘political struggle’ that paved the way of a further significant move beyond target setting into technology delivery. Despite the fact that all recounted changes by 2012 still did not represent a paradigmatic shift, it is undeniable that their accumulative effect highly discredited market paradigm. It is compatible with what Hall (1993) predicted that ‘the accumulation of anomalies’ and ‘multiple adjustments *stretch the intellectual coherence* of the paradigm’ and gradually undermine its ‘credibility’.

Whilst previous chapter aimed at characterising the UK electricity policy changes based on their *type* and *level*, the findings of this chapter could contribute in the literature of change *process*. In contrast to sharp distinction between continuity and change in conventional ‘punctuation theories’ (Baumgartner & Jones 1993; Hall 1993; Pierson 2000), a new generation of frameworks argue that ‘change and stability are in fact inextricably linked’ (Streeck & Thelen 2005; Kern & Howlett 2009; Mahoney & Thelen 2010). As such, significant changes often take place through a ‘gradual process of breakdown and replacement’ which is ‘*cumulatively transformative*’²⁷⁸. Apparently, the case of UK electricity policy change by 2012, to some extent, provides supportive evidences for the latter. This represents an *accumulative change process* in which unintended consequences of each step call for more changes in the next step. It shows how changes in some components undermine policy ‘consistency and coherency’ and thereby they open up the door for a reproductive loop of adjustments. Theoretically, the conceptualisation of that process and the analysis of the role of every step of change in stimulating such accumulative process would potentially lead to a set of very interesting

contributions to the literature of change ‘modes and strategies’²⁷⁹. Though, such contribution falls out of the original scope of this research.

5.5. Conclusion and summary

On the basis of an analysis of the process of shift in the UK electricity policy over a period of almost 12 years, this chapter aimed to explain *why* and *how* such levels of change in policy components, characterised and measured before, occurred. The next chapter will focus particularly on explaining change in low-carbon technology mix. Consistent with the wording adopted in previous chapter, this chapter illustrated which dynamics shifted the UK electricity policy mix from a market-based, liberalised, privatised and technology neutral governance to a policy model in the late 2012 in which market was substantially discredited; a set of diverging objectives were legally binding; energy departments were highly politicised; a particular set of technologies were targeted; and a very complex package of policy instruments were in place.

By applying the insights from the literature of policy process and change, particularly the ACF, this chapter draws a dynamic picture of interrelation between change drivers and pre-existing policy context. Whilst it introduces the concept of *policy saliency* for change drivers, it claims that actual changes are also affected by *policy context’s* reaction to those change impetuses. In fact, their policy impact could be either *amplified* or *undermined*, depending on the coalitional balance and strategies in favour or against policy change. Together, a combination of policy salient change driver and supportive coalitional strategies could contest established policies and offer solutions. The main argument here is that the level and the type of final changes in policy components are the function of how *significant* and *irreconcilable* the imposed perception of *policy failure* is. Such relative and constructed understanding of anomaly and deficiency could explain why the UK electricity policy has experienced distinctive forms of change in response to different drivers. Why the pattern of increasing distance from the

market paradigm observed, whereas in early stages, a set of market-compatible adjustments were seen adequate.

Despite remarkable findings, this research was unable to contribute in the literature of paradigmatic shift. The main reason was that notwithstanding an accumulative alteration in almost all policy components, the UK electricity policy did not yet represent a wholesale paradigmatic shift. Likewise, although this study found distinctive policy saliency of change drivers, it did not provide a clear understanding of characteristics required. It was the same for the role of policy narrative as a coalition strategy. Whilst the incorporation of narrative in the realm of policy process studies was a contribution in itself, compared to previous studies of the UK energy policy changes²⁸⁰, it remained for further research to show how policy narratives could not only displace predominant paradigm, but also replace it with a new policy alternative. And finally, this research opened the doors to a debate in future about the ‘modes’ and ‘pathways’ of change process. As a preliminary finding, by presenting an accumulative and gradual process of transformation, it showed how change in different policy components, e.g. policy objectives in 2008, could trigger further changes in other components, e.g. instruments in the EMR.

Chapter Six: Understanding Gradual Transformations in Electricity Low Carbon Technology Policy

6.1. Introduction

This chapter aims to answer the third research question by investigating *how* and *why* the low carbon technological balance of UK electricity policy had gradually shifted throughout the period of study, 2000-2012. It reflects this fact that in the early 2010s the choice of technology turned into the heart of UK electricity policy debate. Particularly, EMR was seen as the first electricity policy over almost three decades that was substantially designed to support ‘the low carbon technology family’, largely nuclear and renewable²⁸¹. To provide a deep contextual explanation of such incremental alteration in electricity policy, this chapter moves beyond the traditional metaphor of policy literature in focusing primarily on significant policy changes driven by external drivers. As such, it shows how two already divergent nuclear and renewable advocacy coalitions compromised on an agreement as the result of an inevitable process of policy negotiation. It then explains why the UK electricity policy was fraught with *policy tensions* in the post-White Paper context. This chapter refers it to EMR’s characteristics like policy ambiguity and over-complexity. Subsequently, it observes a reduction in political significance of nuclear technology due to either the post-Fukushima context with the emergence of shale gas or a fall in political support of Conservative party. Finally, it points to an interrelation between nuclear-renewable reconciliation and a form of *internal defection* within both advocacy coalitions. Theoretically, this chapter expands the explanatory power of the ACF concept of negotiated agreement by claiming that compromised policies are often associated with *inherited tensions* and they are in constant risk of *policy*

retrenchment or even *reversibility* following any alteration in original contextual arrangements or coalitional balance.

6.1.1. The choice of technology at the heart of contemporary electricity policy

As explained in previous chapters, since the late 2000s and the early 2010s, the choice of technology turned into the heart of UK electricity policy debate. In fact, for the first time in the post-privatisation context, there was no longer any electricity policy without a serious consideration to the notion of low carbon technology. It means the main policy question that every electricity policy was expected to answer was an outline of through which technological trajectories the UK electricity-specific targets are to be met. As of 2011, this discussion culminated in the period of EMR. As such one of the main characteristics of EMR was the fundamental shift it represented in the technological direction of the UK electricity policy. As discussed earlier, after a long period of technology neutrality followed by a period of ‘re-politicisation’ and ‘target-setting’, EMR was conceived as a major policy proposal aiming at the delivery of low carbon technologies and moving ‘beyond target-setting’. Although the policy rhetoric of technology-blindness amongst low carbon options, i.e. nuclear, renewable and CCS, was still in place, it soon became clear that the design of EMR would have potentially different consequences for various technologies. Given that CCS was then a ‘yet to commercialise’ technology, the nuclear-renewable²⁸² competition was central to the EMR policy process.

Therefore, this chapter seeks to analyse the UK electricity policy change through a technological lens by investigating the differing balance between nuclear and renewable policy since the early 2000s. It is expected that throughout that analysis, this thesis could shed light on the evolving role of nuclear and renewable as the main UK low carbon electricity technologies. Furthermore, it also sets out to explain *why* and *how* the nuclear-renewable balance had gradually shifted throughout the period of study, 2000-2012. Similar to other empirical chapters,

this analysis is largely based on almost 53 interviews conducted and complementary document analysis as well as secondary material.

6.1.2. Analytical framework and theoretical proposition

In order to provide an in-depth understanding of such gradual shift represented in the shifting low carbon technological elements of UK electricity policy over the period of 2000-2012, the fourth section of analytical chapter moved beyond the traditional metaphor of policy change literature in focusing primarily on major and significant policy changes. Indeed, the main policy change frameworks draw a ‘rather sharp conceptual line between [continuity] and discontinuous changes’ (Thelen 2009: 474). Therefore, they hardly address a ‘gradual transformation’ such as what was represented in the shifting low carbon technological balance of the British electricity policy particularly under EMR. Likewise, inspired by ‘varieties of neo-institutionalism’ literature²⁸³, they explain policy changes largely on the basis of the emergence of an external change driver.

To cover those theoretical gaps in answering the third research question, chapter two formulated proposition 4. Amongst various factors that have contributed to this change, this proposition was mainly based on the concept of ‘negotiated agreement and policy compromise’ introduced by the recent developments of the ACF (Sabatier & Weible 2007). Having reviewed theoretical and empirical literature of gradual policy change through policy compromises, it focused on theorising the role of negotiated agreements in changing technological elements of electricity policy as a basis for empirical examination and testing. Having showed the substantial ‘importance’ of negotiated agreement as a pathway to ‘gradual-evolutionary’ changes via ‘often mixed policy solutions’ in previous studies (Nohrstedt 2008; Ingold 2011), this thesis theorises what happens next once a policy has changed through a mutual compromise. For this purpose, chapter two then tried to expand the explanatory power of ‘negotiated agreement’ by incorporating insights from the Institutional Change theory (Thelen 2009). As such, proposition 4 was formulated as follow:

***Proposition 4:** Compromised policies often suffer from ‘contested’ arrangement and ‘ambiguous’ design which keeps open a space for ‘continuous tension’ and ‘re-interpretation’. Therefore, they are always ‘vulnerable to shift’ following ‘contextual change’ or new ‘coalitional balance’.*

6.1.3. Outline of the chapter

The conceptual development manifested in proposition 4 is used here to inform a contextualised explanation of the case. Accordingly, the rest of this chapter examines this proposition by applying it in the case of UK electricity policy between 2000 and 2012. Respectively, the following two sections historically review different stages of the nuclear-renewable relations. Although both sections are based on a mixture of empirical evidence, the latter relies largely on original semi-structured interviews. It is, perhaps, due to the lack of already analysed literature about very contemporary changes in EMR. The analysis in section two, in contrast, is structured mainly upon investigating policy documents and secondary material. Within that context, the main focus is on long-term divergence and conflict between nuclear and renewable policy which gradually conformed to a form of nuclear-renewable reconciliation. This strategic convergence was initially manifested in the Coalition Agreement and then formulated overall under the Electricity Market Reform (EMR) policy package and the introduction of Contract-for-Differences (CfD) in particular. Having studied the empirically rich story of the case, section four discusses findings of empirical evidence and applies the chapter’s proposition to them. In addition, that section suggests a further hypothesis as a theoretical base for further applications. Finally, a summary of the contributions and conclusions of this thesis comes under section five.

6.2. Nuclear-renewable relations by the late 2000s: the history of divergence

For several decades, nuclear and renewable technologies had been seen as two extremely divergent and technically incompatible energy sources. While support of renewable energy has been rooted ideologically in environmental ideas advocated originally by green civil societies and NGOs, nuclear technology, by contrast, represents the controversial inheritance of militarisation and large-scale industrialisation. This mismatching history became even more problematic after the subsequent emergence of renewable industry, due to an additional sense of commercial competition in attracting public support and market share. This subsection reviews briefly the historical backgrounds of several decades of nuclear-renewable conflict.

6.2.1. A background of fluctuating nuclear policy

The UK government support of nuclear dates back to almost the 1950s after the Second World War. As other countries with a legacy of military interest in nuclear technology, the UK tended to develop civil nuclear power as well. Since then, ‘the UK continued to play a leading role in developing [civil] innovative nuclear technologies²⁸⁴, (Worthington, the then Shadow Minister for Energy and Climate Change, 2013). This high political status, derived from the ‘dual functionality’ characteristic of nuclear technology, was intensified by the 1970s’ oil shock with a ‘wave of new investments’ in nuclear power stations as an ‘indigenously produced’ and geopolitically secure power technology (Lockwood et al 2013: 16).

In the late 1980s and 1990s following the process of privatisation in the UK electricity sector and the application of a pool market, nuclear stations were perceived as economically unattractive by the investors, due to their inherent inflexibility, scale and risk (Pearson & Watson 2012: 10). New policies were derived from the pro-market approach of technological neutrality and ‘blindness to any preference for type of fuel source’ (Scrace et al 2010; Kuzemko 2011: 66).

This happened despite a long period of strong governmental commitment to support nuclear by either 'nuclear tax' in the 1989 Electricity Act or Non Fossil Fuel Obligation (NFFO). Consequently, in the 1995 Nuclear Review (*The Prospect for Nuclear Power in the UK*), the UK government declared its disappointing prospect for commercial attractiveness and interventional justification of nuclear power (DTI 1995; Pearson & Watson 2012: 15). This fact was officially proclaimed in the 2003 Energy White Paper (*Our Energy Future*) where it says “its current economics make it [nuclear power] an unattractive option for new, carbon-free generating capacity and there are also important issue of nuclear waste to be resolved” (DTI 2003: 12). Although the document stated formally that “the option will remain open” (DTI 2003: 48); building any new nuclear power station, nonetheless, became subject to “the fullest public consultation”. This conclusion, perhaps, was highly contested by the nuclear lobby and led to its pro-active stance to alter state policy (Pearson & Watson 2012: 24).

Given the dominance of crisis narrative derived from a geopolitically-informed security concern in the mid 2000s, a direct policy response was a shift – ‘albeit somewhat covertly’- towards a more ‘home grown’ and domestically produced energy portfolio. As a result, in contrast to nuclear disappointment and ‘indifference’ in the 2003 EWP, the nuclear lobby smartly started an intensive effort to convince government through an opportunistically association with the energy security agenda and supply diversity. After almost a ‘decade of anti-nuclearism’ (Interview 32, Former minister in Department of Energy, Conservative MP, August 2012), they persuaded the Labour government that a trinity prospect of the 2003 EWP including energy efficiency, renewable and CCS, might not keep lights on and guarantee security of supply. A long-experienced civil servant at that time shared his interpretation of the hidden reasons for the evolution of Labour nuclear policy as below:

Well, I think Mr Blair was, probably, had always taken a view that, you know, nuclear should be able to compete if it could stand on its own two feet, but, you know, they had accepted that the old Labour wing of the party were not going to let him do this and that, and probably felt that the 2003 white paper was, therefore, a, what he would call a *fudge*,

you know, that is was *unrealistic* to think that you could have the policy that was based just on renewables and energy efficiency. I mean you can *caricature* the 2003 white paper...and we reserve our position, or, you know, we're not going to change our position on nuclear, for the moment, and if we do we will, you know, publish another white paper and consult about it... I think, the, there are various trends here that work in the background...Growing concern about climate change, and in, in this context, quite importantly, the appointment of *David Kind* as the Chief Scientific Advisor, who would've been saying to the Prime Minister that, you know, a policy that's only based on, well, renewables and energy efficiency but didn't actually do very much to promote them was not going to work... you know gradually getting to the point where, the Prime Minister felt that nuclear must be allowed back into the policy mix. (Interview 39, DECC energy team senior member, August 2012)

As a result, although the Blair 'nuclear renaissance' rhetoric, manifested in the 2006 Energy Review (*The Energy Challenge*), was primarily challenged successfully by Greenpeace due to the lack of full consultation process, it eventually led to a governmental positive shift towards the nuclear option in the 2007 Energy White Paper (*Meeting The Energy Challenge*): 'the economics of nuclear power now look more positive than 2003' and 'new nuclear power stations reduce the costs and risks associated' (BERR 2008: 21). However, the inevitable 'careful language' of the White Paper did not declare any propensity to nuclear public support (Pearson & Watson 2012: 26): 'it would be for private sector to fund, develop, and build new nuclear power station'. Nevertheless, some forms of state support were then consolidated by the following Nuclear White Paper, at least for supporting 'decommissioning costs' (BERR 2008: 36). More importantly, that document not only confirmed that 'the Government believes new nuclear power stations should have a role to play in this country's future energy mix', it also emphasised that 'the Government should take active steps to facilitate this' (ibid: 7).

6.2.2. The growing but marginal renewable policy

As a general pattern, the 1970s' oil crisis was a starting point to the issue of alternative energy sources including renewable, whereas initial motives got watered down in the UK after oil price decline and the discovery of North Sea resources. During the Conservative era, renewable demand was expected predominantly as a natural result of a freely trading market (IEA 1998: 67; DETR 2000). Subsequently achieving the aspiration of 10% renewable power by 2010

was stated in the New Labour electoral manifesto in 1997, although they said very little about how they wanted to meet that target.

At that time, the Climate Change Levy, the creation of the Carbon Trust, and the replacement of NFFO with the Renewable Obligation (RO) were the main policies in place. Nevertheless for the renewable advocacy coalition, the introduction of RO (DTI 2000), as the first renewable-specific policy opposed by the nuclear lobby, was ‘an achievement in itself’ (Kuzemko 2011: 129; Mitchell 2000). Indeed, NFFO had never specifically supported renewable technologies²⁸⁵, compared to its large support of nuclear (Mitchell 2000: 293-4; Kuzemko 2011: 129). As an over-optimistic analysis, the 2002 Energy Review even doubled the renewable target to 20% by 2010 and another 20% by a further decade (PIU 2002: 6). But like most of other ambitious features of the PIU report, the renewable target was also conceived by policymakers as ‘a step too far’ (Kuzemko 2011: 142) and eventually was heavily compromised in the 2003 Energy White Paper. This case shows a clear example of ‘hard battle’ between the politically influential nuclear lobby and a coalition of environmentalists and relevant departments like DEFRA. Based on the report of an insider interviewee, Kuzemko (2011: 144) has pointed in a lose-lose trade-off. The 20% renewable target by 2010 was ignored. In return, any likely new nuclear build was subjected to a full White Paper review. Although that report deliberately rejected the state’s responsibility to decide about the fuel mix and to set technology targets, it only informally ‘predicted’ a 10% share of renewable technologies by 2010 and the same for another further decade (DTI 2003: 12): ‘In reducing carbon dioxide emissions, our priority is to strengthen the contribution of energy efficiency and renewable energy sources’ (DTI 2003: 12).

The status of renewable policy remained almost intact in the 2007 Energy White Paper. Given the ‘reappearance’ of nuclear power at the centre of policy attention, triggered by security concerns, renewable policy suffered from a sense of complacency about ‘significant progress’ that had been made under RO. As the result, the document resisted any suggestion for alternative renewable policies like

a form of Feed-in-Tariff or 'long-term contracts' (Henney 2011a: 290). Nevertheless, the fact that the increased 'multiplicity of options' might reduce security risks was utilised partially by the renewable coalition to justify the necessity of moving away from an over-reliance on fossil fuel resources (Interview 25, Senior policy fellow at Friends of the Earth, January 2012).

6.2.3. Continuous nuclear-renewable conflict

Since the inception of civil nuclear technology as a matter of public attention following an era of 'private-secretive' development, it has always remained socially, politically and environmentally an 'ironically controversial technology' (Wynne 2010: 1). This fact was reflected in the 1970s by the *Nuclear Power and the Environment* Report (Flowers 1976): "nuclear development raises long-term issues of unusual range and difficulty which are political and ethical, as well as technical, in character". Attracting public engagement and debate around nuclear led to 'several high profile and long-lasting public inquiries' that took place and were extended later under the Labour government.

Although the anti-nuclear movement in the UK has never been as politically powerful as in other European countries without nuclear military legacy such as Germany and Denmark, green NGOs have always actively challenged the environmental consequences of nuclear development. Their position has been further reinforced by the emergence of an accumulatively subsidised renewable industry as a potentially business rival for the nuclear industry. From their point of view 'nuclear... stands like bouncer at the door blocking the way for renewables' (GreenPeace 2008: 11). Added to the economic competition in gaining public support, there is a technical rationale that the two 'technology families' are not particularly compatible. Once one is established, 'technology-specific complementarities', e.g. network infrastructure, are 'likely to crowd out the other family' (Katz & Shapiro 1985: 424-25).

Together, the environmental coalition played an influential role in the 2002 PIU Energy Review and then the disappointing conclusion of the 2003 Energy White

Paper about nuclear. Nevertheless, it became clearer and more challenging in the mid 2000s, when government policy re-shifted towards supporting new nuclear build, which had been practically ‘on-hold’ since Sizewell B in 1985. The 2006 Energy Review was firstly sued legally by Greenpeace to the Royal Courts of Justice (RCoJ) as a “seriously flawed” and “wholly inadequate” consultation process (RCoJ 2007: 45). Once the process got repeated, it was again abandoned by other NGOs like the Green Alliance and WWF, due to what they labelled as a ‘sham’ and ‘rubber stamping exercise to legitimise a decision already taken’ (see Macalister 2009; Johnston 2012). Generally, the anti-nuclear movement criticised the transformation of an originally political process as an increasingly ‘technocratic rationality and post-political’ deliberation which exclude significant social and environmental concerns. It seems that widespread public engagement and the role of civil society in the nuclear policy process is no longer appreciated. Instead, it was perceived, in Johnston’s (2012) term, as a ‘planning risk’ constraining up-scaling new nuclear stations. This problem was significantly deepened following the 2008 Planning Act (HMG 2008b) that will be elaborated later.

6.3. Nuclear-renewable reconciliation: the era of vulnerable compromise

6.3.1. The 2008 Climate Change Act, the ‘minimised concept’ and the second nuclear ‘renaissance’

If security concerns *revived* the option of nuclear, then the statutory de-carbonisation target *necessitated* nuclear as the most economically feasible and environmentally friendly option for meeting that target. As a result of the legally binding target of %80 reduction in carbon emissions by 2050 in the 2008 Climate Change Act, the huge practical gap between this ambitious target and the actual situation was gradually conceived as a policy failure resulting potentially in a

huge political and legal cost. The exploitive capability of the pro-nuclear lobby attempted seriously to persuade policy makers that nuclear is the most accessible, mature and affordable low carbon option. As a RSPB campaigner pointed out, by fracturing and downgrading the concept of multiple '*environmental pollution*' to '*just carbon*', they smartly exploited this '*minimised definition*' to attach themselves to the pro-climate coalition (Interview 11, Senior planning policy officer at RSPB, December 2011). They proposed two fully divergent scenarios which need to be chosen from either 'abandoning climate change target publicly' or 'investing on nuclear' (Interview 42, the former member of DECC energy team, August 2012).

'In fact, the climate change substantially shifted the debates around nuclear from de-commissioning and economics to low carbon generation. It was supported by no-subsidy narrative as well' (Interview 41, CBI Energy Group member, August 2012).

This pattern was also evident in different scenarios of published reports by the Committee of Climate Change (CCC), as the advisory body for meeting the 2050 target. They presented nuclear-based scenarios as the most economically feasible and practically deliverable options to replace CCGT, as the base load technology²⁸⁶ (Interview 33, Director of energy policy in one of the Big Six, August 2012; Interview 44, Head of energy policy at one of the Big Six, September 2012). As a result in late 2009, Ed Miliband as the DECC's Secretary of State at the time, announced 'the most ambitious' nuclear plan in Europe for 8 new nuclear power plants. It reflected a substantial shift in the level of debates around nuclear as a climate change mitigating technology. Since then, this status was widely described as a 'nuclear renaissance' (Cooper 2009; Sovocal 2011; Henney 2011a; Johnstone 2012: 2; MacKerron 2012) indicating the 'resurgence' of nuclear as a joint strategy for both challenges: mitigating climate change and ensuring energy security.

To summarise, it could be argued that the most important advantage of the pro-nuclear coalition was the ability to present nuclear as the only way of reconciling a '*certain degree of different objectives*'. Though, this argument has been albeit strongly criticised by its opponents²⁸⁷.

There is a long history of discussion over the question of whether or not the UK needs new nuclear. As of 2008, the nuclear industry, led by EDF, had been able to assure the already sceptical public about nuclear's safety and cleanness and it strategically pushed the focus away from controversial issues like radiation and nuclear waste towards carbon emissions and global warming (Interview 11, Senior planning policy officer at RSPB, December 2011)

6.3.2. The imbalance in political power: the defection of the anti-nuclear coalition and the 2008 Planning Act

Following the 2008 Climate Change Act, the originally integrative anti-nuclear environmental coalition was broken down due to a series of dynamics. Firstly, some members of the environmental coalition gradually became more relaxed towards nuclear. They were mostly high profile individuals, called 'heretics' by others, who inevitably perceived nuclear as a 'necessary evil'²⁸⁸, to address climate change²⁸⁹ (Interview 11, Senior planning policy officer at RSPB, December 2011; Interview 14, Policy research fellow at Green-alliance, December 2011). As an example, Mark Lynas in "What the Green Movement Got Wrong" (2010) suggested that opposition by environmentalists, such as himself, to the development of nuclear energy 'had speeded up climate change'.

Had the Green movement of the Seventies and Eighties supported nuclear power — instead of violently opposing plans for greater use of atomic energy — we would not be facing the climate crisis we are today (Lynas 2011).

Similarly the British environmental-journalist George Monbiot moved to the nuclear camp when he 'harshly' condemned the anti-nuclear movement because it 'has misled the world about the impacts of radiation on human health' (2011). This movement was started initially by environmentalists like James Lovelock who in 2004 argued that "only nuclear power can now halt global warming" (McCarthy 2004), as the only realistic alternative to fossil fuels. As another instance, Stephen Tindale who was the Executive Director of Greenpeace until 2005, alongside some other members rejected its conventional position against nuclear and started lobbying for it. As an environmental politician summarised to me, 'Nuclear lobby successfully used climate change to get environmentalists on

side'. He pointed to a form of 'implicit agreement between [those parts of] environmental and nuclear lobbies' who 'synergistically' supported each other to persuade the public for de-carbonisation via nuclear (Interview 43, former DECC Secretary of State SPAD, August 2012).

The environmental coalition has at least two parts. There is a part that regards nuclear power as an environmental solution and there is a part that regards nuclear power as a continuous environmental problem. So, environmental coalition itself is a bit divided on that (Interview 15, Former politician and head of an Energy Institute, December 2011).

Besides individual figures, it became also the case for some 'moderate NGOs' who practically got rather convinced that meeting electricity carbon reduction targets through renewable generation alone is quite difficult and challenging. It is evident in the following quotations from two interviews conducted with senior analysts in Green Alliance and WWF:

Comparatively, the significant drawbacks of nuclear are outweighed by the more significant drawbacks of not doing anything possible to deliver low carbon power mitigating climate change (Interview 14, Policy research fellow at Green-alliance, December 2011).

Because all analysis shows that meeting electricity carbon reduction targets through renewable alone is not at present affordable nor feasible in the timescales Government wants. This has, over time, carried weight with Government, mainstream parties and those greens more focused on carbon rather than emotional antipathy to nuclear (Interview 17, Senior policy research fellow at Policy Exchange, December 2011).

Nonetheless, the main green NGOs environmental activists continued with their opposition to nuclear and support of renewable technologies. In fact, nuclear still had kept elements of an 'ironically controversial technology' and is an issue of social and political concern for most of environmentalists. Insofar as the DECC's Officer of Nuclear Development complained recently that still 'each of the key decisions that Government has taken so far on nuclear power, has been the subject of challenge on judicial review. I expect that *to continue*' (Higson 2013). As an instance, a Green Party MP has recently argued:

It would be a folly to think that there is no hope of tackling climate change without nuclear power. But analysis using the government's figures shows that we *don't need nuclear power* to meet climate goals and keep the lights on. The path we take is a *matter of political choice*, not *technological inevitability* (Lucas 2013)

However, the internal schism certainly contributed to the weakening of ‘public opposition’ against nuclear power in the UK²⁹⁰. It could be explained better by thinking about the marginal role of ‘ideological green NGOs’ in shaping overall British politics and public opinion compared to the European²⁹¹ level and other anti-nuclear countries like Germany (Interview 11, Senior planning policy officer at RSPB, December 2011; 41). This pattern ultimately led to a ‘quieter’ and less-influential anti-nuclear coalition in the UK. This fact was evident by some studies showing a growth in the number of supporters for building nuclear stations up to double compared to whom were firmly against them²⁹² (Haslam 2013).

The status of the nuclear side reflected clearly contrasting signs. Having access to the financial support of big companies, mainly ‘state-backed’ EDF, an open-hand in exploitation of the persuasive and ‘highly credible’ technical and engineering advice²⁹³ (Interview 24, An economist and head of a low carbon research institute, January 2012; Interview 40, Consumer Focus Head of energy policy, August 2012), and a close relation with some internal parts of government helped them to change the ‘mindset of policymakers’ in favour of the nuclear option. There was some unproved evidence like claims of a Friends of the Earth senior analyst that ‘a proportion of the DECC budget was coming from nuclear industry’ or the position of Gordon Brown’s brother in EDF which ‘articulates how strong the connection is’ (Interview 25, Senior policy fellow at Friends of the Earth, January 2012). Similar comment made by a Lib-Dem politician based on this fact that ‘two former Labour energy ministers, John Hutton and Alistair Darling, then became nuclear lobbyists’ (Interview 43, SPAD of former DECC Secretary of State, August 2012). But the main person in changing policy rhetoric about nuclear, was seen as John Hutton who was ‘instrumental in securing the takeover of British energy by EDF’ (Interview 39, former DECC energy senior member, August 2012). More importantly, critics like Johnstone (2012) compared subsequent government policies, such as Planning Act, IPC and EMR, with what Keith Parker, the head of Nuclear Industry Association suggested in 2005. They argue that new policies are fully compatible with what he prescribed as key changes required for developing nuclear. In a recent comment, Mitchell (2013) related the political position of

nuclear back to the legacy of military-civil links that it is still covertly in place in the UK. Therefore, she argued that the UK ‘energy policy is muddled with powerful regional and defence policies and lobbies’.

Such strong lobbying had not been limited only to politicians. It also was expanded to civil servants as well. On the one side, institutional re-structuring including the creation of DECC and the marginalisation of independent Ofgem shifted overall institutional design towards a more ‘minister-led’ policymaking. As the former DECC Energy senior member described during an interview, this fact left the DECC more affected by both politician and business lobbies desire than Ofgem which was primarily responsible to public consumers (Interview 39, August 2012). Based on an analysis of the ‘register of meetings’ released by the DECC, a Guardian environmental journalist argues that the nuclear lobby is by far superior to other energy lobby groups: ‘the nuclear lobbyists are in a *different league*’ (Hickman 2013). On the other hand, given DECC is a newly established department²⁹⁴, it opened up more spaces for ‘external stakeholders particularly the large number of inward secondees from energy industry’ (Interview 40, Consumer Focus head of energy policy, August 2012; Butler 2013). Another important lobbying factor, highlighted by a former member of the CBI energy group was the overall political stance of the CBI, as then a ‘credible’ climate policy supporter, in favour of nuclear. It was evident when the Labour’s first re-conversion towards nuclear was publicly announced by Tony Blair in the CBI conference in November 2005 (BBC 2005; Interview 38, CBI energy group member, August 2012).

The political position of nuclear was reinforced also by the introduction of the Planning Act (HMG 2008). In order to develop large scale infrastructures, particularly nuclear power stations, more rapidly, the planning system was expected to get ‘streamlined’ and ‘sped up’. Therefore, a clear distinction was made in between the consultative frameworks of National Planning Statements (NPSs) and those of local issues. Consequently, since then, there was no longer an opportunity to dispute the substance of NPSs. What still remained open was only

the possibility to comment on their detailed designs or local issues. Nevertheless, several critics argued that regarding the still controversial nature of nuclear power and treating public consultations as ‘planning risks’ (HMG 2008), the 2008 Planning Act eventually facilitates a less-democratic and more centralised decision making process on nuclear technology. They complained that by framing nuclear under an ‘incontestable rationality’, the planning system was inclined towards sidelining diverse perspectives by a ‘false consensus’ and preventing the anti-nuclear movement from being heard²⁹⁵.

It could be argued that [through Planning Act] it is easier to oppose the construction of wind farms than it is to substantially deliberate the issue of nuclear power (Johnstone 2012: 5-9).

In sum, this set of factors shifted the *overall political balance* in favour of the nuclear side. It could partially explain why even in the post-Fukushima context, the level of political support for nuclear technology in Britain remained rather intact. As a Lib-Dem politician concluded, it seems that the nuclear lobby successfully exploited all three levels of lobbying space: public opinion and media; political parties and ministers; and, policy level and civil servants (Interview 43, SPAD of former DECC Secretary of State, August 2012). This fact should be analysed in conjunction with the emergence of another defection of political parts of the anti-nuclear coalition, which will be elaborated in further sections.

6.3.3. The EU Renewable Directive (2008); renewable as ‘dual answer’ and the political-economy of RO

Starting from the rhetoric of 20-20-20 in 2007, the European Union published a ‘climate and energy package’ (EC 2007) revealing a significant tendency to enhance the role of renewable option in the energy portfolio to 20% at the European level, which subsequently was translated nationally into 15% from the entire UK energy production, under the Renewable Directive. It was a statutory obligation for the UK power industry which was expected to reach the minimum of 30% renewable power provision by 2020. At the time of signature, ‘the

mandated level' was highly contested in terms of the huge economic costs it 'hysterically' imposes on the UK, compared to other European countries, as well as its weakening effects on current de-carbonisation policies (Henney 2011a: 261). A senior economic advisor of the DECC explained that the rationale behind such 'shockingly over-ambitious demand-pull' target was 'to encourage investment in renewable innovation as a *public good* legitimising public support' (Interview 12, Government advisor and the EMR Technical Expert Panel, December 2011); the comment that was, albeit, opposed by another group of renewable supporters²⁹⁶.

Inspired by the still-in-place legacy of security concern, the renewable target re-framed the debate around renewable as a 'dual answer' for both climate change and energy security: '...turning to renewable will help the UK recover some of its energy self-sufficiency' (DECC 2009b: 10). This new mixed role for renewable technologies was manifested in a series of policy documents. As arguably 'the most comprehensive strategy' (Skea et al 2011: 51), the UK Renewable Energy Strategy (DECC 2009b) broke down the way of meeting 15% renewable obligation from all UK energy. It specified the share of each sector in reaching that target. More importantly, this pattern also led to a range of instrumental change from 'banding' RO technology-specifically to introducing a small-scale Feed-in-Tariff (FiT).

Nevertheless, the Renewable Directive imposed a set of fundamental concerns for the effectiveness of RO under the new regime. Firstly, given the very low-level of renewable deployment at the time, there was a practical concern that under the current incentivising mechanism driven by RO, it would be 'rather unlikely to meet this target' (Interview 12, Government advisor and the EMR Technical Expert Panel, December 2011). More importantly, the Directive substantially changed the perception of support from 'subsidising' to 'price fixing'. As a former senior member of the DECC energy team envisaged, meeting renewable target through RO would make the government a 'machine of subsidy'. Thus, it could have 'huge affordability consequences' that ultimately undermines the 'renewable

political constituency' (Interview 39, August 2012). This group of critics argued that RO would work for 'baby technologies' with marginal proportion but it was absolutely 'less-effective in delivering central technologies' in-scale, as what is expected from renewable technologies to do under the EU Directive (Interview 43, SPAD of former DECC Secretary of State, August 2012; 39). This concern would be more understandable in the context of the financial crisis which constrained dramatically the overall level of public expenditure. Whereas it elevated, instead, the affordability concern in which renewable technologies might be perceived by the public as 'expensive and luxury' options²⁹⁷. In addition, there was another non-renewable concern as well. Given the high-level of political support for nuclear at the time, 'over-subsidising' renewable under RO could also 'undermine the economics of nuclear technology and would threaten its competitiveness' (Interview 39, the former DECC Energy senior member, August 2012).

In sum, following the over-ambitious renewable target, the inability of RO, in terms of either economic cost or the level of delivery for renewable technologies, became widely apparent. It was also understood by pro-nuclear politicians as a threat for the political-economy of the nuclear technology (Interview 43, SPAD of former DECC Secretary of State, August 2012). Altogether, these dynamics stimulated a shift from RO to a 'more inclusive' and 'price fixing' mechanism, which will be discussed later.

6.3.4. Coalition Government; 'no public subsidy' narrative and nuclear-renewable compromise

Following the general election in May 2010, none of the main political parties had sufficient majority to form a single-party government. Consequently, for the first time since the Second World War, an intense process of negotiation started amongst the three main political parties. Given several years of 'great alliance of the Liberal-Labour centre-left' (Laws 2010: 7), the actual result came as a surprise for most politicians and political commentators: the emergence of a Conservative-

Liberal Democrat Coalition Government. In terms of the nuclear-renewable balance, the negotiation prospect was challenging. With respect to the traditional propensity²⁹⁸ of Conservatives to nuclear as well as political antipathy to renewable technologies and in particular, on-shore wind; there was expected a huge conflict with Lib-Dems who had been typically anti-nuclear and pro-renewable simultaneously. In his book, David Laws, one of the then Lib-Dems' negotiators, has reported a few quotations about nuclear-renewable debate from that politically historical discussion.

But on nuclear power we came to an era of obvious disagreement. Oliver Letwin [Conservative negotiator] said: 'Look, there is a genuine disagreement here. But this need not be an era of confidence. We can agree that the Lib-Dems do not need to support nuclear power'... Chris Huhne [Lib-Dems negotiator and subsequent DECC Secretary of State] responded that the issue was one of public subsidy, 'Can we agree that there should be *no public subsidy* for nuclear power? It is incredibly expensive'... Oliver replied: 'Yes, there will be no direct public subsidy. But as we put the carbon price up, that will obviously favour non-carbon generating technologies'. We agreed on a form of *words* on this... Chris Huhne suggested that there needed to be much greater ambition on carbon reduction and renewable technologies that 'until recently, Labour just hasn't done enough on this'... [during Labour-Lib Dem talks] Ed Miliband [Labours negotiator and former DECC Secretary of State] said that it was impossible to stop climate change without relying on nuclear power: 'We must have more nuclear power to meet our climate change targets' (Laws 2010: 118, 151, 171).

To resolve that challenge, both parties eventually agreed on a form of bilateral agreement which kept all options open and left some windows for further challenges. The Coalition Agreement (HMG 2010) came to an ambiguous wording on that contract. They agreed 'to increase the target for energy from renewable sources²⁹⁹', while they still pretended there is 'no public subsidy specifically for nuclear power' unless 'general measures' that would be in place as part of wider policies (Henney 2011a: 101). In other words, they pledged to resist neither nuclear nor renewable. It was, indeed, as a part of the deal that the position of the DECC Secretary was given to the Lib-Dems.

Liberal Democrats have long opposed any new nuclear construction. Conservatives, by contrast are committed ... [but nuclear stations] receive no public subsidy. We have agreed a process that will allow Liberal Democrats to maintain their opposition to nuclear power while permitting the government to ... new nuclear construction becomes possible (HMG 2010)

But in reality, the political balance of final agreement shifted slightly in favour of the nuclear option. Indeed, the formation of the Coalition Government and its compromise generally weakened the party-political power of the anti-nuclear advocacy coalition. This fact ultimately exacerbated the pattern of coalition defection amongst environmental activists. As a former Lib-Dem Special Advisor of the DECC Secretary said during an interview, the position of being a central part of ‘governmental game’ as the DECC Secretary of State has firmly constrained the Lib-Dems’ flexibility ‘to politically lead an anti-nuclear coalition’. On the other hand the accumulative ‘Labour-Tory consensus’ on nuclear support was ‘fairly strong’. The nuclear option was an attractive case for both 'left-wing industrial policy' and 'right-wing big-project desire' (Interview 43, SPAD of former DECC Secretary of State, August 2012). Overall, the political significance of shift in the nuclear position of Lib-Dems has been compared by some energy analysts to the ‘re-conversion’ of Labour in the mid 2000s.

Also important is conversion or re-conversion of Labour government to nuclear power in 2006 Energy Review which had been rejected in 2003; and also *conversion of the Lib-Dems* rather than the whole coalition agreement which enabled nuclear to continue to be on the agenda. The *combination of those is important*. The Tories were always in favour, the Liberals were against, but in the coalition agreement they agreed *wording on nuclear power* which enables nuclear power to go ahead without any subsidy... Now the green NGOs are anti-nuclear but not too much others. They are out of the mainstream even the Lib-Dems and Green Party. I think none of the media, no company, no one in the government are anti-nuclear (Interview 17, Senior policy research fellow at Policy Exchange, December 2011).

6.3.5. The 2011 Electricity Market Reform White Paper: the way to delivery

In response to the growing recognition of the fact that current electricity market design is unlikely to meet the Government's both electricity-specific targets (complete de-carbonisation and 30% renewable share) as well as to secure the future generation capacity and thereby energy security, the DECC launched its consultation on Electricity Market Reform (EMR) in December 2010, which resulted in the White Paper in July 2011 (*Planning our electric future*). This document was seen as a continuation of ‘a plethora of warning documents’ including Project Discovery (Ofgem 2009), Energy Market Assessment (HMT 2010) and Step Change (CCC 2010). More significantly, it was a policy response

to some electoral promises manifested in the Coalition Agreement for 'energy market reform to deliver security of supply and investment in low carbon energy' (HMG 2010). Amongst complex objectives of EMR, one of the most important aspects had targeted the *delivery* of low carbon technologies, i.e. nuclear and renewable. Overall it was proposed to assure investors about the profitability of low carbon electricity supply investment with 'maximum de-risking' characteristics (Interview 46, Former member of DECC ministerial team, December 2012). As the then DECC Secretary of State, Chris Huhne, wrote to The Daily Telegraph on December 16th 2010, at the day he launched the proposal in the House of Commons, attracting technology-specific private investment for both nuclear and renewable was of primary objectives behind EMR:

...Some £110bn of investment, or more than double the normal amount in the next decade – must be in low-carbon and secure sources like *renewables, nuclear*, clean coal and gas if we are to meet our climate change targets...But nuclear and most renewables are [of] the mix that *investors most dislike* when faced with uncertainty...By forging a comprehensive response, we can unlock investment on an unprecedented scale...By providing greater certainty, we can encourage new market entrants and investors...However, there is *no justification* for paying extra support to nuclear, which is a mature technology... It is time to *get off the fossil fuel hook* and onto clean, green electricity (Huhne 2010).

As shown in previous chapters, the White Paper technically introduced four mechanisms: Carbon Price Floor (CPF); Feed-in Tariff with Contract for Difference (FiT-CfD); Emission Performance Standard (EPS); and, Capacity Mechanism (CM). Although all mechanisms would have implications for low carbon technologies, the Contract for Difference (CfD) had been designed more inclusively to cover both nuclear and renewable options³⁰⁰. Technically it was proposed to replace RO, which was supporting renewable technologies exclusively. The CfD has been regarded as 'the main mechanism of EMR' somewhere, which could potentially cover other aspects of EMR (Interview 18, Senior director at CCC, December 2011; UKERC 2011: 1). Most of the policymakers and civil servants I have interviewed, including the former DECC Secretary of State and Energy Minister, have claimed the neutrality of EMR's original design amongst low carbon technologies, particularly renewable and nuclear (Interview 46, Former member of DECC ministerial team, December 2012; Interview 47, Former member of DECC ministerial team, Conservative MP,

February 2013; Interview 30, Member of Energy & Climate Select Committee, Labour MP, July 2012).

I do not regard signing a CfD for nuclear as a subsidy. I mean, I suppose you could construct it that it would be a subsidy, but the key point here is not that it is a subsidy, the key point is that it *offsets the externality*, the adverse externalities which are created by fossil fuel production, well, so obviously if you go beyond that and you pay more than that level, then that become specific subsidy to the industry. I am *genuinely technology neutral* on that sense and centre boat policy at this stage is that to make sure that we do not bet everything in one of the families of technology. So, I disagree with you that EMR was ever only for nuclear or renewable (Interview 46, Former member of DECC ministerial team, December 2012).

They argued that through EMR, the UK would be the first country to introduce an inclusive mechanism for both nuclear and renewable technologies: ‘we will lead new energy era as we led energy liberalisation’ (Interview 47, Former member of DECC ministerial team, Conservative MP, February 2013). The Public Policy Advisor to Nuclear Industry Association (NIA) declared similar aspiration in his lecture a nuclear policy forum in central London that ‘what we were doing in terms of EMR, that’s seen as a real model for the future on *how to finance nuclear power stations*’ (Haslam 2013). This is conceived somewhere as a ‘maximum de-risking approach’ (Interview 9, professor of energy policy at Lancaster University, November 2011) ‘socialis[ing] nuclear investment risk’ (Henney 2011a: 104) to assure investors in the context of the Fukushima crisis and the German nuclear challenge. The rationale behind nuclear support has always been defended strongly by influential nuclear lobbyists: ‘I would argue strategically potentially that is a good condition for nuclear subsidies... we are buying ourselves an option’ (Blyth 2013).

Nevertheless, despite EMR’s initial claim about inclusiveness and technology neutrality amongst low carbon options, its legislation process has been an attractive ground for different technological lobbies to compete for more long-term gain and contracts. As a member of the Energy and Climate Change Select Committee of Parliament has, rather harshly, described, this is one of the three ‘lies’ government policy in EMR is based on.

Look the Government's policy is based on three lies, it's based on that energy isn't going to cost more, it's also based on the lie that Government is neutral as between technologies, it's not... And the third lie, I think, is that you can do nuclear without public subsidy. You can't, and actually it's about time that we said that openly (Interview 30, Labour MP in DECC Select Committee, July 2012)

In a very interesting comparison with post-2007 context, a former energy senior member at DECC expressed how far he was surprised by new nuclear policy under EMR:

Yeah, the Friends of the Earth and, oh, I, was it Greenpeace, it was one of, probably both of them, took us to judicial review for not consulting properly. The policy we actually consulted on was that we would allow nuclear to compete in the market, not that we were going to offer a subsidy. And, and so, yes, there's clearly been a change in government policy. The government likes to say that, actually, it's not a change in policy because we're not offering nuclear as subsidy, but, but that seems, to me, to be clearly different from the policy on which we consulted. I don't think we ever contemplated that we would be offering EDF a fixed price for nuclear under the original policy...I think, I think, now, question is was, was the, was it a shift in policy on nuclear that drove, that drove the EMR or was it, or was it EMR that drove the shift in nuclear policy? Whether the Government felt there was an opportunity to, to support the nuclear transition? Or, was it the other way round? (Interview 39, August 2012)

After publishing the White Paper, there was a huge disagreement about the likely practical consequences of EMR on different technologies. Having analysed consultation responses of almost 233 stakeholders and several interviews conducted alongside reviewing further secondary material, my overall perception was that, despite some opposing perspectives and politicians' public rejection, the existing 'one size fits all' settings of CPF and CfD were widely understood as a way to support nuclear power plants, whereas the extent of their support for renewable technologies was still unclear and dependent on further settings. Although I heard few moderate arguments like 'I do not think that this is the winning of nuclear, this is just *catching up of nuclear* rather than renewable not complete winning (Interview 17, Senior policy research fellow at Policy Exchange, December 2011), the perception of imbalance support was reflected frequently by interviewees in phrases such as 'nuclear is an *obvious winner* of EMR' (Interview 1, Former Scottish energy directorate and member of UKERC advisory board, November 2011; Interview 6, Government advisor and head of a research centre on energy governance, January 2013; Interview 10, Emeritus director of an energy and environment research institute, December 2011;

Interview 9, professor of energy policy at Lancaster University, November 2011). Particularly, it became the main concern for green NGOs and the renewable industry who comparably preferred the RO's 'stability and retention' (REA 2011: 1; Scottish Government 2011: 2).

This is fundamentally a package designed to support the needs of nuclear ... Renewable technologies come off a very poor second best....EMR will promote investment in new nuclear ... at the expense of renewable energy – and even deliver windfall gains for existing nuclear power companies (FoE 2011: 1).

The overarching aim of EMR from the Government's perspective is to enable the building of new nuclear power, rather than the various other laudable objectives set out in the consultation... we would argue [it is] the result of a political need rather than the outcome of evidence-based policy analysis. (Exeter EPG 2011: 1-2).

In short, there is no doubt that EMR was to fundamentally change the power technology mix towards a low carbon portfolio through attracting a 'Herculean amount of investment'. On the basis of its original design, it was widely thought that nuclear would be fuelled much more than other low carbon options by EMR mechanisms, mainly CFP and CfD. Insofar as some critics argued that EMR seems as a 'complex cover justifying hidden state support' for nuclear and an 'escaping way' from legal limitations of 'no-subsidy' narrative within the Coalition Agreement and the European State Aid legislation (Interview 43, Former SPAD of DECC Secretary of State, August 2012; Interview 6, Government advisor and head of a research centre on energy governance, January 2013; Interview 41, CBI energy group member, August 2012; Interview 44, Head of energy policy at one of the Big Six, September 2012). Although, '[even talking about subsidies] became a real sort of *dirty word* and nobody wants to admit to having subsidies', in practice it was clear then that 'nuclear is subsidised now' (Blyth 2013). This fact is also resonated in an interview quotation from a Friend of the Earth campaigner and senior analyst as follow:

[EMR] is also built around the needs of nuclear, but in so doing it's also tangled itself up in the need to avoid state aid complications, the *Treasury's obsession* with having none of these commitments on the public books, and indeed trying to negotiate the mess that is the Coalition Agreement promise to have no new public subsidy for nuclear, in so doing it has some major problematic effects for other things. It means that we've ended up with a support mechanism that is highly complicated. (Interview 25, Senior policy fellow at Friends of the Earth, January 2012)

On the other hand, EMR's initial design imposed several ambiguities and uncertainties on the way of renewable technologies. In that context, the prospect for the 2020 renewable target³⁰¹ remained completely obscure and dependent on forthcoming policy settings. The level of concern is clear in this statement by the representative of Renewable Energy Association in a policy conference in April 2012.

When I want to say something about EMR, I don't really have anything, all I have is a *load of questions*, a load of questions and a load of kind of concerns about how it would work and for those of you that are Renewable Energy Association members...renewable industry is *cautious* about the process of Electricity Market. EMR is primarily for nuclear. Renewable technologies are being swept along in the flow, with little control over the outcome.

6.3.6. The on-going policy process and the expansion of tension

As the process of EMR legislation was going ahead between the White Paper in July 2011 and the Energy Bill in December 2012, a set of further tensions gradually became clear. Having reviewed written comments from different stakeholders and the pre-legislative scrutiny evidence sessions in Parliament, in addition to participating in several events including Westminster Energy Forums and conducting further interviews, the elements of an increasingly conflicting policy process were being empirically observed. On the one hand, regarding the 'level playing field between renewable and nuclear' under the inclusive mechanism of CfD, it raised a serious concern amongst a part of the renewable industry and green NGOs. They believed that under current design, 'renewable technologies will fare less well as it is proposed to have a shorter contract length, and it seems likely that nuclear will need a higher strike price than most renewables' (REA's written evidence to the Energy and Climate Change Committee, June 2012). They predicted that practically the renewable support will be getting 'distorted' by nuclear subsidy (Interview 43, SPAD of former DECC Secretary of State, August 2012).

On the other hand, policy tensions exceeded the borders of industry and civil society and expanded into the political arena and within the Coalition Government

as well. Following the financial recession and growing concerns about renewable costs, the historical antipathy of right-wing Tory backbenchers against renewable technologies in general, and wind power in particular gradually started to reveal publicly.

Tory scepticism about the RE is not something new or surprising for the UK. But what has shaken the Government's political commitment to wind-power started by a letter signed by more than 100 Conservative MPs urged the prime minister to further cut subsidies to onshore wind-farms in 2011...what was even more politically significant, I believe, was the emergence of rumours around that the chancellor was sympathetic to the MPs as well. (Interview 52, Former civil servant and energy consultant, August 2012)

In contrast, although government was keen to lay on the political rhetoric of 'no public subsidy for nuclear', the practical implication of EMR was widely perceived that 'the government has broken its pledge not to subsidise nuclear reactors' (Geels 2013). This contradiction has evidently affected intra-government conflict.

Government's policy is also based on the lie that Government is neutral as between technologies, it's not, and the fudging that has gone on *to square the tensions* within the Coalition over nuclear (Interview 30, Labour MP in DECC Select Committee, July 2012).

Coalition tension over nuclear-renewable support then was partially embodied in Treasury-DECC conflict, while there were visible other elements of either between or within-party³⁰² tensions as well. Such complicated political conflict was even expected to intensify, at the time of writing, since the compromise was thought still unsatisfactorily 'paradoxical'³⁰³ in a political context that upcoming election was also approaching (Interview 30, Labour MP in DECC Select Committee, July 2012). Furthermore, the 2012 reshuffle in the DECC showed 'a serious move' towards marginalisation of renewable technologies regarding the 'demotion' of Charles Hendry, as a pro-renewable Conservative energy minister, who was replaced by Mr Hayes who already had declared his war against renewable technologies: 'Renewable energy needs to pass the twin tests of environmental and economic sustainability, and wind power fails on both counts' (Hayes in Harrabin 2012). In an opposing comment he said 'we are working hard to make the UK one of the most attractive places in the world to invest in new nuclear'.

6.3.7. The 2012 Energy Bill and Gas Strategy; contextual shift and the risk of nuclear 'relapse'

Despite great efforts made by successive UK governments to make nuclear investment as secure as possible, unsurprisingly nuclear was encountering several difficulties in the global context. On the one hand, the international challenges, like the Fukushima crisis and political protest against German nuclear power plants raised 'divergent policy responses' across the Europe and overall disputed 'nuclear's renewed legitimacy'³⁰⁴. Although the nuclear-oriented design of UK policy had still remained officially firm, the actual position of the nuclear option had been politically undermined, as was then reflected in further policies. On the other hand, what was so-called as 'economic self limiting future of nuclear power' (Kuzemko 2013; Johnstone 2012) had made it still economically uncompetitive and a financially unviable policy option. These conditions were derived from a set of factors including high capital cost, technical bottlenecks, long construction times, uranium importation, waste problems, decommissioning and security challenges. This fact was proved recently by evidence of several business challenges in the way of the first contract for a new nuclear plant since 1985. The withdrawal of E.ON and RWE as well as the semi-endless challenging negotiation with EDF, at least by the time of writing in summer 2013, had raised concerns that 'the nuclear dream has [practically] failed' (Economist 2012).

Indeed, these significant shifts in contextual features of nuclear led to reminding such pessimistic predictions that 'the *nuclear renaissance* has so far been more rhetorical than actual' (Sovocal 2011) and it 'may actually turn out to be more of a *nuclear relapse*' (Cooper 2009). Despite official policies being still in place, there were seen practical elements of policy reversibility and 'nuclear give up'.

They are very well aware, not just the Treasury, this is the politicians too, of the huge costs of the UK nuclear programme which took place in the 1970's and 1980's and which burdened the UK economy for many years and was a major public sector economic and technological disaster in Britain's history, bigger I think than any other thing. They won't want a repeat of that because it's very bad for the economy and national welfare so you've

got an almost *impossible negotiation* taking place and I don't really see any good outcome out of that and I think the likely result, I'm afraid, is *further delay* and then ... *a bit of a rethink* after the Election. It's one aspect of EMR which I think has been *set up to fail* as it were (Interview 48, Former civil servant and fellow at an energy consultancy, July 2012)

The challenging prospect of the UK nuclear policy was then politically used by two groups of policy stakeholders to strategically challenge the current nuclear aspiration and offer their own alternatives. Apparently the first group consisted of environmental activists and the renewable industry who had long wished to shift the pro-nuclear political balance and capture low carbon public resources. This tendency was clear from the comments of some interviewees I have talked with, as quoted here from a representative of the Friends of the Earth.

I think there's some really big questions at the moment about whether the level of new nuclear that the Government talks about will actually ever emerge, we've seen numerous Big Six companies pulling out of nuclear plans, we've seen estimates of the level of strike price that will be required to get new nuclear away from both the University of Birmingham and from City Groups suggesting *nuclear will cost more*, or demand more, than offshore wind to get those projects underway. (Interview 25, Senior policy fellow at Friends of the Earth, January 2012)

As a result, despite keeping the main features of EMR's original design intact, the 2012 Energy Bill (DECC 2012a) revealed some further details of EMR's implementation. By introduction of a 'levy cap', clean energy would be funded until 2020, almost at the amount that CCC had advised to meet emissions targets (CCC, response to Energy Bill draft, 2012). Given no new nuclear plant was expected by 2020, due to the long construction timescale, the large proportion of this money would go to meet the 2020 EU renewable target. Having reviewed several policy comments, there was a growing perception that renewable options would eventually gain a more balanced support under the 2012 Energy Bill than what was conceived under the 2011 EMR White Paper: 'the Government has picked [both] nuclear and offshore wind "too early"' (Shrestha 2012). Nevertheless, there still remained a high level of 'anxiety' remaining in the renewable industry about the effective implementation of a 'new subsidy regime' (Clark 2013).

[By the Energy Bill] the government is now explicitly committed to meeting its obligations under the *renewable directive*. And it has provided the money to do so through increased cap in the levy control framework.... it has locked in the delivery of a third of our electricity from renewable by 2020 and *pre-empted* a lot of the money needed to subsidise new nuclear. (Burke 2012)

The post-Bill positive prospective of renewable is reflected in what a senior representative of Renewable Energy Association said during a talk in one of the policy forums in central London I had participated in July 2013. It though clearly contrasts what the same person had said in 2012, quoted before, reflecting a big concern within renewable industry about the future of renewable support under EMR.

So I think first point is sufficiency of the LCF, well is it sufficient for what? So I'm not sure that that it is really sufficient, partly because we don't know exactly what the Levy Control Framework is going to be paying for. The renewable energy industry, they're on the whole *quite happy* with the strike prices. They've been set according to the levels that exist at the moment in the renewables obligation. There are enabling powers in the Energy Bill for a solution which guarantees renewable generators can sell their power at a reference price. So if they were happy with what they had under the Renewable's Obligation, they will be happy with the current draft strike prices...

The second group of policy actors was a combination of the gas lobby and right-wing conventional Tories. They opportunistically were seeking to fill the capacity gap of any likely nuclear failure by a new generation of gas power plants. Following the discovery and forthcoming exploitation of unconventional resources, particularly shale gas, there was some prediction about a radical reduction in the gas price as the main market reference. Therefore, it did cast doubts on the feasibility of a speedy support for nuclear and renewable technologies in nearby future: 'the lower the gas price, the less favourable the economics of nuclear and renewable (Henney 2011a: 104). This technological innovation was also strategically exploited as a political opportunity for climate sceptics and Conservative backbenchers to challenge any form of low carbon support including nuclear policy. Below is a quotation from a right wing analyst about the approach of new Environment Secretary.

Britain's energy policy now faces a huge opportunity [in shale gas]. Mr Paterson will support ending energy subsidies and promoting shale gas. (Benny Peiser, the Global Warming Policy Foundation, in Harrabin 2012).

The most direct response to the emergence of the ‘game changing’ shale gas option came from the Chancellor by introducing a new Gas Generation Strategy (HMT 2012) that included a plan for 30 new power plants. Unsurprisingly, it caused a huge disagreement amongst energy analysts and commentators. In contrast to a group of strong supporters who deeply believed in shale gas as an engine for the ‘UK industrial renaissance’ and ‘energy revolution’ (Corin Taylor, Institute of Directors, in IoD 2012; Helm 2012b), its practical consequences were critically scrutinised by different members of the low carbon coalition³⁰⁵. These criticisms ranged from conservative comments of the DECC Secretary of State (Davey in Murray 2012) to a more direct challenge from the then CCC’s Director (Kennedy in Telegraph 2012) describing it as a ‘wishful thinking’ which will prevent UK ‘to meet its climate targets’.

Arguably, the parallel emergence of the gas strategy and the nuclear policy dispute were not merely due to an accidentally coincidence. As an explanation of their mutual interrelation, it has been argued that in the case of problematic revival of nuclear, there would be an empty space in the electricity portfolio which needs to be filled by another option. ‘If [nuclear investments] don’t happen, then we’ve got a *major hole* in our energy mix’ (Interview 25, Senior policy fellow at Friends of the Earth, January 2012). It triggered a growing call for a ‘Plan B’ by MPs instead of relying what they called as the ‘ambitious and at worst unrealistic’ UK nuclear goal. Such alternative scenario was thought crucial ‘to ensure it will be able to meet its climate change targets if nuclear projects fail to materialise’ (Shankleman 2013). The Chancellor was also sending signals that he ‘believes there are alternatives to nuclear’ (Lefty 2013) and in particular that gas should be central to any ‘Plan B’. As CCC suggested in the Fourth Carbon Plan, shown in figure 4, there is a bulk of almost 40% for nuclear in 2030 compared to an 8% gas share, which might be ultimately reversed. It was something that was publicly mentioned by the anti-nuclear movement.

At the same time the Government’s attempts to revive the nuclear industry are beginning to look like a train wreck and EDF Energy is demanding subsidies which are double or even triple the current cost of electricity. This must be raising questions about how much of the Chancellor’s support for gas has been influenced by the growing uncertainty that nuclear

stations will ever get built... The Government's plans for gas are unclear, perhaps because it is *waiting to see how far the nuclear program progresses*. (NFLA 2012)

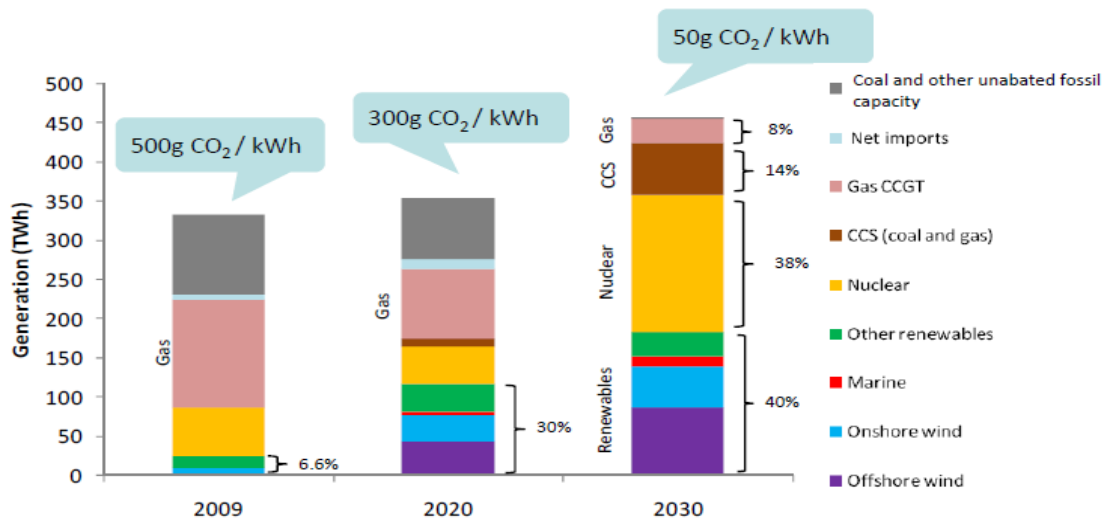


Figure 4: A scenario for power sector decarbonisation to 2030 (DUKES 2010, CCC Calculations, cited in Thomson 2012)

6.4. Analysis and discussion

Having reviewed an empirically informed analysis of the nuclear-renewable relationship in the UK electricity policy since the early 2000s in two previous sections, this section sheds light on theoretical contributions and draws some lessons from the studied case. Firstly, through the empirical examination of the chapter's proposition, it tries to bridge between these analyses and analytical discussion about policy change and negotiated agreements. In addition, this section offers some lines of theoretical contribution and analytical proposition for further research. This type of contribution is derived from an inductive approach to the case study and goes beyond literature-driven concepts that were hypothesised and encapsulated into the chapter's proposition.

6.4.1. Negotiated agreement; 'mixed' and 'middle-way' policy solutions

Let's start with re-examination of basic hypotheses about the 'importance' of negotiated agreement as an alternative path to 'gradual-evolutionary' policy change. As shown in analytical chapter, these typical dimensions of the concept of

policy compromise have already been supported by some previous studies. Firstly, the centrality of nuclear-renewable reconciliation at the heart of EMR supports the ACF's hypothesis that negotiated agreement could facilitate policy change, when there is a deadlock with no feasible alternative. The mixture of adopting legally binding climate targets alongside the European renewable obligation made the 'status quo' totally unacceptable and urged policymakers to 'reform' policies. Furthermore given a form of almost balanced coalitional power in 2010-2011 particularly under the Coalition Government, no advocacy coalition was able to fully materialise its own preference. Therefore, the only option was a 'mixed' and 'middle-way' policy solution (Nohrstedt 2008; Ingold 2011). What happened in the Coalition Agreement and then in the original design of EMR was a partial coverage of, at least in theory, some dimensions of both camps' preferences. As an interviewee described, 'EMR [and perhaps CfD] is a classical combination of different ideas. But nobody, I would say, is deeply happy with that. It is actually a total mess' (Interview 13, Economist at a leading Electricity Policy Research Group, December 2011).

6.4.2. Inherited ambiguities; contested implications and continuous tension

The wealth of empirical evidence shown in previous sections reflects what has been claimed in the first part of chapter proposition: '*Compromised policies* often suffer from '*contested*' arrangements and '*ambiguous*' design which keep open a space for '*continuous tension*' and '*re-interpretation*'. With regards to 'policy ambiguity', it was widely understood not only by stakeholders, but also by policy makers and politicians as well. Both had pointed out that, as of 2012, it was very difficult and arguably too early to predict the exact consequences of EMR, since the most important detailed arrangements were 'yet to come'. In fact, while the 2012 Energy Bill had shed light on some detailed arrangements like the contract counterpart and the levy cap, there were still several unanswered questions³⁰⁶ that different possible responses to them would lead to diverse scenarios for both nuclear and renewable. This was the main reason for the reluctance of different interviewees when I asked them to discuss detailed dynamics of EMR and predict

foreseeable outcomes. In fact, what the two coalitions agreed on was mainly a *general guideline* that was then formulated in a very ‘complex and inconsistent’ policy package. Thus, a group of critics has called the overall design of EMR as a ‘wishful thinking’ representing political ideas more than practical realities (Interview 22, Former Board member of London Electricity, January 2012).

The EMR package is, it’s a disastrous package... It reflects a backward committee-based design and seems, I would say, a classical addition of diverse interests. What I feel now is that it’s unwisely designed by determining the technology fix and planning to meet it. But it misrepresents the targets and it’s going to fall off the rails at some point, I am sure (Interviews 13, Economist at an electricity policy research institution, December 2011)

This inherited ambiguity and ‘subjectivity³⁰⁷’ in the design of EMR had kept doors open for different advocacy coalitions to impose their own interpretations on the policy package. Such confusing level of complexity was evident in the advices that the main DECC’s civil servant in charge with EMR gave to a group of business representatives during an event I attended in July 2013 at the central London. He firmly encouraged them to get their lawyers involved to help them in understanding the EMR’s complexities.

Well, you’re going to see a huge amount *more detail* come out on the CfD over the next six months...My encouragement, and I’m sure you will, but my encouragement is that you get your *lawyers involved* too because that will set out the fine detail of the drafting of the contract...because really the debate does need to move onto *those details*. Because, as we’ve found when we’ve worked through it, those details are incredibly important... So, I would ask you to very quickly go through that, and for your lawyers to go through that. (Jonathan Brearley, the then DECC Electricity market and network Director, July 2013)

The case study showed similar evidence for contested design of compromised policies. Having reviewed various stakeholders’ responses to the consultation call and my interview questions as well as pre-legislative hearing evidence, they suggest a challenging status in which a remarkable degree of interest conflict was visibly going on. Therefore, the EMR policy process was witnessing an extraordinary intense lobbying battle from businesses and trade unions to secure their own long-term commercial interests. Actually, the main reason why the EMR process was being so overwhelmed by lobbying rested on the shifting nature of UK energy policy characterised by huge ‘state intervention’ and ‘rent-seeking’

opportunity. For instance, what was going on for a long time and behind the closed doors between EDF and government, as the first CfD, was expected to determine the profit margin of the giant EDF for almost 40 years. As the BBC reported in summer 2013, despite a long-run negotiation, the conflict gap was still seen so big and there was a serious concern that ‘there is a risk that the *whole thing will collapse*’ (Peston 2013). On the other hand, this contract would also lock the UK electricity market and consumers to paying the cost of a particular generation option for several decades that was so-called by critics as an ‘inflexible and expensive’ technology (Interview 50, former PM SPAD and energy commentator, January 2013). A similar challenge was in place, to some extent, in the way of renewable industry as well. In fact, regarding the ambiguities mentioned in the design of EMR, each business side was trying to guarantee its own share of forthcoming subsidies and also to prevent itself from unintended consequences. Therefore, they started an intensive lobbying process aiming at imposing their own policy interpretations and enforcing their preferred ways of implementation.

This is consistent with Szarka’s argument that the role of political/material interests in negotiated agreement is always crucial: ‘the negotiated agreement path arises from new opportunities to reconcile beliefs and/or interest’ (2010: 849). Additional to *commercial interest* conflict, the cases of negotiated agreement, embedded in EMR, provided empirical evidence for *political interest* conflict as well. The Coalition Agreement was arguably derived primarily from a reconciliation of political interests of ‘office seeking’ rather than a merely belief-driven compromise. The most important explanation behind such agreement is that both parties prioritised their political interests to their policy beliefs and thereby agreed on a policy which would guarantee, to some extent, their mutual political gain in the new government. Altogether, empirical evidence suggested that following the introduction of EMR, a high-level economic and political challenge, albeit covertly, began to arise within the UK electricity policy subsystem. It happened with regards to a wide range of political-economic resource consequences and power implications that EMR was supposed to bring

about. Following quotations reflect the extent that EMR suffered from policy ambiguities and thereby became a level battle field for different lobbyists. As Butler (2013) describes, it likes ‘a *Christmas present for lawyers and lobbyists*’.

Lobbying is happening everywhere. But what is differentiating EMR from others is a high level of complexity and messiness it entails. There are only very few, I think, who are able to fully understand how it is going to work. All the confusion over policy has kept open a huge scope for lots of lobbying that are overrunning the department. I guess since now, the central skill in power industry will move from econometrics and economic modelling to lobbying and policy brokering in Westminster and Whitehall (Interview 5, Senior member in UKERC and RCUK, November 2011)

Regarding both characteristics of ‘inherited ambiguities’ and ‘politically contested design’, the policy process of EMR was arguably ‘fraught with tensions’. This fact was largely evident by empirical observations. Since reaching the initial mutual consensus in the Coalition Agreement and the first formulation under the EMR White Paper, business-led tensions were gradually revealed. Highly conflicting approaches were embodied in documents published and comments made by different stakeholders. An even more intense process was going on behind the scenes and through the lobbyists. The tension even reached inside the Coalition Government itself. It was primarily unfolded by the anti-wind stance of Tory backbenchers but then was ‘squared’ within government departments.

The increasing disputes within the Coalition Government itself either between the DECC and the Treasury or between Ed Davey and his own ministerial team have led to a confusing status what I would call it a *policy blight* (Interview 30, Labour MP in DECC Select Committee, July 2012).

To summarise, this case provided empirical support for the first part of proposition 4. A remarkable level of generality and subjectivity in the EMR’s initial design and high-profile commercial and political implications it was supposed to bring about made it a critical battle field for different advocacy coalitions involved in initial agreement. Consequently, there was evident an increasing tension amongst policy actors who were keen to exploit existing ‘policy gaps’. There is where I return back to what a Tory MP said about EMR policy process during an interview which fully reflects all characteristics we recounted here.

Politics is a *messy* business and that you can have as many academics, industrialists and civil servants sitting round as you like, designing policies that they think look, you know, beautiful policies. But at the end of the day, we are in a democracy and democracies don't always follow what some people might consider to be the logically pure path. And the art of the possible really is the problem that I and other politicians face, which is that we have to *compromise* on almost everything we do, and sometimes that the compromise you end up with can look *extremely messy*. I mean, I'm the first to admit, even though I'm a Government MP, that EMR is *fiendishly complicated*, it's *plasters upon plasters* upon plaster to fix the unintended consequences of previous plasters... (Interview 53, Conservative MP, ECC Select Committee, June 2013)

6.4.3. Policy retrenchment and reversibility

Although negotiated agreements might lead to a consensual policy change and the formation of a new coalitional balance, this research claims that they can not necessarily guarantee long-term stability of coalitional equilibrium or irreversibility of altered policies. As Szarka (2010: 849) pointed out 'a divergence in either beliefs and/or interests is not an insuperable barrier to coalition formation [or policy change], but is problematic for coalition maintenance [and policy sustainability]'. In other words, under any change in the contextual conditions that had initially facilitated negotiated agreement, there is a risk that inherited challenges within advocacy coalitions might also began to arise. In such a case, it is more likely that the mutual agreement would eventually fail. This is what was formulated in the second part of the proposition: '[*Compromised policies*] are always '*vulnerable to shift*' following 'contextual change' or new 'coalitional balance'.

Having reviewed recent changes in practical realities around the notion of nuclear-renewable relation under the EMR policy process, the balance of support was seen moving away from nuclear in the 2012 Energy Bill, compared to the era of nuclear renaissance which led to the 2011 EMR White Paper. The empirical evidence provided two justifications for this pattern. The first rationale related back to the contextual changes which occurred during 2011-2012. While the Fukushima crisis and German nuclear phase-out discredited the nuclear option internationally, nuclear 'self-limiting' dynamics, particularly the increasing cost estimation, as well as the emergence of shale gas had also collectively obscured

the prospect of UK nuclear electricity generation. The following written comment from one of the interviewees summarises the declining pattern of nuclear, due to shifting contextual conditions.

UK has a long history of discussion over the question of whether or not it needs new nuclear stations. As of 2007-2008, that question was *hardly disputed*... But now in five years time a lot of things have changed... If I was to make a simple answer it was that in terms of physical supplies and energy security, I would say, the *UK no longer needs new nuclear*... Nevertheless there is still a case for new nuclear in terms of diversity in energy supply and emissions reduction. However nuclear is not the only way to those objectives at *any price* ... For me; nuclear seems a static business that its long time technical evolution has come to a deadlock. Without emergence of some sorts of technical breakthroughs of a new nuclear generation - which has been long promised but never seems to happen – the sector could not compete and its development would be largely dependent on areas of state support (Interview 50, Former PM SPAD and energy commentator)

Furthermore, given the constant support from Labour for nuclear, which then was continued by Tories in the Coalition Government, that political balance shifted dramatically during recent years. Besides disappointing substantial limitations of nuclear itself, two further interrelated dynamics have moved the position of Tories more in favour of the gas: the rise of right-wing ideologies and climate scepticism within the Conservative party reinforced by the emergence of shale gas technology. Although nuclear still was enjoying some conventional ‘big project’ ideas among Conservatives, there was no longer an ‘ideological-political’ support from governmental departments, specifically the Treasury: ‘it seems that nuclear has been given up and there is no clear hope for future’ (Interview 48, Former civil servant and fellow at an energy consultancy, July 2012). As another supporter of nuclear technology declared (Leftly 2013), the ‘Treasury believes there are alternatives to nuclear. Treasury officials insist that the "power stations of tomorrow" do not necessarily mean nuclear sites’. The nuclear coalitional-base was more weakened when two giants, i.e. RWE and E.On, decided to exit from ongoing negotiations with the Government. On the one hand, leaving EDF as the ‘only player’ definitely gave it a unique upper-hand in the negotiation process. It was clear from policy rhetoric was going in the media at that time.

[From government point of view], the prime minister is a bit concerned about the *political fallout*, if the project were scrapped. Doubts would be exacerbated about the government's ability and determination to deliver on important job-creating and wealth-creating

infrastructure projects. Also the *credibility of the government's* long-trumpeted low carbon energy policy would be undermined, perhaps fatally, [after years of successive governments pledging themselves to a new nuclear age] (Peston 2013).

On the other hand perhaps, there would be no serious hope for a market with only one player. There was a lot of doubt on how market mechanisms, e.g. auction, would function once there was no real competition (Interview 3, Government advisor and Professor of energy economics, December 2011). This fact weakened the position of EDF because the government knew that it would be an expensive failure for the EDF as well.

The calculation being made in the Treasury and Downing Street is that *EDF has more to lose* from the deal's collapse than the UK does ... and its ambition to become *the global player in nuclear development* and operation would be damaged, and perhaps terminated...George Osborne seems to me to be less worried about EDF ultimately walking away than about being seen to pay too high a price for the Hinkley power station. [He wants to achieve] a petty political win and negotiation victory (Peston, 2013).

In short, given a series of contextual change as well as some shifts in coalitional balance, the agreed nuclear-renewable convergence under the Coalition Agreement and then the EMR White Paper was gradually retrenched. It was supposed to some extent that it was going back to a form of re-divergence³⁰⁸. As the result, there arose several doubts on the future of renewable. It was getting even more obscure in the case of nuclear policy. Insofar as Robert Peston (2013) has reported after talking with nuclear negotiation counterparts, 'my reading of the mood of both sides is one of *cautious pessimism*...[If the negotiation failed] there is a risk that the *whole thing will collapse*'.

6.4.4. Negotiated agreement and sub-coalition division and defection

Having applied the chapter's proposition in the case of nuclear-renewable relations in the UK electricity policy, three previous sub-sections illustrated how empirical evidence supports the main concepts of that proposition. Nevertheless, the wealth of empirical materials gathered could shed light on some more lessons to be learnt. This section attempts to theorise them inductively and provide a few conceptual hypotheses for examination in the future research.

One important fact emerging from the empirical observations was that policy compromises were often associated with the defection of the coalitions involved. Evidently, the process of renewable-nuclear convergence was accelerated with a substantial shift in the approach of some already anti-nuclear environmentalists in the late 2000s. The case of defection occurred largely within the most ‘moderate’ members of the environmental coalition who ultimately facilitated an agreement, whereas the core ideological anti-nuclear environmentalists still strongly held their policy beliefs. Similarly the Coalition Agreement itself emerged from a process of coalition division. It was a within party division when the new environmentalist Conservatives gained power, in spite of the Tory backbenchers known as ‘climate sceptics and renewable deniers’. On the other side, given the Lib-Dems as political part of the anti-nuclear movement, it was seen a movement division when they came to a mutual agreement with Tories to reduce ‘nuclear antipathy’. Both cases reflected the *marginalisation of extreme* ideological members as a primary *condition for policy compromise*. The moderate approach of both party representatives in the process of talks has been evident in following quotation from a Lib-Dem negotiator.

The shift in the positioning and *tone of the Conservative Party* also made it much easier to secure a policy agreement for the coalition. We were negotiating with a *moderate and reasonable group of Conservatives*, who were willing to make real *concessions to reach agreement*...While the Conservatives have shifted towards the centre ground of British politics since 2005, the Lib-Dems had also moved decisively from the left to the centre... (Laws 2010)

This could be well conceptualised by taking into account the concept of ‘heterogeneity of advocacy coalitions’ with ‘a solid core and fuzzy edges’ (Nohrstedt 2008: 28). From this point of view, advocacy coalitions comprise sub-coalitions with a *different level of rigidity* in their commitment to policy beliefs. Therefore, to respond to a stalemate circumstance that has stalled policymaking for a long time, there is always a possibility of some forms of coalition defection amongst those members who are less ‘principal’ and more flexible in their policy beliefs. These defected sub-coalitions involving ‘auxiliary/material’ members are more likely to lead a negotiated process and reach a consensus with other likely defected sub-coalitions. In other words, as Weible et al (2009: 130) predicted,

‘actors on the fuzzy periphery might very well *switch allegiances* over relatively short periods of time to increase their political influence’. In return, ‘extreme coalition members may defect from both coalitions to prevent the adoption of “balanced” [negotiated] policies³⁰⁹’ (Weible et al 2009: 129). To provide a theoretical base for further discussion and scrutiny, this fact has been encapsulated in the following hypothesis.

***Hypothesis:** Negotiated agreements often emerge from a process of ‘coalition defection’ and the re-alignment of non-principal members on compromised policies.*

6.5. Summary and conclusion

Although the introduction of the concept of negotiated agreement and policy compromise is relatively new to the theoretical field of policy change (Sabatier & Weible 2007), its existence has been frequently evident in some previous UK energy policy studies (Bernstein 2001; Kuzemko 2011). Nonetheless, the amount of research that has developed and examined compromise-related theories remains quite rare. Inspired by insights from ‘institutional change theory’ developed by Thelen and her colleagues, this research seeks to contribute to theory development around the notion of negotiated agreement.

Based on the developed conceptual proposition in chapter two, the findings of this research supported the important role of negotiated agreement in achieving a gradual-incremental change. Having reviewed the history of nuclear-renewable relations since the early 2000s in the UK electricity policy, this chapter showed how the initially conflicting approaches turned to an era of gradual convergence that ultimately led to the Coalition Agreement and the EMR White Paper. Then, the chapter displayed to what extent the nature of compromised policies might suffer from a set of ‘policy gaps’, derived either from ambiguities in original design or from politically contested arrangements. It argued that the substance of compromised policies is seen often inextricably intertwined with inherited

tensions and contradictions. Empirically, it was reflected in high level of uncertainty about the implications of EMR for different technological options. As the result, an intensive process of controversial lobbying started by both advocacy coalitions to prevent probable unintended consequences. The emergence of post-agreement tensions derived from ambiguous and contested design was a supporting evidence for what the first part of proposition 4 suggested. What was claimed by the rest of chapter proposition indicated that compromised policies are often ‘vulnerable to change’, once they face either changes in their original context or a shift in the balance of coalitional power that policies have rested on. It was also evident in the status of ‘nuclear relapse’ despite a long period of strong political commitment to support nuclear technology. This case empirically showed why a compromised policy might fail. It suggested that nuclear policy was undermined not only because of international crises and domestic undermining dynamics; but also due to the shift in the position of political and commercial pro-nuclear advocates.

Finally, this chapter suggested a new hypothesis for further empirical testing and examination. Deriving inductively from observations made in the case study, it was argued that negotiated agreements often emerge from a process of coalition defection and re-alignment. Based on the ACF understanding of the internal composition of advocacy coalitions, the defection is more likely to take place amongst non-principal coalition members who have relatively weaker ties with the main coalition’s policy beliefs. This concept was originated primarily by analysing evidence of defection in the environmental part of the anti-nuclear coalition and the re-alignment of a mixed ‘carbon coalition’ instead. Then, this pattern was followed similarly by a form of defection in two political parties involved in Coalition Government. To provide a base for empirical examination, the previous section ended with the formulation of a hypothesis for further research.

Chapter Seven: Conclusions, Further Research and Reflections

7.1. Introduction

This concluding part of the thesis aims to summarise the main empirical findings and theoretical contributions of this research. Having analysed the UK electricity policy change over more than a decade ending in 2012, this thesis has provided an understanding of *what* exactly had changed by then and the extent of change undergone. It has also presented a rich and contextualised explanation of *why* and *how* those changes had occurred. This chapter seeks to clarify which challenges this case study has brought into the existing understanding of policy change and, in return, which theoretical contributions it has proposed to it. The next section is structured in such a way as to respectively answer the research questions based on findings and concluding observations made already in the three empirical chapters. To avoid unnecessary duplication, the section condenses those answers here. By examining the developed propositions, it also provides a summary of contributions and conceptual implications for policy studies. A further section reviews some analytical issues that this research has intentionally not tackled, due to the limitations of a PhD thesis, but they potentially open up windows for further analysis and research. The last section sheds light on some methodological and practical limitations the research has been faced with. It also conveys a few final reflections.

7.2. Answering the research questions, empirical findings and theoretical contributions

Electricity policy has always been a challenging case in studying policy change theories. This is not only because of the central role that the power sector plays in modern societies; it is also due to the nature of a policy that is characterised by a conflicting confluence of interests, ideas, values, politics and technologies. In the

UK, studying recent shifts in electricity policy is even more analytically interesting and academically significant. On the one hand, electricity is assumed to form a large part of the UK future energy mix as the ‘dominant source’ and the ‘focal point of competition’ (see in figure 23 in Appendix B). Consequently, it potentially plays a much wider role across the whole economy in what so-called an ‘electric-centric future’ (Thomson 2012). On the other hand, for several decades Britain has led the world of energy and electricity policy towards liberalisation and privatisation. Nevertheless, recent developments in its power sector have marked a substantial shift from what was traditionally called the ‘British model’. In particular, Electricity Market Reform, introduced by the DECC in 2011-2012, was seen as ‘the biggest transformation to Britain's electricity market since privatisation’ and a ‘once-in-a-generation opportunity’ (Davey, the then DECC Secretary of State, in Harvey 2012). This was due to a wide range of policy implications that EMR was supposed to bring about for the electricity system and other related sectors. Firstly, it had challenged the predominant market policy paradigm. Secondly, it was supposed to actualise multiple ambitious, and to some extent diverging, policy objectives including security, emission reduction and affordability. Furthermore, it was substantially designed to shift the technology mix in power generation. Finally, it was expected to attract a level of investment in the next decade which would outweigh investments in almost all other economic sectors (Harvey 2012).

This thesis has set out to analyse shifts in the UK electricity policy between 2000 and 2012 in such a way as to answer three specific research questions elaborated in the first chapter. While the first question was substantially a descriptive research question, the two others were seen as more explanatory. Also, the third research question with a particular focus on nuclear and renewable policy was assumed a subsidiary of the second one seeking to broadly explain major shifts in electricity policy. As a reminder, the main research questions that this section aims to answer are as follows:

- 1) How could one *characterise* and measure changes undergone in the UK electricity policy between 2000 and 2012? Did EMR represent a

significant policy change? If so, what were the *extent* and *aspects* of the change? Did it fulfil the characteristics of a wholesale *paradigmatic shift*?

- 2) *Why* had those changes emerged? In particular, *why* did that process lead to the formation of EMR in 2011-2012? *Which* policy dynamics influenced its characteristics, and *how*? How could one *explain* the process of major shifts in the UK electricity policy mix?
- 3) Given that the choice of technology was central to the UK electricity policy debates in the early 2010s, *why* did the role of low carbon generation technologies, i.e. nuclear and renewable, shift over the period of the study? *Which* were the policy dynamics and *how* did they turn the divergent nuclear-renewable balance to a convergence and then a deep tension under the EMR policy process? How could one *explain* the gradual transformations in the low carbon electricity technology policy?

Answering these questions is closely intertwined with conceptual discussions about what the policy literature offers to shed light on the answers. Therefore, this section also draws a set of theoretical implications informing contextual explanations. Those contributions are made based on examining a set of propositions developed in the analytical chapter, though in the trade-off between generalising simplified universal models and providing a ‘realistic term’ of the case study (Hall 2010: 219), this thesis is definitely more committed to the latter than the first. Below are the propositions developed to facilitate answering the research questions³¹⁰:

- 1) In ‘techno-centric’ policy subsystems, the characteristics of socio-technical systems constitute a significant component of policymaking. They should be taken as an independent policy component in characterising and measuring changes that take place in technological aspects of policymaking. Here it is called *technology preference*.
- 2) The characteristics of ultimate changes relate to the degree and the nature of ‘*deficiencies*’ and ‘*failures*’ that salient change drivers present to any of the existing policy components.

- 3) The level of policy impact of a change impetus is conditioned not only by its *policy saliency*, but also by *coalitional balance*, in favour of or against policy change, and their *strategies*.
- 4) Compromised policies often suffer from ‘*contested*’ arrangement and ‘*ambiguous*’ design which keeps open a space for ‘*continuous tension*’ and ‘re-interpretation’. Therefore, they are always ‘*vulnerable to shift*’ following ‘*contextual change*’ or new ‘*coalitional balance*’.

7.2.1. Conceptualising and defining changes in the UK electricity policy

The first research question sought to provide an understanding of changes that occurred in the UK electricity policy between the early 2000s and 2012. The rationale behind asking such a fundamental question was the fact that there was no common and rigorous assessment of what exactly had changed during the first decade of the century. Whilst this period of time had constantly witnessed different forms of alteration in electricity policymaking, the question of defining the extent and aspects of those new policies had always resulted in different and even opposing answers. On the one hand, various policies were seen as far-reaching changes, being called a ‘profound change’ (Blair in DTI 2003: 3), a ‘new energy paradigm’ (Helm 2005 and 2007), a ‘ground breaking change’ (FoE 2008), ‘the biggest transformation’ and ‘once-in-a-generation fundamental reform’ (Ed Davey at the DECC 2012). By contrast, others argued not only that ‘still no paradigm shift has happened’ (Mitchell 2008; Kern 2009; Kuzemko 2011), but also ‘still very little has changed’ and ‘to some extent, we have been here before’ (Pearson & Watson 2012: 2). The question had also received a narrow response in some cases with respect to various aspects of electricity policy. The moving role of state and market (Helm 2005; Rutledge & Wright 2011), the shifting composition and hierarchy of policy objectives (Mitchell 2008; Helm 2005), the evolving socio-economic role of energy (Pearson & Watson 2012; Kuzemko 2011) and the changing technology and innovation policy (Kern 2010; Winskel 2012) are some examples that were also taken separately into consideration.

Theoretically, this question is rooted in an analytical shortcoming of the literature that lacks a comprehensive framework for measuring and characterising policy changes. Even recent developments in the field (Kuzemko 2011; Kern et al 2013) based on the Policy Paradigm theory (Hall 1993; Oliver & Pemberton 2004) do not yet fit for the purpose of this case study. They characterise a policy mix or governance regime by a model of four policy components including policy paradigm (interpretive framework), objectives, institutions and instruments. What is still missing is a framework that could trace changes in *technology policy* as well, which are intrinsically central to the electricity policy mix. For the specific case of the UK in recent years, debates over the choice of technology and generation mix have predominantly outweighed other policy issues in the sector. This fact culminated in EMR (DECC 2011, 2012a) which was substantially a ‘technology specific’ and ‘delivery focused’ policy proposal. This is, though, a part of a wider disciplinary problem of policy studies in overlooking the notion of technology and socio-materiality in general.

To both answer the research question and contribute to policy literature, chapter two developed a proposition as a platform for empirical examination and testing. As such, proposition 1 developed a fifth policy component, a so-called technology preference for characterising policy change in ‘large-technical’ and ‘techno-centric’ subsystems like electricity. Technology preference, in this sense, refers to wider socio-technical configurations of a system rather than merely final choices of technology. Inspired by the Transition literature (Geels 2002, 2004), proposition 1 proposed a systematic account of technological change. As such, it seems analytically impossible to explain the dominance of a certain type of technology without taking the socio-technical characteristics of that system into account. By applying this improved model to the UK electricity policy change since the early 2000s to 2012, chapter four divided this period into five distinctive timeframes. By this, it illustrated what exactly had changed, and to what extent. Furthermore, it showed how evolutionary was the process of change and how resistant were some policy components of the existing governance regime.

Eventually, the main focus was on the assessment of EMR in terms of whether or not it represented a wholesale paradigmatic shift.

As a background condition, this study characterised electricity policy before 2000 by a marketised and normalised policy paradigm, a competition-targeted system, a privatised and de-politicised governance structure, a de-regulated instrument design and a technology-neutral but, at the same time, a centralised, large-scale and fossil fuel-based socio-technical system. Observations here pointed to parsimonious changes that happened in the early 2000s following a re-birth in electricity policymaking. Most importantly, the two objectives of carbon reduction and affordability were officially stated, albeit vaguely. The rest were limited to some very marginal low carbon instruments and a modest innovation policy. As a consequence of a series of serious international insecurity challenges, the middle of the decade witnessed a substantial shift in the way energy issues were interpreted. From that time, energy was no longer seen as a normal function of the market. Instead, it became re-politicised and re-conceptualised as a national and strategic asset. It thus led to a pattern of the securitisation of policy objectives as the first priority, and the revival of nuclear and other home-grown generation technologies. Nonetheless, in practice, neither governance machinery nor policy instruments nor even socio-technical arrangements altered remarkably.

As shown in chapter four, the scope of change expanded dramatically in the last third of the decade, when legally binding climate-renewable targets emerged and new institutional arrangements such as DECC and CCC were officially established. Less significantly, there was also more distance from the market paradigm alongside a re-interpretation of energy as intrinsically intertwined with climate policy. Nonetheless, again, the expansion of change was constrained at practical policy levels, i.e. policy instruments and technological features. However, it is worth highlighting that a rising importance of technology in electricity policy was a distinctive hallmark for this period.

This thesis observed a significant move, since the early 2010s, in the focus of electricity policymaking away from simple policy rhetoric and target-setting towards issues around *practicalities* and *technicalities* of an on-the-ground delivery. Indeed, it was the first time since privatisation that the central concern of electricity policymakers was about how to *deliver* the investment required and via which *technological pathways* this should be delivered. This research has addressed Electricity Market Reform (DECC 2011, 2012) as a direct response to such concerns. By introducing four new policy instruments, it signed a clear distance from market logic. It is worth noting that the high degree of hybridity and complexity of EMR resulted primarily from a level of state intervention in electricity policymaking that had not been seen in Britain for almost three decades. To move intentionally beyond energy ‘targetism’, it simply continued with overall objectives set before, albeit with electricity-specific versions. However, the objectives reflected a higher level of divergence leading to the so-called ‘trilemma’ status. This was similar in the case of policy institutions. While EMR did not propose any explicit structural change in governance machinery, it practically shifted the balance of power and authority in favor of ministerial and political departments. Nonetheless, what substantially differentiated EMR from the previous three decades of electricity policymaking was definitely its unique level of technology specificity. As empirically evident here, it in fact brought the choice of technology mix from the margin into the heart of policy debates. However, as of 2012, apart from replacing conventional fossil fuel options with nuclear and large-scale renewable, other socio-technical features of the UK electricity system had remained rather intact. It was still characterised as a centralised system, dominated by large-scale power plants, focused on the supply side and structured by big and vertically integrated utilities.

Having reviewed the application of the proposed five-layered framework in more than a decade of UK electricity policy evolution, this study answered the first research question in a way that contrasted with similar studies seeking to characterise current UK energy policy (see Helm 2003, 2005; Mitchell 2008; Kern & Mitchell 2010; Routledge 2010; Kuzemko 2011; Kern et al 2013). This

distinction comes methodologically from either a more comprehensive framework this research has applied or a longer-term analysis this research has undertaken – or both. As the main conclusion, this study showed that despite a long process of policy change leading to several significant shifts in existing policy components by the end of 2012, it was still *too early* to claim a *wholesale paradigmatic shift* in the UK electricity policy under EMR. Particularly, it addressed two main policy components that had never substantially shifted, as of 2012. Firstly, this research identified the status of *paradigm ambivalence*. This means that whilst the current design of British electricity governance had moved far away from the predominance of market paradigm, it still suffered from the lack of an integrative-cohesive interpretive paradigm to frame other policy components. This explained why existing arrangements had led to a series of challenges evident in this research like ‘policy mess’, ‘over-complexity’, ‘uncertainty’ and ‘inconsistency’. The second, still resistant policy component was the socio-technical configuration of the UK electricity system. Although EMR aimed to substantially shift the technology mix of power generation, it reflected a form of continuity in terms of characteristics that the UK electricity system had been *locked into* for several decades, as previously recounted. Given the leading role of the UK energy liberalisation in developing an international energy market, this concluding observation implied that the market legacy had still remained alive and its associated socio-technical arrangements had stayed almost resilient. As such, this thesis rejected a range of extreme claims characterising EMR either as a paradigmatic shift or as continuing as normal.

This analysis has also made several theoretical contributions to the literature of policy change. Firstly, by providing empirical evidence for proposition 1, it claimed that for understanding the extent and aspects of policy changes, at least in ‘large-technical’ or ‘techno-centric’ subsystems, it is analytically crucial to analyse shifts in technology preference alongside other, already developed policy components. This contribution proved useful in analysing more than a decade of electricity policy in the UK. By providing a more concrete framework for defining policy change, it prevented forming early conclusions based on normative

perspectives about what change should have been undergone. More importantly, it revealed that technology preference has always been an inextricable component of electricity policy mix. Particularly following many developments in recent years, there has no longer been any debate about electricity policy without a serious consideration to the matter of technology. In addition, this finding contributes to policy literature through covering its analytical shortcoming in capturing changes in socio-materiality and technological features of a governance system. As such, this study bridged two different disciplinary realms of public policy and science and technology studies. Secondly, by incorporating insights from the Socio-Technical Transition theory, it displayed how the dominant socio-technical design of the electricity system, such as the level of centrality, scale, structure and generation mix, could frame the final choices of technology. It uncovered why EMR primarily favoured nuclear and big renewable options, like wind farms, more than other small-scale and decentralised technologies. Without this contribution, it was analytically difficult to explain why those forms of low carbon technology were left marginalised, despite shifts in almost all policy components. In the absence of such a systematic account of technology, this thesis might have simplistically concluded that EMR represented a significant shift in technology preference, regarding the aspiration of replacing conventional fossil fuels with nuclear and renewable generation options.

7.2.2. Explaining major shifts in the UK electricity policy mix

Following the conceptualisation of *what* changes occurred from the early 2000s to 2012, the second research question aimed at explaining *why* and *how* such significant changes emerged. In particular, *why* did that process lead to the formation of EMR in 2011-2012? *Which* specific events and policy dynamics influenced its characteristics, and *how*? To elaborate more, that question sought to provide an understanding of the causalities that shifted the UK electricity policy mix from a market-based, liberalised, privatised and technology-neutral governance to a policy model in late 2012 in which the market was substantially discredited; a set of diverging objectives were legally binding; energy departments were highly politicised; a particular set of technologies were targeted; and a very

complex package of policy instruments were in place. There was a specific focus on the evolving role of the market policy paradigm in UK energy governance, from when it was seen as a complete orthodoxy to a process of gradual displacement that eventually led to *paradigm ambivalence* in the period of EMR.

Apparently, this question has theoretical roots in the literature of significant policy changes. Having reviewed the main reference frameworks, i.e. PE, MS and ACF, there is a complex set of theoretical factors for explaining major changes in public policies. Nevertheless, although they provide an understanding of the different *nature* and *origins* of change drivers, they do not say anything about specific parameters and dynamics conditioning *varying impacts* of those change drivers on public policymaking. For instance, existing change theories are unable to explain why the rise of climate concerns has had different policy impacts either across various timeframes and contexts or in comparison to other events like insecurity concerns.

Chapter five sought to answer this explanatory research question. As a theoretical framework, it relied on propositions 2 and 3 developed in the analytical chapter. With the first proposition, it moved beyond the conventional typology of change drivers in policy literature. Building upon the notion of ‘policy proximity’ presented by Nohrstedt and Weible (2010: 20), proposition 2 clarified differences in the nature and impacts of change drivers by introducing the concept of *policy saliency*. It argued that the level of policy saliency is the function of not only the magnitude and policy proximity of a change driver, but also the extent of *disruption* and *failure* perception that it imposes on existing policy components. The main claim there was that the ultimate driver of policy change is derived not only from the existence of significant anomalies between objectives and outcomes, but also from the perception of deficiency and failure of existing policies as the cause of those anomalies. Proposition 3 aimed to highlight the role of subsystem context and coalitional balance in imposing such meaning of policy failure on change drivers and thereby framing their policy impacts.

To examine those propositions, this thesis provided an analysis of recurrent changes throughout more than a decade of UK electricity policy between 2000 and 2012. By dividing that period into two main timeframes, it pointed to two different patterns of electricity policymaking. Observations made here revealed that although throughout the first period the market paradigm showed a high level of resilience and continuity, the latter triggered the gradual demise of the market logic. During the first period, as elaborated in chapter five, even when the ‘benign context’ was over in the early 2000s and a set of early energy challenges and climate concerns led to the revival of energy policy, the actual level of policy shift was highly compromised and limited to vague targets and ‘light-touched regulations’. The main reason, presented by empirical evidence, was that such level of anomaly and policy failure was not understood to be fundamentally *irreconcilable* with all components of market-based governance. Such modest perception of failure resulted from both the lack of disruptive *policy saliency* of the challenges as well as still significant *coalitional balance* in favour of market paradigm, despite the rise of a climate advocacy coalition. It was almost the same in the case of the huge insecurity concern in the middle of the decade. The construction placed on such policy salient international events as national security threats by media and politicians brought back energy issues into the heart of public and political debate. However, the absence of a pro-change advocacy coalition with credible policy alternatives, as well as seeing challenges as *exogenous* and *temporary*, removed the ultimate responsibility of *policy failure* from the existing policies and governance system. Eventually, that period of time also did not witness a fundamental overhaul in energy policy, as characterised in the previous section.

As chapter five elaborated, a different pattern started to appear from the beginning of the second period in the last third of the decade. Using the context of securitisation and re-politicisation, a growing climate advocacy coalition showed that minimal climate policies were no longer capable to meet UK targets. Following that shift in coalitional balance, both challenges were framed as the *accumulative* evidence of *policy failure*. Consequently, the campaign for a more

political commitment to the policy objectives resulted in a series of legal targets and institutional reforms. Furthermore, the reconfiguration of energy and climate policy under the new departments was the starting point for a further process of *market contestation* by the low carbon advocacy coalition. Observations confirmed that this pattern was intensified, soon after, in the context of renewable targets and then financial crisis. As such, another version of *policy failure* was apparently constructed: if the UK was expected to meet its climate/renewable targets, the then market arrangements could not *deliver technologies* required. Subsequently, this research pointed to the rise of an extremely *policy salient* challenge: the increasing concern of under-investment and the risk of power *capacity crunch*. Likewise, the growing popularity of policy debate around energy price and affordability expanded the sense of *market deficiency* across the sector. Such multi-faceted perception of *failure* in the electricity market imposed a huge *change imperative* for a substantial move away from market-based policymaking. Nonetheless, whilst such an intensive process of *contestation* fundamentally displaced the market paradigm, the inability of the low carbon coalition to provide a cohesive alternative paradigm led to the so-called status of *paradigm ambivalence* in EMR.

On the basis of such detailed analysis of the process of shift in the UK electricity policy over a period of almost 12 years, this study responded to the second research question with the following conclusions. Firstly, it showed that differences in the level of policy saliency of various change drivers, like climate change and security concern, have always been important factors, albeit by no means the only factors, that framed the perception of failure and thereby final policies. It was evident that climate change was being seen as increasingly important not only for public and environmental NGOs, but also as a consensual issue for all political parties and business unions. Nevertheless, with respect to its characteristics as ‘intangible’, ‘global’, ‘non-immediate’ and ‘long-term’ challenge, its exclusive policy impact was highly constrained and easily compromised. Later on, it brought about a higher level of urgency and political commitment, when climate targets became enshrined in law in 2008. By contrast,

security concern reflected a different level of policy saliency. It was intrinsically understood as an ‘urgent’, ‘nationally evident’, ‘historically meaningful’, politically ‘provocative’ and highly ‘visible’ challenge for the public and policymakers. Nonetheless, its policy impact was also limited until the early 2010s when its nature shifted from an exogenous and temporary geopolitical concern to an endogenous lack of investment and close fear of capacity crunch. Arguably, it was the only time when insecurity challenge was widely understood as a fault of existing policies. Unsurprisingly, both climate and security concerns came to a higher level of policy saliency when they showed a form of political convergence and accumulative resonance. Finally, the emerging concern of affordability in energy prices was then proved as the most ‘popularly understandable’, highly ‘tangible’ and politically salient change driver which was universally important beyond the boundaries of the energy sector. As such, the recently constructed divergence and conflict between climate cost and energy price undermined public and political support for climate and renewable policies. This detailed observation showed that different change drivers reflected various levels of policy saliency depending on how remarkable was the perception of failure they imposed on existing policy components.

As the second concluding observation, this research drew a dynamic picture of interrelation between change drivers and pre-existing policy context. It explained how the rise of climate concern was insufficient to significantly shift market-based electricity policy in the early 2000s. It pointed to the context that the pro-market advocacy coalition was able to frame the emerging contestation as something compatible with existing policies. Thereby it simply compromised more radical solutions proposed by the then weak climate coalition. Likewise, it addressed the emergence of security concern in the middle of the decade which again did not lead to an overhaul of the existing policy components. Despite the revival of political aspects of electricity governance, empirical evidence did not reflect the existence of a security advocacy coalition ready to seize the moment and to challenge existing policies. By contrast, this study points to the important role of an empowered climate coalition in driving the post-2007 changes either by

framing the contestations and providing accumulative evidence of failure or by developing proposals for new acts and institutions. Nevertheless, the policy influence of that coalition has been undermined following the emergence of financial crisis and the construction of climate cost counter-narrative as well as the lack of an alternative policy paradigm.

Furthermore, this study displayed how resistant the legacy of energy liberalisation and marketisation was. As evident in chapter five, no change in market-based policy components came into place unless there was conceived an absolute *irreconcilability* between existing policies and emerging contexts. The introduction of vague targets and renewable instruments in the 2003 EWP was a conservative response to the challenges imposed by climate movement into the then electricity governance system. A similar pattern observed later on at the time that insecurity challenges led to limited policy changes like re-politicisation and discursive alterations. More significant changes in objective and at institutional levels occurred only when a widespread perception of deficiency and failure of political commitment to the targets started to emerge in 2008. Such disruptive impact then culminated and expanded into interpretive, technological and instrumental levels in the case of EMR. As highlighted in this research, as of 2011-2012 the existing design of electricity governance came to a complete deadlock in almost all aspects of policymaking. Therefore, this observation argued that EMR was more a direct response to this widespread perception that the ‘current electricity market will no longer deliver’ than an ideology-driven policy proposal.

Fourthly, this case study provided an image of how gradual, path-dependent and evolutionary electricity policies changed over a long period of time. Those shifts happened often in reaction to unintended consequences of previous policies rather than completely disconnected shifts. In the early 2000s, policy changes remained limited to vague targets and marginal low carbon mechanisms. However, what this study observed was that they then triggered a further stage of policy change either by introducing targets as a hallmark for evaluation and contestation or by

empowering the low carbon advocacy coalition through financial subsidies and cluster building. Likewise, the level of re-politicisation and legitimisation of state intervention in meeting insecurity challenges in the mid 2000s facilitated subsequent changes in the state machinery and legally binding targets in 2008. The *chain of actions* continued later with policy feedbacks of strong legislations and institutional reforms. They thus paved the way for a further move beyond target setting into technology delivery. As of 2012, the *accumulative effect* of that evolutionary process highly discredited market paradigm, despite the fact that it still did not represent a paradigmatic shift. This rich contextual explanation, in short, not only pointed to the evolutionary and accumulative nature of UK electricity policy change, but also highlighted the role of the previous policy's feedbacks in stimulating further changes.

Last but not least, studying a long history of UK electricity policy change facilitated unfolding the black box of advocacy coalitions involved. It became evident that there was wide participation by heterogeneous policy actors including political parties, ministers, governmental departments and civil servants, businesses and trade unions, academia and energy experts, consultancies and think-tanks, NGOs and civil society as well as media and journalists. A very interesting observation showed that throughout various stages of change process, different coalition members played different roles and presented different policy weight. Given EMR as a delivery-focused and technology-specific policy, this study showed a high level of influence by businesses, technical analysts and civil servants in designing its 'devilishly complex' mechanisms, whereas in 2008 there were primarily political actors at ministerial and parliamentary levels that affected the significant shift in policy objectives and institutional levels. Perhaps the role of civil society and academia was important in initiating those ideas, framing solutions, convincing policymakers and shifting public opinion. This contextual explanation suggested that depending on which component of UK electricity policy was about to change, there was a particular group of actors who were then more influential than others. This conclusion opposed such simplistic claims that explain changes in electricity policy only based on the central role of big

businesses or constantly driven by politicians. Instead, it provided an understanding of the links between the level of change and the policy weight of coalition members.

In addition to answering the second research question, this research contributed to the literature of policy change in at least three different ways. First, it suggested that in the absence of an alternative paradigm, the interpretation of *deficiency* and *failure*, derived from practicalities on the ground, is the ultimate imperative for policy change. Therefore, proposition 2 characterised final policy changes as the function of how *significant* and *irreconcilable* the imposed perception of *policy failure* is. This proposition proved useful in explaining why changes in the UK electricity policy reflected a remarkable level of path-dependency and remained limited to the policy components that were widely thought to be no longer working. It meant the legacy of dominant paradigm would be able to dampen new challenges only by minor adjustments and compromises, unless existing policy components were deeply questioned and discredited. In short, the more *irreconcilable failure*, the greater likelihood of policy change.

So, where does the perception of policy failure come from and what are the main sources of deficiency? This is the point that directs us to two further interrelated conceptual implications: *policy saliency* and *coalitional balance*. If this section was to offer a simple answer to the question above it would be to suggest that such widespread de-institutionalisation of existing policies comes perhaps as a mixed consequence of an emerging policy salient change driver and a pro-change coalitional strategy. By introducing policy saliency, this thesis argued that for stimulating a significant change, the emergence of a remarkable anomaly is only a part of the story. Such an anomalous driver also needs to put existing policies under the responsibility of perceived failure. As Boin et al (2009: 98) describes, there are only some events that ‘*hit at the heart*’ of existing policy domains, espousing *deficiencies* and *failures*. This thesis empirically supported the contribution that differences in characteristics of change drivers could cause distinctive potentials for policy impact.

Another relevant contribution of this case study reached further than merely clarifying the nature of change drivers. It claimed that in order to impose the perception of failure on existing policy components, the intrinsic policy saliency of the change driver is by no means sufficient. By applying proposition 3, it illustrated that actual changes are also affected by the *policy context*'s reaction to those change drivers. In fact, their policy impact could be either *amplified* or *undermined*, depending on the *coalitional balance* and strategies in favour or against policy change. By this, current research offered an important addition to social constructivist approaches of “framing contests” (Boin et al. 2009; Widmaier et al. 2007). Inspired by the ACF, it emphasised the role of actor constellations and pro-change advocacy coalitions not only in constructing the widespread perception of deficiency and failure, but also by developing credible policy alternatives.

7.2.3. Understanding gradual transformations in electricity low carbon technology policy

Given the choice of technology turned into the heart of UK electricity policy debate in the early 2010s, the third research question aimed to investigate how and why the technological balance of electricity policy in the UK had shifted throughout the period of study, 2000-2012. The focus was on the main low carbon options, nuclear and renewable³¹¹. The reason for this classification was the fact that the policy debate about nuclear-renewable balance culminated in the period of EMR. It was, in fact, the first electricity policy over almost three decades that was substantially designed to support ‘the low carbon technology family’. As such, the third question was a subsidiary of the second research question seeking to explain the process of policy changes. What differentiated it was the particular focus it had on alterations in the nuclear-renewable balance representing minor and incremental policy changes.

In order to answer this question, this research moved beyond the traditional metaphor of policy change literature in focusing primarily on major and

significant policy changes. Indeed, the main policy change frameworks draw a ‘rather sharp conceptual line between [continuity] and discontinuous changes’ (Thelen 2009: 474). Therefore, they hardly address a ‘gradual transformation’ such as what was represented in the shifting low carbon technological balance of electricity policy particularly under EMR. Likewise, inspired by ‘varieties of neo-institutionalism’ literature³¹², they explain policy changes largely on the basis of the emergence of an external change driver.

To cover those theoretical gaps in answering the third research question, chapter six formulated proposition 4. This proposition was mainly based on the concept of ‘negotiated agreement and policy compromise’ introduced by the recent developments of the ACF (Sabatier & Weible 2007). The chapter then tried to expand the explanatory power of ‘negotiated agreement’ by incorporating insights from the Institutional Change theory (Thelen 2009). As such, proposition 4 assumed that *compromised policies* are often ‘*vulnerable to shift*’ following ‘contextual changes’ or new ‘coalitional balances’. This development was then used to inform a contextualised explanation of the case.

Empirically, this proposition was investigated by applying more than a decade of evolution in the role of nuclear and renewable technologies in the UK electricity policy. Through reviewing two distinctive periods of nuclear and renewable policies, chapter six explained how fluctuating and varying that long history was. The first period, started by the emergence of those technologies as civil technologies for power generation in the UK (1950s for nuclear and 1970s for renewable), reflected a history of continuous conflict and divergence between two technologies. They showed a high level of incompatibility either politically in terms of supportive advocacy coalitions or commercially in terms of competition for public support, or even technically in terms of different infrastructure required. By contrast, the post-CCA context facilitated a gradual convergence between two groups of technologies. It was primarily triggered by ambitious climate and renewable targets in 2008 that necessitated the revival of nuclear and a complementary role of both nuclear and renewable. Their reconciliation then

culminated when traditional anti-nuclear coalitions started to defect and the new coalition government came to a cross-party agreement on supporting both technology families, though that those compromised policies by no means implied that there was no remarkable level of disagreement still left in a part of advocacy coalitions. However, the first proposal of EMR was the manifestation of such mutual support in which CfD was the first inclusive mechanism covering both options, since the introduction of NFFO in the 1989 Electricity Act. Nevertheless, an increasing level of tension between politicians, departments and business lobbies started to emerge when policy debates moved into the detail arrangements and settings of EMR. By late 2012 and in the post-Fukushima and shale gas context, the discussions around the Energy Bill showed some signs of policy reversibility for nuclear electricity, so-called ‘nuclear relapse’.

Studying this detailed story showed why after several decades of divergent policies for nuclear and renewable, different advocacy coalitions eventually compromised on a policy that meets some dimensions of both camps’ preferences. This was the first empirical finding of this case study in response to the third research question. It evidenced that in the context of a policy deadlock with no feasible alternative for meeting emerging targets, reaching an agreement on an inclusive technology preference represented a gradual change in electricity policy mix. Observations here revealed that this happened following a negotiated agreement between different members of two advocacy coalitions. On the one hand, shifting the stance of a group of anti-nuclear environmentalists facilitated that reconciliation. It was then signed by the politicians in the Coalition Agreement. Finally, that agreement was formulated by policymakers under the EMR mechanisms, particularly the CfD. Without this coalitional explanation, it was difficult to understand why the huge ideological distance between two technologies’ constituencies began to disappear and how they thus shaped a unified camp of the low carbon technologies in the late 2000s.

The second finding related to the turning of that pattern to a high level of policy tension that overwhelmed the entire UK electricity policy in the post-White Paper

context. This controversy over the role of nuclear and renewable technologies transcended the boundaries of business lobbies and interest groups into the government and within/between relevant departments. The explanation that this research provided for that status, based on empirical evidence gathered, was based on the level of policy ambiguity EMR suffered from and the over-complexity it was characterised with. In fact, during the policy process in 2011 and 2012, the actual outcome of EMR was highly unclear and dependent on further details that were yet to be set. Furthermore, since its inception, EMR was expected to bring about a wide range of very significant economic and political implications for nuclear and renewable technologies. Therefore, both advocacy coalitions began an intensive process of lobbying to influence policy details in a way that would maximise their own political and commercial interests. As such, this case study provided an analysis of the factors that left EMR *fraught with policy tensions*.

The third observation in response to the third research question addressed several challenges that gradually emerged in the way of agreed nuclear and renewable policies. In particular, it pointed to the hope of a nuclear role in the future of low carbon electricity generation that was substantially watered down during 2012. Such reduction in the political significance of nuclear technology was explained with reference to two important dynamics. On the one hand, technical and economic limitations of nuclear power in the post-Fukushima context undermined its feasibility compared to other emerging options like shale gas. On the other hand, it lost a large proportion of party political support following shifts undergone within the Conservative Party towards the revival of far-right ideas of climate scepticism and in favour of gas.

Finally, empirical studies highlighted an interrelation between reaching an agreement on nuclear and renewable policy and the emergence of internal rifts within two already divergent advocacy coalitions. This was observed in a few cases. The defection within the anti-nuclear movement following the 2008 CCA and Renewable Directive as well as the marginalisation of anti-renewable and climate sceptic members of the Tory Party in the process of negotiation over the

coalition government were two main examples. Therefore, this finding suggested that without subordinating either ideological nuclear antipathy or traditional climate and renewable scepticism, the consensual agreement over nuclear and renewable technologies would never happen.

In terms of theoretical contributions to the literature of gradual/incremental policy change, this research highlighted three different conceptual implications. Firstly, it provided further empirical evidence in support of the ACF's claim that in the context of policy deadlock, negotiated agreements over a 'middle-way solution' could facilitate achieving gradual-incremental policy changes. Secondly, this case study supported empirically the assumption formulated in proposition 4 that the substance of compromised policies is inextricably intertwined with inherited tensions and contradictions. This was shown by referring to 'policy gaps' they are suffering from including policy ambiguities and politically contested arrangements. Finally, it provided empirical evidence for what proposition 4 predicted, albeit inspired by the Institutional Change theory, that compromised policies are at constant risk of failing or retrenchment following any alteration in the contextual characteristics or coalitional balance that those consensual policies have rested on and originated in.

7.3. Some avenues for further research

Though we here presented an analysis of policy evolution and change in the UK electricity policy between 2000 and 2012 and explored the limitations for existing policy studies concepts, this study by no means claims that it has provided a comprehensive account of such a complex process of policy change. It thus revealed several analytical shortcomings of current policy change literature in addressing the complexities of this case study. This section aims to propose some avenues for further research and to open up new windows for future theoretical developments and empirical investigations.

7.3.1. From ‘technology preference’ to ‘policy preference’

Chapter four of this thesis proposed the inclusion of the fifth policy component called ‘technology preference’ to characterise changes in socio-technical aspects of electricity policy. Although this suggestion was primarily based on the centrality of technological shifts in policymaking for specifically large technical systems, it seems analytically consistent with what broader policy process frameworks suggest as well. Particularly, it is in line with the concept of ‘*policy preference*’ introduced by the ACF (Sabatier & Wieble 2007: 195). This means the ACF assumes that policies should not only clarify their main objectives, but also need to determine *how* and via which proposal of *solutions on the ground* those targets are practically expected to be met. Perhaps policy instruments would then be designed to facilitate those overall strategies. This approach is also consistent with what Lockwood (2013) points to as the ‘*preferred system configuration*’. Similarly, this concept expands the definition of policy change beyond conventional policy components. This implies shifts in policies are not yet ‘politically sustained’ and analytically complete, unless a fundamental transformation takes place in the preferred system that is expected to operate on the ground.

Perhaps in ‘techno-centric’ subsystems like the case of electricity policy, the main feature of ‘policy preference’ clearly refers to ‘technological configuration’ of the system. However, it seems potentially generalisable and analytically meaningful even beyond techno-centric subsystems. Depending on the nature of those policy fields, the policy preference could involve features like the main solutions, strategies, system configuration and regime structure. This research proposes developing relevant propositions to be examined in terms of the applicability of the concept of policy preference in non-technologic policy changes.

7.3.2. The characteristics of policy saliency

To explain major policy changes, this study introduced the concept of policy saliency. This implied that varying levels of policy impacts that change drivers

bring about reflect, to some extent, their magnitude and policy proximity as well as the level of failure they impose on existing policy components. While this research provided empirical support for that overall claim, it did not theorise the main characteristics that shape policy saliency. The literature of focusing events (Birkland 1997; Kingdon 1995; Zahariadis 2007; Hermann 1972) presents a set of ‘politically symbolic’ features that are important in attracting attention to an event. They include surprise, suddenness, threat, uncertainty, urgency, visibility, scale, the level of anomaly and exclusiveness. While they seem still under-theorised here, the empirical investigation of their policy impact could be seen as another suggestion for further research. The main question here is which set of characteristics of a change driver could increase its level of policy saliency.

7.3.3. Policy narratives as change strategies

Having addressed several policy narratives constructed by pro-change advocacy coalitions, this research highlighted the role of policy narratives as change strategies. As evident in chapters five and six, they could either frame the contestation of existing policies or shape alternative solutions. In fact, since this thesis drew a link between policy failure as *perceived* and the likelihood of change, it highlighted the role of policy narratives as *mediators* of those perceptions. As two examples, it pointed to ‘securitisation’ narrative in the mid 2000s and ‘no public subsidy’ for nuclear in the early 2010s. Similarly, the most recent counteracting instances are ‘climate cost’ and ‘green development’. This observation is in line with the point of Shanahan et al (2011: 536) that ‘the inclusion of policy narratives as a causal variable in policy change process is not only helpful but also *critical*’. This argument bridges two frameworks of *policy narratives* and the literature of *policy process*³¹³ (Shanahan et al 2011: 536; Nowlin 2011; Nohrstedt 2011). This is perhaps another avenue for further examination. Developing theoretical propositions about which characteristics are required for a policy narrative, or a mix of narratives as evident in this case study, to enhance their policy impact is the beginning of another conceptual debate that could be studied in more detail later.

7.3.4. Conceptualising change processes and pathways

As one of the main findings, chapter five characterised the process of UK electricity policy as a lengthy, gradual, evolutionary and accumulative process of change. This means that whilst some changes were incremental and minor in themselves, at the same time their policy feedbacks provided bases for further changes. Thus, over a period of time, they collectively led to significant shifts in electricity policymaking. This finding is consistent with the concept of ‘gradual transformation’ introduced by Streeck & Thelen (2005), Kern & Howlett (2009) and Mahoney & Thelen (2010). Contrary to most of the change frameworks, it describes policy change as a ‘gradual process of breakdown and replacement’ which is ‘cumulatively transformative’. Consequently, a group of theories aim to address different modes and processes of change. For instance, Streeck and Thelen (2005) followed by Kern and Howlett (2009) developed a typology of four change mechanisms and strategies for ‘gradual transformation’ in a policy mix. Each pathway, in this sense, displays a particular level and order of alteration in policy components. Apparently, similar studies could also contribute to this literature of change ‘modes and strategies’. Therefore, having characterised the *type* and *level* of policy change in UK electricity policymaking between 2000 and 2012, the conceptualisation of change *processes* and *pathways* is another analytical debate that is worth being studied in further research.

7.3.5. Coalition defection and policy compromise

The case of nuclear and renewable policy in chapter six revealed something new to the literature of policy change through negotiated agreement. It showed that compromised policies between two different advocacy coalitions came from a process of coalition defection and internal rift. It has been claimed here that the *marginalisation of extreme*, and usually ideological, members of two advocacy coalitions is a primary condition for reaching a policy compromise. This status reflected the basic concepts of the ACF about the heterogeneous composition of advocacy coalitions. They include ‘a solid core and fuzzy edges’ of members with different levels of commitment to policy beliefs (Nohrstedt 2008: 28). This case

study displayed that when two already competing advocacy coalitions are close to a mutual agreement over a policy, they are mainly ‘actors on the fuzzy periphery’ that might very well switch or compromise their coalition ‘allegiances’. On the other hand, ‘extreme coalition members may also defect to prevent the adoption of “balanced” [negotiated] policies’ (Weible et al 2009: 129). This finding is encapsulated in the hypothesis below and this research suggests its future empirical examination.

Hypothesis: Negotiated agreements often emerge from a process of ‘coalition defection’ and the re-alignment of non-principal members on compromised policies.

7.4. Reflections and limitations of this study

Given the complexity and messiness of policy process, there is no single universal and parsimonious solution for dealing conceptually with the world of policymaking. Any research thus investigates inevitably only some particular aspects of the policy process. Therefore, it is analytically important for a policy research to be aware of and transparent about the limitations it faces; the theoretical weaknesses it suffers from; the analytical blind spots it is constrained by; and the practical challenges it tackles. The previous section identified some issues that this thesis has not investigated, which are potential avenues for further work. Likewise, this section aims to take account of some methodological and practical challenges and limitations this study has confronted.

7.4.1. Challenges of a contemporary and complex case study

The first limitation refers to the nature of this case study. Given the time scale of this research on electricity policy between 2000 and 2012, the matter under investigation is very recent and contemporary. Particularly, Electricity Market

Reform, at the time of writing, is still an ongoing and changing process. This characteristic, though, has brought in some research advantages like the availability of data and accessibility to experts and policy actors. For example, I personally have participated in several seminars and conferences about EMR with wide participation from the main players' representatives. It provided me a unique opportunity to observe, to some extent, the very complex and challenging process of policymaking. Therefore, this research has shed light on some aspects of the contemporary subject that would never be identified otherwise in any form of historical studies. On the other hand, it has constrained the possibility of a comprehensive retrospective analysis of the case over a full policy cycle including implementation and policy outcomes. In fact, it is hard yet to analyse EMR's policy implications and practical consequences. It might have been easier to come to firm conclusions about a policy change through a 'historical perspective' given a 'few years of hindsight'. Though that analytical advantages of retrospective and historical analyses come always at the expense of losing some detailed aspects of the reality. There is, in fact, a trade-off between contemporary access to the case and the benefits of hindsight perspective.

7.4.2. The lack of evidence for studying paradigmatic shifts

Despite remarkable findings about policy change in general, this research was unable to contribute to the specific literature of paradigmatic shift. As shown in chapter four, notwithstanding an accumulative alteration in almost all policy components by 2012, the UK electricity policy did not yet represent a wholesale paradigmatic shift. Therefore, while this thesis has provided an understanding of the meaning of a complete paradigmatic shift, it has never been able to explain why and how it could happen in some point. For example, it studied a set of change drivers that highly discredited and displaced existing policies leading to the emergence of paradigm ambivalence. But in return, it did not say anything about the circumstances in which an alternative policy paradigm could gain sufficient credibility and momentum to fully replace the old one. Another example was the interrelation between the emergence of a paradigmatic shift in the energy and electricity sector and change in a wider macroeconomic model. While

historical evidence support this coincidence in the 1980s, it was analytically impossible for this research to either approve or reject such interconnection as a necessary driver for paradigmatic shift. Reaching such a conclusion became even more complicated when the recent financial crisis failed to replace the pro-market economic paradigm. This is what has been recently addressed by some leading scholars in the field of policy paradigm. Pemberton (2013), as an instance, discusses why recent financial crisis was ‘wasted’ in the way of making a paradigmatic shift in economic policy.

7.4.3. Recent developments and possible scenarios for UK electricity policy

Since this research stopped the clock for further analysis in the late 2012 and throughout the process of writing up in 2013, UK electricity policy has constantly witnessed a rapid process of alteration and change. As of December 2013, several technical details of EMR are now published, the long-run negotiation between Government and EDF has now reached to an initial agreement, the political debates around energy price cap have overwhelmed electricity policy and the Energy Act has most recently received the Royal Assent. It draws an extremely complicated and increasingly conflicting picture of power industry that obscures any predictable scenario for the future. Consequently, depending on shifting socio-economic and political conditions, there is a wide range of diverse possibilities in the way of future British electricity policy. In the one hand, an extreme group of the low carbon advocacy coalition thinks about a full implementation of EMR with the exclusion of gas and based preferably on renewable technologies more than nuclear. By contrast, on the other hand, there is a coalition of right-wing ideologists and climate sceptics who dispute current commitments to energy targets and push towards a post-election revision in national and international climate obligations. Between these two far ends of the spectrum, there is perhaps a portfolio of middle range scenarios supported by different combinations of political, ideological, technological and commercial policy drivers. This seems to me a status of *fundamental uncertainty* in

continuation of what I called paradigm ambivalence that potentially could eventuate in any unforeseeable scenario.

7.4.4. Research reflexivity: an analytical journey between theory and the case

Just before the last part, I would like to reflect upon my four year of analytical journey. I started by thinking about the adoption of socio-technical transition framework, as a Dutch-originated literature, in the UK energy policy. For that purpose, I relied on an analytical framework based on insights from different literatures of policy learning, policy transfer and diffusion, research utilisation, epistemic communities and instrument constituencies. Nevertheless, this initial design of the research was empirically challenged once I dealt with the on-the-ground realities of British electricity policymaking particularly in the case of EMR. Soon after, I gradually found that it was analytically difficult to bridge between empirical data in this case and primary theoretical frameworks. Only a few numbers of interviewees had even heard about the transition theory and it was also undermined by the legacy of British superiority and leadership in energy and electricity policy. Many studies also pointed out that there are some fundamental mismatches between policy and political institutions in the UK energy sector and other European countries including the Netherlands (Shove & Walker 2007; Kern 2010; Kern 2012). In fact, what was seen then central to the UK electricity policy process had more to do with political and policy frameworks than theories within the realm of Science and Technology Studies. Consequently, these practical factors pushed me away from undertaking a pure STS research into the heart of policy studies. Here was where I returned back to the theory and began to develop a new set of analytical propositions, largely based on the literature of policy change, that enable informing contextual observations. Such analytical journey backing and forth between theory and empirical data was constantly repeated throughout different stages of this research.

7.4.1. Positioning theoretical contributions: Bridging between Science and Technology Studies and Policy Studies

The last but not least, this sub-section aims to clarify the disciplinary position of the thesis. Having been in a Science, Technology and Innovation Studies department (STIS), as the hub of a wider university wide network, ISSTI, I have been familiar with the growing field of inter-disciplinary and multi-disciplinary research. In particular, Science Studies Unit (SSU) within the Edinburgh University has been historically rooted on different disciplinary backgrounds, such as sociology, philosophy and history. Recent developments towards technology and innovation studies have also added to such a rich tradition by incorporating other disciplines like economics, business studies and technological subjects.

My research is albeit no exception. Although this thesis has primarily relied on policy frameworks, due to a set of practical reasons I explained before, I position my work as trying to bridge between two already separated disciplinary realms: STS and policy studies. On the one hand, being disconnected from the world of policy is still seen as one of the shortcomings of existing STS frameworks (for Transition theory in specific see: Shove & Walker 2007; Smith & Stirling 2007; Kern & Smith 2008; Meadowcroft 2009, Kern & Howlett 2009; Kern 2012). On the other hand, there is also a gap in policy science in theorising the role of socio-materiality and technology innovation in explaining public policymaking and change (Joerges 1996: 3-4; Winskel et al 2012: 1).

This inter-disciplinary approach is very clear in chapter four, where it examines recent developments in policy studies, particularly Policy Paradigm (Hall 1993) and Advocacy Coalition Framework (Sabatier 1999), for conceptualising the extent and the type of policy change in British electricity policy. Having characterised electricity system as a ‘techno-centric’ and ‘large technical’ system (Hughes 1983), it identifies a theoretical gap in capturing technological shifts as an important dimension of policy change in power sector. As such, chapter four opens up a space for incorporating STS-originated theories like Socio-Technical Transition. The introduction of technology preference, implying the socio-

technical characteristics of a system, as an independent level of policy change provides a conceptual framework for defining some specific features of policy change in the case of Electricity Market Reform. This theoretical contribution arguably lies somewhere between STS and policy studies.

From such a disciplinary point of view, I would categorise other theoretical contributions in chapters five and six, largely within the boundaries of policy studies. While highlighting the role of irreconcilable policy failures in driving ultimate shifts is a move beyond conventional typology of change drivers in policy literature, presenting compromised policies as often subject to reversibility and retrenchment is thought an ACF-specific theoretical contribution.

However, notwithstanding this discussion about to which academic camp this thesis belongs to and to what extent, it is worth to bear in mind, once again, that this research is mainly an empirically-driven study providing a contextual explanation of UK electricity policy change rather than a primarily theoretical piece of the work looking for global conceptual generalisation.

Endnotes

¹ For example, a historical study conducted by Wieble et al. (2009: 125) shows that environment and energy policy, in general, has been the subject of a large proportion of policy researches done based on the application of ACF. Szarka (2010: 836) refers to the politically controversial characteristics of energy policy required to 'reconcile values, interests and norms'

² Regarding the characteristics of electricity infrastructure like the longevity, the scale and the cost, any alteration in electricity technology policy could lock the system, for a long period of time, into a particular form of technological trajectory and socio-technical system.

³ Though that it also points to the absence of an alternative advocacy coalition representing a cohesive policy paradigm, as the main reason behind incomplete paradigmatic shift in EMR.

⁴ Public policy could be defined diversely referring to an intention; a specific policy proposal; a decision; a program; a process; a policy sector; or, an outcome.

⁵ A good policy theory, as Dye (1992) indicates, should simplify and respond to reality with meaningful information about the policy process and with good explanations of public policy.

⁶ The comprehensive rationality assumes that a comprehensive, coherent and rank-ordered analysis of policymaking is substantially possible and policy makers are to potentially maximise policy utilisation and adopt 'optimal solutions'. In contrast, modern theories point to 'bounded rationality' of policy actors whose decision is filtered by belief system and cognitive biases and follow the logic of 'satisfaction' and 'appropriateness' rather than simply 'utility maximisation' (Weible et al 2009; Sabatier 1998; Cairney 2011: 212).

⁷ The policy cycle approach, called 'the stages heuristic' (Lasswell 1956; Brewer & deLeon 1983; 1999), suggests functionally breaking the complex policy process down simply into a series of sequential stages such as agenda setting, policy formulation, implementation and evaluation. This approach arguably represents the 'public face of public policy' (McConnell 2010: 222) once most governments yet recognise stages, at least the formulation-implementation distinction, in delegating authorities to different institutions. It could also prevent the misleading dominance of agenda setting and the dismissal of policy implementation in policy process theories.

⁸ The reason that 'comprehensive rationality' and 'policy cycles' are no longer inspiring modern policy theories, is that they suffer from a set of constraining characteristics like central top-down policy implication and lack of causality linkage, as well as over-simplification. Nevertheless, they still function as 'descriptive' analytical 'starting points' and ways of 'organising policy studies and strategies' (Cairney 2012a: 6, 41).

⁹ Cairney (2012: 154) points to a 'blurred boundary' between formal and informal 'sources of authority' that disperse power vertically amongst different 'supranational' and 'sub-national' levels and horizontally to quasi and non-governmental actors.

¹⁰ It means, while governments have 'authority' to make policies, they do not have sufficient 'capacity' to act alone. It is due to either the lack of specialised expertise or the problem of 'overloading' (Nowlin 2011: 50).

¹¹ Such technocratic perception of policymaking was rooted in the definition of politics based on 'conflict, interests and power struggle'. It led to this conclusion that 'ideas do not matter, as power and material interests ultimately drive politics' (Price 2006: 252). But under the complex situation that interests are not clearly 'knowable' and 'certain', they are no longer seen as independent from interpretative bias of ideas and beliefs (Kern 2010: 33) to address policy ambiguities.

¹² Ideas are broadly defined as paradigms; norms; policy ideologies and beliefs; and, policy proposals. They function either as constraining factors framing the policies and limiting action alternatives, like paradigms and norms which are taken for granted, or as dynamic 'irresistible forces' stimulating and fuelling profound change, such as new policy proposals. Indeed, depending on different forms of ideas, they could potentially cause stability or change.

¹³ Hay (2002: 194) argues that 'power and ideas are inextricably linked' and therefore 'ideas often hold the key to unlock political dynamics'. In a similar argument, Fischer (2003) points to an accumulative support 'to back up the claim that ideas are relatively autonomous of interests and institutions.'

¹⁴ Cairney (2012: 2) identifies five conceptual pillars and analytical lenses to study policy process. They range from 'individual policy makers' choices and interests to ideas and policy beliefs. They also extend to institution and then policy networks and interest groups followed by taking 'socio-economic context' and 'policy condition' into consideration. In addition, there are some elements of 'serendipity' and 'chance' in dealing with the concept of unpredictable opportunity windows and external events.

¹⁵ In a similar argument, Nohrstedt and Weible (2010: 12) characterise any likely change in terms of its 'nature (normal or paradigmatic)' and 'tempo (gradual or rapid)'.

¹⁶ This section does not deal with the concept of explaining the processes of change, which will be discussed in further sections.

¹⁷ Policy change could refer diversely to shift in a policy intention, a specific proposal, a decision, a program, a process, a policy sector, or an outcome.

¹⁸ Hall calls policy components 'central variables' of the policymaking process.

¹⁹ Thomas Kuhn (1962: 10) conceptualises a scientific paradigm as an integrated framework and 'heuristic device' of analysis including 'theoretical propositions' and 'models' that provide an integrative explanation of a scientific phenomenon.

²⁰ 'Policymakers customarily work within a framework of ideas and standards that specifies... Like a *Gestalt*... it is influential precisely because so much of it is *taken for granted* and unamenable to scrutiny as a whole. I am going to call this *interpretative framework* a *policy paradigm* (Hall 1993: 279)'.

²¹ It is noteworthy that policy paradigm is often used with reference to a wider socio-economic policy (cross-subsystems), rather than a particular area of policymaking (subsystem-wide) (Hall 1993; Kuzemko 2011: 66). Hall also acknowledges the possibility of identifying policy paradigm in some fields with 'highly technical issues' and 'a body of specialised knowledge' like energy policy (Hall 1993: 291).

²² There is an ambiguity in Hall's classification when he takes third order change as both change in policy objectives and change in all dimensions simultaneously. To prevent confusion in cases where policy objectives change while other dimensions are still stable, I have taken third order change as change in policy objectives compared to paradigmatic shift as change in all dimensions and framework.

²³ Recent developments assume policy settings as a sub-component of policy instruments. Therefore it has not been mentioned as a distinctive policy component and level of analysis.

²⁴ While Hall has used the terminology of 'policy paradigm' as an 'interpretive framework', Kern et al have referred it to overall governance system including all four components. To prevent confusion, this research uses policy paradigm in its original meaning as an interpretive framework component. Instead, it uses policy mix or governance system for all components together.

²⁵ For example, the initial work of Kuzemko (2011: 67) had divided the ideational component, i.e. policy paradigm, into two different sets of ideas: 'ideas about socio-economic role of energy' and 'ideas about energy governance'.

²⁶ Though the ACF is not foremost and solely a policy change theory.

²⁷ The ACF's policy belief system briefly recognises three layers for coalition beliefs: deep core-normative belief, policy core belief, and secondary ones. This classification is also consistent with Cairney's distinctive typology of ideas as paradigms; norms; policy ideologies and beliefs; and, policy proposals (2012: 15).

²⁸ Both function as theoretical and ontological assumptions of the 'nature and operation of the world' (Kern & Mitchell 2010: 7). They are similarly spanning most policy areas (Campbell 2002: 171) and simulated with 'landscape macro-political trends' (Shackley & Green 2007: 221; Kern & Mitchell 2010: 3). Furthermore, they are highly resistant to any change 'akin to religious conversion' as they are 'taken for granted' and 'largely inculturated normative issues' (Sabatier 1993: 31). Similarly, such normative-paradigmatic ideas function primarily as a source of 'stability' and 'a constraint' on policy change (Cairney 2012: 15-16).

²⁹ When I asked one of the researches, who had contributed to developing the current policy paradigm theory about incorporating technical issues in characterising energy policy change, the replay was that 'I did not include this as a *separate level* of the paradigm [policy mix] - partly because that might make it less generalisable beyond energy'.

³⁰ Winskel (2012: 5) points to some advanced technological scenarios that the cost of change would be even 'halved'. It shows the 'broad appeal' and 'compelling promise' of technological innovation for socio-technical system change'.

³¹ Winskel et al (2012: 25) criticises the lack of inter-connection between 'energy innovation policymaking' and 'policy analysis research'. Thus, he recommends a 'strong policy research community'.

³² The multi-level perspective (MLP) is at the heart of STT for explaining system change. It shows that socio-technical systems, or 'regimes', also interact across and between other levels: the 'socio-technical landscape' (macro) and 'niche-innovations' (micro). These levels are understood as heuristic, analytical concepts that help to explain how systems both operate and change (Geels & Schot 2007: 399).

³³ This set of features of the UK electricity system has been widely mentioned in interviews as well as in several studies (Bolton & Foxon 2013; Watson 2013; Wolsink 2012).

³⁴ Expensive electricity infrastructure gives a heavily path-dependent nature to regimes.

³⁵ Incumbents will respond positively to policies promoting particular technologies or activities if these present opportunities that fit within core corporate strategies and vested interests (Lockwood et al 2013: 18). They have capacity to learn and a willingness to *tweak* initial proposals.

³⁶ The electricity socio-technical system or regime in this sense is a *complex configuration* of technical artefacts, institutional arrangements and social practices (Bolton & Foxon 2011; Foxon 2011; Geels 2004).

³⁷ The inclusion of practical solution, e.g. technology change, is also supported by wider policy process theories like the concept of 'policy preference' in the ACF; this will be elaborated later.

³⁸ As noted in section one, the modern theories are characterised by a set of shifting features of policy studies. As such, contrary to the policy cycle perspective, the reference approaches 'aim to uncover the underlying generative causal processes that constitute the drivers of policy dynamics (change and stability)' (Real-Dato 2009: 118). Likewise, their explanatory accounts rest on the behaviour of rationally-bounded actors and the 'logic of appropriateness'. All three theories are substantially away from taking policy makers simplistically as full rational decision makers. Furthermore, in all frameworks, policy dynamics and causalities have been conceived as characteristically ideational (Real-Dato 2009). It means they acknowledge the analytical salience of ideas in policymaking and their symbiotic interaction with power, as the traditional focal point of policy studies. Finally, the concept of policy subsystem and new forms of group-government relationship are central to all three frameworks.

³⁹ There are some more frameworks which have been taken into account in recent policy change studies. This is notwithstanding the fact that their initial focus is particularly on policy learning aspects of change: the Discourse Coalition Framework (Hajer 1995) and the Epistemic Communities Framework (Haas 1992).

⁴⁰ This form of monopoly emerges from a strong connection with powerful political ideas and 'policy images' reflecting both the 'emotive' and 'empirical' social construction of an issue (Weible 2008: 618).

⁴¹ The main rationale behind this circumstance is the 'disproportionate/ asymmetric information processing' by bureaucrats resulting from the policymakers' information 'oversupply': 'delegated authority and formal routines within the bureaucracy can *dampen* signals from political principals while centralised authority and informal procedures can *amplify* those signals' (May et al 2008; Nowlin 2011: 54). Consequently 'popular issues tend to benefit from large increases in macro political attention but also that unpopular issues tend to benefit from decreasing attention' (Mortensen 2009: 450).

⁴² The significance of policy change comes from this fact that actors seek to 'over-compensate' their former neglect of information by 'radically readjusting' the new policy image. The wide acceptance of the new policy image, resulting from the 'venue shopping' process, is conceived as 'the beginning of another lengthy period of policy stability' (Meijerink 2005: 10).

⁴³ Some elements of serendipity and 'chance occurrences' are also mentioned in PE.

⁴⁴ This describes a situation in which policy advocates are potentially enabled to convey their policy alternative because of attentions paid to either relevant problems or political patterns. It highlights the inherent serendipity and accidental nature of policy process rather than its rationality. Inspired by

Cohen et al's (1972) 'garbage can model' and 'organised anarchy': 'The origins of policy may seem a bit obscure, hard to predict and hard to understand or to structure'.

⁴⁵ There are some modifications in new versions of the MS framework. Firstly the basic assumption of streams full independency is no longer verified. They are now assumed to be semi-autonomous but co-evolutionary interrelated: 'Stream independence is a conceptual device... The MS framework can assume that the streams act "as if" they are independent' (Nowlin 2011: 57). Furthermore, new revisions have added institutional factors which are called 'policy milieu', including such institutions as state government structures. More importantly, the focus of MS has been expanded beyond merely agenda setting to 'policy design and formulation' (Ness 2010; Ness & Mistretta 2009).

⁴⁶ Laudan (1997) defines the concept of theoretical 'progressivity' as 'maximising the scope of empirical problems, while at the same time minimising the scope of unsolved anomalous or conceptual problems'. On that basis, the ACF could be regarded as a relatively 'progressive theory', despite that it still shows some signs of 'degeneration' and conceptual ambiguity (Nohrstedt 2008: 52). The ACF also enjoys a high level of systematic 'standard requirements' of 'empiricist' theory formulation (Szarka, 2010: 837; Weible et al 2009: 125- 127; Sabatier & Weible 2007: 208). Therefore, Grin and Loeber (2006: 210) conclude that the ACF 'deserves credit as being theoretically comprehensive, rigorous and integrative'.

⁴⁷ Similarly, the study done by Weible et al (2009: 125) displays that amongst various theories of policy process, the (ACF) is one of 'the most popular' and 'pervasively tested' policy theories in diverse 'geographical and substantive breadth and depth' during last two decades. The 'internationalisation of the ACF' has happened notwithstanding a 'fundamental ontological question' regarding the applicability of it in different political systems outside of the 'pluralistic' context of the United States (Weible et al 2011: 350). By introducing the concept of universal 'policy style', Cairney (2008: 350) points to 'common standard operating procedures' of policymaking irrespective to differences in macro political system and 'national level generalisation'.

⁴⁸ There are various 'theoretical foci' within the scope of the ACF (Weible et al 2011: 353). Overall, the most important contributions of the ACF are: advancing an understanding of the formation and behaviour of advocacy coalitions, policy-oriented learning, science-policy relation, policy stability and change (Sabatier & Weible 2007: 192).

⁴⁹ The ACF is conceptually built on a 'range of theoretical contributions' from policy network theory to policy learning and also institutional rational choice theory. 'There are few discussions of policy theory today that do not devote attention to the ACF' (Fischer 2003: 2). Schlager (2007: 317) describes it as a 'meta-theoretical language' functioning as 'a single roof' above other policy theories and models.

⁵⁰ The ACF has recently been a subject of criticism for 'increased complexities undermining the injunction to be clear *enough to be proven wrong*' (Sabatier 1999: 5; Nohrstedt 2011: 462). Critics argue that the ACF should remain committed to its original principles and scientific tradition (see Sabatier 1999) to 'balance between simplification and comprehensiveness' in recognising complexities of public policymaking (Nohrstedt 2008: 54; Nohrstedt 2011: 481).

⁵¹ Statistically, policy change is one of the most-frequently tested hypotheses amongst all ACF studies ever done (Weible et al 2009: 121) and it enjoys increasing 'academic popularity' compared to other policy change theories (Nohrstedt 2008: 4).

⁵² The ACF introduces the concept of policy subsystem as its specific unit of analysis. This is an analytical construct that simplifies the analysis of participation in the policy process through an artificial 'semi-autonomous partitioning' (Albright 2011: 486; Nohrstedt 2011: 462; Weible et al 2009: 134). The notion of a subsystem is characterised by both functional/substantive and territorial/geographical dimensions and 'the vast majority of policy making occurs within policy subsystems' (Sabatier & Weible 2007: 193). This includes multi-level governmental and multi-sector non-governmental actors who are organised into a manageable number of 'advocacy coalitions'. Using the terminology of 'subsystem' highlights the fact that subsystems are 'not immutable' to the wider context, though subsystems are typically systems within themselves.

⁵³ Typically, coalition-based policy theories assume that for any form of policy change 'a coalition of the willing' is needed, since 'no agent is sufficiently powerful to design policy individually and any major change has multiple causes' (Szarka 2010: 836). As the ACF defines, 'advocacy coalitions' are an informal network of stakeholders consisting of members 'who share policy core beliefs and engage

in a nontrivial degree of coordination' (Weible et al 2009: 132). They 'strive to translate components of their belief systems into actual policy [designs] before their opponents can do the same' (Sabatier and Weible 2007: 196).

⁵⁴ The ACF describes a shared three-layered belief system. It is structured into a hierarchy composed of deep core beliefs, policy core beliefs, and secondary beliefs. These three structural categories are arguably arranged 'in order of decreasing resistance to change' (Fischer 2003: 3) and narrowing their scope. Amongst them, policy core belief is perceived as the main driver of advocacy coalitions (Sabatier & Jenkins-Smith 1994; Kim & Roh 2008). Arguably, the ACF 'does not assume that actors are driven primarily by economic/political self-interest' (Sabatier & Jenkins-Smith 1999: 131). Inspired largely by social psychology literature rather than 'microeconomics', it is based on the concept of bounded rationality, instead of rational actor as normal (Nohrstedt & Weible 2010: 9; Weible et al 2011: 349).

⁵⁵ The ACF assumes that any change in policies does not occur in 'a political-administrative vacuum' (Nohrstedt & Weible 2010: 26) and in isolation from wider context as well as internal dynamics. Policies change 'through the interaction of competing advocacy coalitions' (Fischer 2003: 2) and are influenced by the specific 'set-up of policy subsystem' in terms of both quantity of advocacy coalitions and their interaction patterns, i.e. the level of internal conflict among coalitions (Nohrstedt & Weible 2010: 13).

⁵⁶ The ACF defines policy subsystem operating within the broader political environment divided into *relatively stable parameters* and *changing external trends*. While the first condition the possibility of change, the latter make 'shocks' to subsystem. The relatively stable parameters consist of institutions; basic attributes of problem area and distribution of natural resources; legal/constitutional structure; fundamental socio-cultural values and social structure (Weible et al 2011: 352; Albright 2011: 487). Alternatively, the changing external factors comprises elements like change in public opinion, demographic change, socio-economic change, regime shift, spill-over effect of over-subsystem policy changes, crises and disasters (Albright 2011: 487; Nohrstedt 2011: 464; Nohrstedt & Weible 2010: 5).

⁵⁷ Inspired by 'ideational policy theories', like Hecló's 'social learning' (1974), Hall's 'policy paradigm' (1993) and Wiess's 'enlightenment' concept (1977), the origin of the ACF had primarily tried to 'integrate the hitherto largely separate literatures on knowledge utilisation and policy change' (Sabatier 1987: 650). The ACF defines policy-oriented learning as 'the relatively enduring alterations of thought or behavioural intentions that result from experience and/or new information' (Sabatier & Jenkins-Smith 1999: 123).

⁵⁸ Although the ACF introduces 'the internal and external shock dichotomy' in terms of both policy and geographical distance (Nohrstedt & Weible 2010: 3), their definitions and impact pathways have been regarded as almost the same (Albright 2011: 506).

⁵⁹ This will be discussed in detail in a further section.

⁶⁰ 'The basic argument in the neo-institutional literature is that most policies are firmly rooted in inert institutional settings ... which cannot be changed from within. Therefore, stimuli, external to the policy subsystem, are required for non-incremental policy change'. (Nohrstedt & Weible 2010: 3)

⁶¹ Critics argue that the ACF has overemphasised the role of (external-internal) events as the cause of policy change (James & Jorgensen 2009). This is due to the empiricist legacy of the ACF towards 'contextless universal generalisation' (Fischer 2003: 25) that sees such events as easy to measure in time series analyses (Fischer 2003: 7). The presumption there is that drivers are of sufficient magnitude for change and there is a direct relation between the magnitude of external events and the level of change: 'the bigger the cause, the bigger the impacts' (Keeler 1993; Cortell & Peterson 1999). In contrast, Fischer (2003: 16) emphasises the fact that a deep explanation of how policy change comes about is expected to be drawn from a 'detailed social and historical contextual examination' of any particular case.

⁶² Critics point to an analytical risk in explaining policy change based on 'arbitrarily chosen' and 'vaguely defined', either external or internal, change drivers (Capano 2009; Nohrstedt & Weible 2010: 5). Evidently, there is a wide range of definitions and divergent vocabulary emerged to capture differences between those drivers. While they were called simply 'external events' or 'external perturbations' by Sabatier and Jenkins-Smith (1993), they were then called 'external shocks' by Ingram et al. (2007) and Ostrom (2005). More comprehensively, the titles of 'focusing events' (Birkland 1997;

Kingdon 1995; Zahariadis 2007) and ‘critical junctures’ (Hogan & Doyle 2009) aim to broadly conceptualise change drivers and the consequences they bring about.

⁶³ Policy literature points to common ‘managerial challenges’ that current policies face to meet new contextual requirements involving surprise, threat to core societal values, uncertainty, urgency, scale, and necessity of reform (Boin et al. 2009; Widmaier et al. 2007).

⁶⁴ This study suggests using the label of *disruptive* for those events or change drivers that are policy salient.

⁶⁵ Perhaps, regarding the unavailability of empirical evidence, this research does not provide a complete conceptualisation of a fully-fledged paradigmatic shift. In a similar study, Kuzemko (2011: 93) concludes that for a wholesale paradigmatic shift alongside the perception of policy failure and paradigm discrediting, the availability of a cohesive alternative policy paradigm is also necessary.

⁶⁶ In the aftermath of an event or crisis, a more likely scenario is that policy debates focus on pre-existing problems and solutions rather than raising and developing new policy challenges or options (Keeler 1993; Kingdon 1995; Quarantelli & Dynes 1977). Particularly in highly controversial cases, ‘symbolic’ policy changes are the most likely and less challenging outcomes.

⁶⁷ From a constructivist point of view, different coalitions interpret change drivers differently, based on their belief-driven conceptual lenses. They highlight what is adaptable to their belief system and tone down, or even ignore if possible, events that are conceived as conflicting to their policy beliefs.

⁶⁸ This fact is in consistence with the concept of ‘skilful exploitation’ introduced by the ACF. It implies the degree to which a pro-change coalition can skilfully exploit the crisis (change driver).

⁶⁹ Building upon policy paradigm theory (Hall 1993), Kuzemko points out that the process of change would be accelerated by the ‘mounting evidence of policy failure’ and increasing ‘anomaly between objectives and outcomes’. She similarly argues that this process is driven largely by ‘political protagonists’ (Kuzemko 2011: 93) through the process of ‘narrative appropriation’ and contestation (Kuzemko 2011: 75). Hall (1993: 280) calls this process ‘discrediting the prevailing paradigm’ that eventually leads to its ‘obsolescence’.

⁷⁰ This literature includes historical, social and rational-choice institutionalism. Given ‘*all definitions of institution*’ imply ‘persistence’, they focus mainly on ‘*stability*’ and ‘*continuity*’. Consequently, ‘the inescapable conclusion’ is that any change in ‘self-reinforcing institutions’ requires ‘*an exogenous origin*’ driver and there is no space for an ‘endogenous change driver’ (Mahoney & Thelen 2010: 4, 6, 7). In other words, given policies firmly consolidated by ‘inert institutional setting’ and ‘policy equilibrium’ status, policy change is rather unlikely unless an external ‘stimulus’ emerges.

⁷¹ The ACF views minor policy change as a product of policy-oriented learning, while major policy change requires a perturbation in non-cognitive factors that are external to the policy subsystem. Learning, however, is not a sufficient condition for major policy change. (Schlager 1999: 250).

⁷² Skocpol demonstrates that policies themselves are institutions that shape other institutions, ideas, alliances, and other aspects of the policymaking arena. (Skocpol 1995 cited in Silberberg 1997: 372)

⁷³ This point contradicts directly the concept behind varieties of institutionalism literature that denies any gap between design and outcome of policies: ‘the enactment of the rule both reflects and reinforces its existence’ (Thelen 2009: 492).

⁷⁴ In the literature, different strategies are distinguishable on the basis of their ontological and epistemological assumption; the starting point and procedures; the aims and logics; and, the style of outcome.

⁷⁵ Yin (2003) points to a classification of experiment, survey, archival analysis, historical research, ethnography, grounded theory and case study. Similarly Lijphart (1971) suggest a typology of research strategies including experimental, statistical, comparative and case study approaches.

⁷⁶ There are a range of pragmatic factors such as personal interests, available time and budget, the level of access to required infrastructures and data and the expectation of influential audiences.

⁷⁷ Sabatier and Jenkins-Smith (1999: 125) suggest energy studies as ‘the most likely’ cases for policy research respecting to their features like ‘technical complexity’ as well as ‘substantial political conflict’.

⁷⁸ This is because policymaking is thought as a ‘long-frame’ and ‘strategic’ process that needs to be analysed in a ‘full policy cycle’. This means a wider context of long-term policy evolution and change that allows ‘operationalisation of falsifiable hypotheses’ and ‘smoothing out short-term fluctuations’ (Szarka 2010: 837).

⁷⁹ As Rhodes (1997: 17) describes, ‘central state functions got lost upwards to the European Union, downwards to special purpose bodies [and devolved areas], and outward to agencies’.

⁸⁰ Lijphart (1999) characterises UK as a ‘majoritarian’ system based on a set of features like centralised power in the hand of majority party, adversarial politics, top-down policy imposition, ‘statist’ public policy monopolised by the government without ‘too many checks and balances’ (Kern 2011:12; Schmidt 2006), politically neutral civil service and hierarchical departments.

⁸¹ Based on an empirical study, Cairney (2011) draws a picture of modern British policy style. Accordingly, the normal UK policymaking is largely derived from incrementalism; it is subject to inertia and path dependency; policy outcomes result from ‘the complex interplay between governmental and non-governmental actors’; there are evidences of ideational policy making; the extensive consultative norms are commonly acceptable; and, radical paradigmatic changes are less-likely to occur. There are perhaps some exceptions of symbolic ‘headline decisions’ taken at the centre of political system.

⁸² This sample is not sufficiently inclusive. For example, my observations found an important role of some media and journalists as well as the central role of political parties in that process which are not directly represented in this sample.

⁸³ The current electricity industry includes four distinctive types of functional ‘entities’ working complicatedly together to provide the flow of power in the UK: generators; transmission operators (TNOs); distribution network (DNOs); and, electricity suppliers (Skea et al 2011: 42). In the UK, most generators and suppliers are almost administered and owned by the ‘Big Six’ companies: EDF; E.ON, RWE, Scottish Power, Centrica and Scottish and Southern Energy. The National Grid (NG), as overall System Operator, in collaboration with other TNOs and DNOs is responsible for transmission and distribution functions and balancing power flow (Skea et al 2011: 43). Furthermore, several independent companies are also working rather marginally in different stages of electricity power process. In addition, there are a wide range of businesses that are affected by the direction of electricity policy. Appendix D displays an overview of all private companies that submitted to EMR’s call for consultation.

⁸⁴ From a structural point of view, energy policy is not limited only within the functions of Department of Energy and Climate Change (DECC). There are several other departments like Treasury, Business, Innovation and Skills (BIS), Transport, DEFRA and the Foreign Office (FCO) which are engaged with the notion of energy policy in some aspects (Pearson & Watson 2012: 34). In addition, there are at least two independent statutory regulatory and advisory bodies dedicated to energy and climate change policy: Ofgem and CCC. A list of such departments commented on EMR could be found in Appendix D.

⁸⁵ A list of academic institutes, think tanks and consultancies participating in EMR has been presented in Appendix D.

⁸⁶ Perhaps NGOs have diverse affiliations. In electricity policy, environmental, consumer support and local societies are the most active ones. A list of NGOs that commented on EMR could be found in Appendix D.

⁸⁷ Despite those advantages, there are a set of analytical challenges in the way of applying a mixed-method strategy. The improper implementation of each method separately and thereby an ineffective use of them, the risk of inconsistent theoretical and epistemological assumptions and the lack of distinctive analysis and presentation are some possibilities required careful considerations (Moran-Ellis et al 2006; cited in Milne 2010).

⁸⁸ In contrast with random sampling generalising interview findings to a wider population, snowballing method seeks personal first-hand accounts of strategic policy players.

⁸⁹ It is arguably a common challenge in the way of most policy studies in general. How could one differentiate between what policy makers say and what they actually believe? Does what they say is directly related to what they actually do? What is the interaction between what they believe, say and do from one side, and the real impacts and consequences of their policy stance from the other side? Does what they do not say and do not do resonate their policy beliefs as well? Even it is problematic to treat official policy documents and parliamentary hearing as ‘unbiased expression of their true belief’ (Jenkins-Smith et al 1991: 858). Since they are presumably to persuade policymakers, there is a risk of ‘misrepresentation’ for strategic purposes. They are normally constrained by official position of the

organisation; the consideration to the self-interests, and the concern of ‘credibility and persuasiveness’. Therefore, any research needs to cautiously contextualise data embedded either in policy documents or interview transcripts.

⁹⁰ Otherwise, without a set of robust theoretical propositions, it would be analytically difficult to eliminate other likely causal explanations through a process tracing analysis (George & Bennett 2005: 223).

⁹¹ It is perhaps for studies aiming at ‘partial explanation’ of a social phenomenon. Otherwise, there are always endless probable causal linkages that could be envisaged between a particular policy change and different actual conditions in society (Nohrstedt 2007: 24). Kern (2010: 58) argues that this is still a wider methodological concern encountering all social sciences. Anyway, the degree of openness and reflexivity in the way of interpreting data and choosing a particular causal explanation rather than others is the only possible way to increase research internal validity.

⁹² This is an addition to the four already developed policy components in the literature: policy paradigm, objectives, institutions and instruments.

⁹³ Whilst a full characterisation seems, to some extent, unlikely due to ‘diachronic’ and ‘relative’ nature of policy change Hay (1999: 30), this research seeks to contribute in the way to overcome such conceptual limitations. Section four will discuss such limitations in detail.

⁹⁴ The electricity socio-technical system or regime in this sense is a *complex configuration* of technical artefacts, institutional arrangements and social practices (Bolton & Foxon 2011; Foxon 2011; Geels 2004).

⁹⁵ These features of the UK electricity system have been mentioned in several studies (Bolton & Foxon 2013; Watson 2013; Wolsink 2012; Mitchell 2013; Hoggett 2013).

⁹⁶ Given EMR as a very contemporary case study, there is no way to analyse its practical consequences. Therefore, this research relies largely on the analysis of EMR’s policy content rather than actual outcomes.

⁹⁷ While this time frame could explain the policy roots of EMR, it cannot cover its implementation.

⁹⁸ This governance model is labelled differently by Mitchell (2008) as Regulatory State Paradigm (RSP) and by Kuzemko (2011) as Pro-market Energy Policy Paradigm (PEPP).

⁹⁹ Energy could be conceptualised differently: an input for economic growth; a public good for quality of life; a source of revenue for exporters; an employer and community supporter; a national-strategic asset; a security factor; an emission polluter; or a tradable commodity (Kuzemko 2013).

¹⁰⁰ As such, energy policy was assumed as a ‘rational, consensus based, objective process’ that could be self-sufficiently provided and invisibly planned by the competitive market, in the most effective way (Pearson & Watson 2012: 30).

¹⁰¹ The term ‘marketised de-politicisation’ was introduced by Colin Hay as ‘off-loading of areas of formal political responsibility to the market’ (Hay 2007: 82).

¹⁰² Electricity privatisation was delayed due to characteristics like complexity; scale; vertical integration; technological mix; non-storability; required excess supply; and successful nationalised experiences (Pearson & Watson 2012: 9; Skea et al 2011: 42).

¹⁰³ Hay describes it as ‘displacement of responsibility from government to public or quasi-public authorities’ (see Kuzemko 2011: 63).

¹⁰⁴ This idea was arguing that in the wake of ‘full disciplines of the market’, even a regulatory role would be naturally downplayed (Pearson & Watson 2012: 7).

¹⁰⁵ As a result of this disinterest in innovation policy, energy RD&D funding after privatisation witnessed almost a ‘collapse’. See figure 6 in Appendix B.

¹⁰⁶ This happened due to their inherent inflexibility, scale and risk (Pearson & Watson 2012: 10) and despite strong governmental commitment to support nuclear energy by either a ‘nuclear tax’ in the 1989 Electricity Act or Non Fossil Fuel Obligation (NFFO).

¹⁰⁷ Nevertheless, the legacy of subsidising coal was kept under the new paradigm, respecting its historical socio-economic role as the heart of ‘British industrialisation’ (Kuzemko 2011: 110).

¹⁰⁸ The lower investment risk for gas was due to its low capital cost/higher running cost characteristics.

¹⁰⁹ The structure changed from a nationalised monopoly to a privatised duopoly and then oligopoly.

¹¹⁰ New Labour evaluated the Pool market as discriminatory in favour of gas and against coal, as their traditional political supporter (Henney 2011b: 52).

¹¹¹ This mechanism then received strong criticism as a 'game changing policy failure' in terms of either missing its objectives or undermining competition (Henney 2011a: 79). It was characterised as comparably less transparent, less liquid and more difficult to enter than the pool market, mainly because of the absence of 'benchmarking' function (Helm 2010: 2; Henney 2011b: 53).

¹¹² Kern (2012: 10; 2011: 15) points to the emergence of a complementary policy rhetoric to the competitive market around the notion of 'developing low carbon technology'.

¹¹³ Even the underinvestment feature of the security concern that had already been understood as a consequence of continuous 'statism' was then conceived, conversely, as the result of 'naive marketism' (Henney 2011).

¹¹⁴ Energy was then discussed widely in Parliament and within committees and a range of new actors, and institutions.

¹¹⁵ The introduction of some sorts of geopolitically-informed 'protectionist' policies, like the International Energy Strategy with the involvement of FCO, faced a high degree of 'scepticism within DTI and Ofgem' and therefore they were generally discredited (Kuzemko 2011: 243).

¹¹⁶ Those policies argued that 'the economics of nuclear power now look more positive than 2003' and 'new nuclear power stations lower the costs and risks associated' (DTI 2007).

¹¹⁷ Nonetheless, the new pattern by no means implied a conceptual return to nationalised single-central planning experienced pre-privatisation. Indeed, that trend seems neither desirable nor even possible, due to the inter-dependency of government, industry and the international context (Skea et al 2011: 3).

¹¹⁸ They implied a more 'regulative', 'quantitative, plan-based, centrally directed', 'command and control' approach (Skea et al 2011:3; Pearson & Watson 2012: 31-32).

¹¹⁹ It is also the case for the Low Carbon Industrial Policy (BIS and DECC 2009) trying to bridge economic potentials of quick transition to a low carbon economy to broader industrial opportunities (Pearson & Watson 2012: 27).

¹²⁰ That condition was 'neither market nor state' (Helm 2010) and was called 'inter-paradigm borrowing' by Kuzemko (2011). Given the resultant intellectual incoherency of such a mixed paradigm, Hall (1993: 280) predicts a pattern of gradual decline in the dominant-original paradigm.

¹²¹ It was completed by the UK Renewable Energy Strategy (DECC 2009) breaking down the means of meeting the 15% renewable obligation from the whole of UK energy and specifying the share of different sectors of it (Skea et al 2011: 51).

¹²² 'Objective setting is one method, therefore, of giving [ideas] political saliency and agency in that they move policy in certain directions. Indeed, policy objectives can be understood as a statement of what a nation or a group of nations holds important. Targets are a method of holding political institutions accountable' (Kuzemko 2013b).

¹²³ DECC came about from merging energy-related policy functions of the Department of Business, Enterprise and Regulatory Reform (BERR) and the Department of Environment, Food and Rural Affairs (DEFRA).

¹²⁴ The formation of CCC intensified policy activities by providing louder recommendations for and 'criticism' of government policies (Pearson & Watson 2012: 26).

¹²⁵ Guy Newey, the head of the Environment & Energy in Policy exchange, describes it as 'the dangers of energy targetism' (Newey 2013). It refers to setting targets without knowing how to meet them.

¹²⁶ As Exxon Mobil Energy Outlook to 2040 shows, electricity will be the dominant source of final energy consumption making the power sector the focal point of competition between all the primary fuels (Exxon Mobil 2013).

¹²⁷ Arguably this process was started by Ed Miliband in 2008 when he called for 'a strategic role for government'. However, he has been criticised for 'late diagnosing' and 'slow responding' to the challenges of the electricity market (Interview 41).

¹²⁸ More importantly, it proposed a 'far reaching energy market reform' (Newbery 2011: 5) through five 'policy packages'. For an overview of those scenarios, look at figure 13 in Appendix B.

¹²⁹ This document disputed market ability to deliver 'excess supply' and 'a particular technology profile'. Thereby it urged government to 're-assess' the current approach towards a 'mixed balance between market and government' (Skea et al 2011: 51, 60-61; Helm 2010: 5).

¹³⁰ Particularly, it criticised a sense of 'complacency' for easy gain of the low carbon target due to recession and over-reliance on the adequacy of EUETS (Skea et al 2011: 48; Pearson & Watson 2012: 27; Henney 2011a: 278).

¹³¹ It consisted of a complex package of measures like smart grid; feed-in tariff; emission performance standard; a floor price for carbon; a review of Ofgem's role; and de-centralised community-based power generation.

¹³² The wholesale pool market is the first followed by the NETA/BETTA models.

¹³³ At the time of final editing, the Energy Act received Royal Assent on 18 December 2013 (DECC 2013a).

¹³⁴ This complex label reflects the rejection of other possible forms of FiT as well as some signs of Coalition Agreement terminology (Henney 2011a: 313). See figure 15 in Appendix B.

¹³⁵ It would be used on an irregular basis in the case of an increasing share of intermittent generation like wind in the final portfolio. It may lead to another set of contractual design to reserve sufficient capacity (See figure 16 in Appendix B).

¹³⁶ Although it received several criticisms as a 'redundant', 'dispensable' (UKERC 2011: 14) and ineffective mechanism (FoE 2011: 10), the EPS resulted from an electoral-political promise of Conservatives to environmental NGOs to symbolically distinguish them from Labour.

¹³⁷ For a comparison between CPF and EUETS, see figure 14 in Appendix B. Nonetheless, the adequacy of CPF for incentivising investment has been questioned due to the lack of de-risking function and 'bankability' (Newbery 2011: 7; Henney 2011a: 312).

¹³⁸ The term hybrid model has been used frequently in recent studies (Bolton & Foxon 2013: 15; Butler 2013; Kern et al 2013).

¹³⁹ Newbery (2011: 12) points to the lack of 'de-centralised investment decision' and competition as well as a 'maximum de-risking' for investors as EMR's characteristics that are in clear contrast with a typical market model. Apart from EPS, a constraining regulatory standard, the only market-compatible mechanism of EMR is CPF.

¹⁴⁰ 'Government, while intervening in a more direct way to pursue its goals of long term decarbonisation and energy security, is still reliant on private actors and market processes to deliver its energy policy priorities (Bolton & Foxon, 2013: 16)'.

¹⁴¹ These signals are a substitute for central government control of the whole power generation sector which used to exist through the CEGB.

¹⁴² This amendment was proposed by a group of cross-party MPs. Eventually, in June 2013, it was rejected by a low margin of votes - 290 MPs to 267 voted against.

¹⁴³ This fact was highly contested as a 'Westminster tragedy' by a wide range of stakeholders for the 'lack of vision' and 'choosing the tools without knowing what the outcome is' (WWF 2011; Green Peace 2011; Exeter EPG 2011). They argue that the absence of a clear target could cause a high risk of "investment vacuum" after 2020.

¹⁴⁴ Affordability in the case of EMR includes both fuel poverty of end users and the lack of competitiveness for energy intensive businesses (Platchkov et al 2011: 5; Consumer Focus 2011; EIUG 2011: 2; CBI 2011: 5). A growing advocacy coalition of new members including energy intensive industries, consumer representatives and tax payer alliance is gradually emerging (Interview 17). For an estimation of EMR's impact on affordability see figure 17 in Appendix B.

¹⁴⁵ As the result of 'inherited tension' between policy objectives, EMR has been characterised as 'internally inconsistent' and 'incoherent in wider policy landscape', suffering from 'redundancy', 'dispensability', 'duplication' and 'policy overlap' (Platchkov et al 2011: 5; UKERC 2011: 1; Exeter EPG 2011: 2; Oil & Gas UK 2011: 2; FoE 2011: 2).

¹⁴⁶ The EPS is the most compatible mechanism with the 'deep environmentalism' idea. 'What CPF and EPS are designed to do is give a *carrot* and a *stick* to the market place' (Interview 13).

¹⁴⁷ It is perhaps in consistence with a wider pattern of strengthening the ministers' roles in 'civil service reform'. The concern is now about undermining civil service *political impartiality* and threatening Whitehall's independence (Butler 2012). Another example happened when the prime minister personally blocked the appointment of permanent secretary of the DECC which showed that 'the energy department is still a very volatile and political place'.

¹⁴⁸ Winskel et al (2012: 14) points to the ‘re-launch’ of the Low Carbon Innovation Group comprising almost all energy innovation institutes. It shows more ‘centralised’ innovation governance.

¹⁴⁹ Nick Butler has made similar statements in the following article as well: <http://blogs.ft.com/nick-butler/2013/01/16/the-uk-energy-departments-corridors-of-power/>

¹⁵⁰ Such tension is going to result in a substantial risk for EMR insofar as recently two main architects of the reform have resigned from their position at DECC.

¹⁵¹ In all scenarios under CM, expectedly, gas could play the role of flexible backup for peaking plants.

¹⁵² The current level of EPS at 450g CO₂/kWh as well as its ‘grandfathering’ nature ‘give a free ride to unabated gas-fired plants’ to continue ‘as long as it is economically viable under CPF’ (Interview 17).

¹⁵³ Unsurprisingly this fact was strongly criticised by the CCC (2012) and environmental groups as a ‘completely incompatible [scenario] with the UK’s carbon targets’ that might ‘cremate the Conservative’s green credibility for eternity’ (Carrington 2012).

¹⁵⁴ While EMR claims neutral approach towards all three low carbon technologies, CCS has always been marginalised due to the long distance it still has from actual marketisation.

¹⁵⁵ Centralisation of large-scale technologies in the UK power industry has historical roots in the policy mindset and infrastructure design. It is more related to the ‘logic of situation more than a strong ideology’ (Interview 16).

¹⁵⁶ After a collapse in UK energy innovation, the key to recently arisen energy technology is not ‘blue skies innovation but coaxing existing inventions through the so-called Valley of Death to commercial scale’ (Harrabin 2012). For an overview of the UK energy innovation spend, see figure 19 in Appendix B.

¹⁵⁷ Mark Winskel (2013) points to an increasing risk of ‘forced up-scaling’ and ‘early lock-in’.

¹⁵⁸ I would like to thank my colleague Mike Kattirtzi for suggesting ‘ambivalence’ instead of my initial terminology of paradigm confusion.

¹⁵⁹ This does not mean that all mentioned dimensions have changed fundamentally. There are several claims that some features still have not changed adequately. For instance, Lockwood (2013) points out that the creation of CCC and DECC do not reflect a complete structural shift.

¹⁶⁰ Otherwise there is a remarkable risk of policy failure and interruption. EMR has been characterised by an interviewee as ‘the beginning of a bigger change [theoretically] that may not happen at all [practically]’ (Interview 24, Economist and director of a low carbon Research Institute, January 2012).

¹⁶¹ Indeed, technology is not a separate part of a system. Socio-technical transition framework tries to incorporate the interaction of material and non-material components of a system into analysis.

¹⁶² ‘Beyond legal targets there is little similarity between the two countries’ energy policies on the ground. [Contrary to the UK] Germany is transforming energy system practices from a centralised top down to interlinked system, regional and local networks; as well as dispersing energy providers geographically, by scale and by users’. (Mitchell 2013)

¹⁶³ The stages heuristic approach (Lasswell 1956; Brewer & deLeon 1983; 1999) suggested simply breaking the complex policy process down functionally into a series of sequential stages such as agenda setting, policy formulation, implementation and evaluation. That generation was then replaced due to their analytical shortcomings and over-simplification.

¹⁶⁴ For example, in the case of the UK electricity policy in the early 2000s, increasing the share of renewable and energy efficiency were seen as ‘overall solutions’ to meet new low carbon policy objectives. Consequently, RO was introduced as a policy instrument to facilitate those targets.

¹⁶⁵ It is an addition to the four already developed policy components: policy paradigm, objectives, institutions and instruments.

¹⁶⁶ Though, it also points in the absence of an alternative advocacy coalition with a cohesive policy paradigm as the main reason behind incomplete paradigmatic shift in the EMR.

¹⁶⁷ Though, inspired by neo-institutionalism, ‘for several decades and with few exceptions, major events have been conceptualised as occurring “external” to policy subsystem boundaries’ (Nohrstedt & Weible 2010: 19).

¹⁶⁸ Nohrstedt and Weible (2010: 19) point in ‘phenomenological’ differences between them.

¹⁶⁹ ‘The greater the geographic and policy proximities, the greater the impact of the crisis’.

¹⁷⁰ Policy literature points in common ‘managerial challenges’ that current policies face to meet new contextual requirements involving surprise, threat to core societal values, uncertainty, urgency, scale, and necessity of reform (Boin et al. 2009; Widmaier et al. 2007).

¹⁷¹ Winskel (2012) characterises that governance model as ‘corporatism and technocracy’. Similarly, Henney (2011a: 335) describes it a centrally administered; publicly owned; and ‘politically manipulated’ system.

¹⁷² There were two oil shocks in 1970s. The first one in 1973/4, in particular, led to the creation of Department of Energy in the UK and International Energy Agency in the OECD level.

¹⁷³ The cases of Sizewell B nuclear station and coal fixed price contracts and 1984 strikes are two examples.

¹⁷⁴ This governance model is labelled differently by Mitchell (2008) as Regulatory State Paradigm (RSP) and by Kuzemko (2011) as Pro-market Energy Policy Paradigm (PEPP).

¹⁷⁵ I have got this term from Hadfield (2007: 2).

¹⁷⁶ Helm (2003) argues that such ‘pragmatic, market based Conservatism had been developed from the eighteenth and nineteenth centuries.’

¹⁷⁷ He was the ‘key architect’ of the wider privatisation strategy.

¹⁷⁸ Economists like Keith Joseph, Eileen Marshall and Stephen Littlechild played a crucial role in linking academics with politicians.

¹⁷⁹ By hiring a large number of ‘likeminded’ energy analysts with ‘economics’ and ‘statistics’ background, the pro-market paradigm was deliberately institutionalised in both DTI and Ofgem. In particular, Kuzemko (2011: 232) describes Ofgem’s approach as ‘off the end of economic scale’. Such market legacy is still visible in Ofgem approach:

We consider that the appropriate use of competitive mechanisms is likely to lead to the best outcome for consumers over the long-term, that would be competition ‘in the market’ or competition ‘for the market’... Of course, the success of these measures will depend heavily on the role of the market on the final EMR package (Ofgem 2011: 3).

¹⁸⁰ Helm (2003: 65) emphasises on that deliberate decision: ‘Lawson, like Thatcher, put particular emphasis on choosing the right individuals to carry out his policies. He wanted to find managers who were ‘one of us’ ... executives were to be chosen with a mind to the political objectives as much as their managerial competence’.

¹⁸¹ The pro-market advocacy coalition is still active in the UK electricity policy subsystem. In the case of EMR, the main important market-oriented bodies are right wing think tanks commissioned by old Tories, like Policy Exchange or Regulatory Policy Institute, as well as neo-classical economic institutes like Cambridge Electricity Policy Research Group and Oxford Energy Institutes. There are several other consultancies with explicit market affiliation. Amongst governmental and public bodies also this approach has been institutionalized mainly in the Treasury, BERR and Ofgem as statutory body for protecting competition. Perhaps other state departments to some extent are influenced by the legacy of this paradigm as well. Businesses that used to be a part of that coalition are now more opportunistic and looking for rent seeking.

¹⁸² Change in the approach to the role of state was not limited to energy sector exclusively. It was a part of ‘broader macroeconomic governance ideas’ emerged at that time.

¹⁸³ Helm (2005: 4) points to a set of background-contextual conditions that facilitated these easy gains. They include the disconnection between economic growth and energy consumption and thus, a temporary fall in energy ratio; the availability of indigenous resources in North Sea; the heavy state-funded investment in energy infrastructure; a limited improvement in energy efficiency; the reduction of oil price; and, a gradual reduction in CO₂ due to a shift from coal to gas: ‘dash for gas’.

¹⁸⁴ This paradigm was also disseminated internationally via ‘multilateral institutions’ and ‘good governance standards’ (Youngs 2009: 8). As such it is argued that neo-liberal ideas dominated ‘both energy and wider macroeconomic policymaking in the UK and beyond’ (Kuzemko 2011: 61).

¹⁸⁵ Such sense of success related to achieving some features like over-supply; effective competition; and, low-emission (Helm 2006: 1). However, there were still a group of critics who were complaining

about ‘overstating’ the benefits of marketisation and overlooking its consequences. (Pearson & Watson 2012: 15, 19).

¹⁸⁶ Previous chapter showed how significant all policy components changed at that time. Kuzemko (2011) points in de-politicisation, either in technocratic or in public level, as the main strategy for institutionalising pro-market policy paradigm.

¹⁸⁷ The term of orthodoxy has been used in different studies with reference to an ‘ideological lock-in’ taking competition as ‘fait accompli as opposed to social construct’ (Kern & Mitchell 2011: 8; Helm 2005, 2003; Mitchell 2008).

¹⁸⁸ This status is called ‘de-skilling’ by several studies (Helm 2005; Skea et al 2011; Kuzemko 2011).

¹⁸⁹ Particularly, the decline of emission driven by dash for gas was almost reversed in early 2000s. In addition, it became clear that the Climate Change Programme (DETR 2000) could not meet emission targets (Lockwood 2013: 7).

¹⁹⁰ Climate change was officially recognised by PM Thatcher in her speech to Royal Society in 1988. Environmental target was firstly acknowledged by the 1993 Coal White Paper (DTI 1993).

¹⁹¹ Whereas ‘Old Labour’ was traditionally associated more with affordability and equity values, the New Labour government tried to be seen as market friendly. Nevertheless, some in Labour were still concerned that a pro-market ‘economic paradigm’ considers growth without adequate consideration to environmental and social consequences.

¹⁹² The report of Royal Commission on Environmental Pollution (RCEP, 2000) was widely cited and very influential for Prime Minister Blair to get involved in energy policy nationally and then internationally (Henney 2011a: 257).

¹⁹³ In 1988, UK signed the Large Composition Plan Directive. Then, the 1992 UNFCCC and the Kyoto agreement in 1997 were the main drivers of UK climate policy. It was then productively coupled with the leadership aspiration of UK foreign policy by the entrance of the FCO.

¹⁹⁴ Climate policies overall require more direct state involvement. They are ‘often associated with the left’ and ‘less-devolved or independent’ policy implications (Kaletsky 2010). It has conceptual roots in theories that are more aware of environmental and political aspects of energy than neo-liberal approaches, like the modern versions of ‘leftist economic and political views’ (Interview 10, Emiratus head of an energy and environmental policy institute, November 2011). Nonetheless, Rowson (2013) argues it has no necessary contradiction between the values of the centre-right and the challenge of responding to climate change, whilst the left has a *relatively* coherent position on that (it’s by no means clear cut) and that many of the potentially effective forms of action (subsidies, regulation, taxation) fall out of their worldview.

¹⁹⁵ Problem solving here is assumed the functional coherence of existing phenomena within the given framework. It by no means seeks to shift the dominant interpretive paradigm.

¹⁹⁶ In addition to the institutionalisation of market ideas in both Ofgem and DTI, they were supported by an influential combination of powerful and wealthy private bodies including big energy generators and investors in the City, who had been benefited a lot from the market (Interview 11, Senior planning policy officer at RSPB, December 2011).

¹⁹⁷ Bernstein called it the emergence of a ‘liberal-environmentalism’ compromise (2001: 187). In a similar statement Kuzemko (2011: 154) describes such ‘weak compromise’ as a political strategy for the Labours to ‘disarm political opposition’ and to ‘buy time’.

¹⁹⁸ Kern (2010) also points in the emergence of a supportive policy discourses like the ‘low-carbon technology development’.

¹⁹⁹ The responsibility of statist exporters for ‘negative effects’ on energy markets has been mentioned in several studies (Mitchell et al 2001; Henney 2011).

²⁰⁰ Geopolitical approach has been defined by linking the possession of energy resources with issues like the influence of foreign policy, ‘state sovereignty’ and ‘national-level politics’ (Correlje & Linde 2006).

²⁰¹ There is assumed an ‘inter-subjective relationship’ between public awareness and political action. It links between the interpretation of *context* and the way of *conduct* (Widmaier et al 2007: 755).

²⁰² Given the nature of insecurity challenge as a shared concern, it has been used strategically by various advocacy coalitions. In further sections, this chapter shows how security was then exploited as a justification for different policies. Also the next chapter illustrates how security was a justification for

different generation technologies. From this viewpoint, I agree with what a high profile energy analyst from RSPB argued:

Security is mainly an indigenous and politician-led concern. It shapes the basic philosophy of state. Therefore it has never been absent in any policy. Generally security here, I think, is more like a shared discourse than a base for shaping a distinctive coalition (Interview 11, Senior planning policy officer at RSPB, December 2011).

²⁰³ This perception of security crisis in the mid 2000s is evident by interviews quoted in Kuzemko (2011: 238).

²⁰⁴ Henney (2011a: 339) argue that electricity industry is fundamentally different from other sectors. The 'politicisation is inevitable' and 'power and politics go together in all countries'.

²⁰⁵ I got the idea of 'market demission' from Alex Henney's term: 'demise of competition' (2011b: 50).

²⁰⁶ By the mid 2006, it became clear that UK will miss its domestic 2010 carbon reduction and renewable targets by 'a large margin' (Skea et al 2011: 61; Lockwood 2013: 8).

²⁰⁷ It refers to different natures of climate and security. While security was an urgent, visible, evocative and politically salient narrative (Lockwood 2009), it was not understood as the failure of system and was not translated to policy solutions and recommendations. On the other hand, although climate was a commonly acceptable and permanently important issue, it was not seen as tangible and immediate crisis compared to others and across the time (Giddens 2009: 2). Therefore, Lockwood says that climate is more a 'valence' issue than a 'salient' one (2013: 16). For a comparative idea, see figure 22 in Appendix B.

²⁰⁸ Henney points in '*naïve marketism*', which ideologically prescribes the *unified market formulation* too far into all areas regardless of 'complexity; transaction cost; relevance; and, practicality' (2011a: 343). It also suffers from an extreme pessimism of any form of state intervention (Pearson & Watson 2012: 30). Whereas, the reality of energy policy is 'much messier' than what market supposes.

²⁰⁹ Several economists I interviewed (Interviews 17, 19, 24 and 26) described that period of time as when 'the voice of neo-liberal economics was balanced' with a more 'regulatory quantitative-oriented' perspective. The dominance of 'finance techniques' in shaping a 'predictable future' and meeting the 'certain targets' was also another characteristic mentioned. This approach was then manifested in the CCC reports:

'a quantity rather than price-based instrument would provide most confidence over delivery...It will be necessary for government to determine the appropriate *pace of de-carbonisation* and to translate it into contracting strategy' (CCC 2011: 1).

²¹⁰ It happened because of both targets' characteristics as imprecise, vague and with 'get-out-clause' and technocratic de-politicisation of those departments.

²¹¹ Such emphasise on targets was due to this assumption that there is no enough political will to tackle climate change. It also reflected both also new changes in climate science and modelling (Lockwood et al 2007).

²¹² There was always a fluctuation in climate public interest. After a decline in public interest in climate change in early 2000s for 2 years, its salience rose steadily from around 2% in early 2004 to around 12% in mid-2007. For the result of the Ipsos-MORI tracker poll see figure 21 in appendix 1.

²¹³ Lockwood (2013: 9) points in the formation of a very broad coalition of civil society groups, including the National Federation of Women's Institutes, Christian Aid, the National Trust, Oxfam, UNISON and the RSPB. In addition, some interviewees from green NGOs marked the engagement of well-known figures like music stars in Liberty Concert (Interview 14, 25 and 28).

²¹⁴ They pointed in dynamics like receiving 'accumulative subsidies', using 'communication instruments and campaigning potentials', attracting 'skilful members', gaining more 'analytical ability', and moving from a merely 'ideological enthusiast' to an 'analytically credible' position.

²¹⁵ Over 400 MPs signed a parliamentary motion for the Climate Change Bill (Lockwood 2013: 9).

²¹⁶ It is quoted from the then Environment Secretary David Miliband that "the Labour could not get into the position of being the only major party not in favour of the proposed bill" (Lockwood 2013: 10).

²¹⁷ I heard similar description in most interviews conducted, e.g. Interviews 17; 15; 34; 41; 43. Though while in the 2010 election, all major party campaigns presented an ‘environmentally decorated’ politics, climate change was never amongst the top-ranked electoral strategies (Lockwood 2013: 20).

²¹⁸ I got this term from a economist specialised in the micro-economy of energy market. He differentiated between ‘energy economics’ and ‘climate economics’ in the way that while the first neutrally seeks the most economically efficient design, the latter is biased in favour of climate targets and is to strategise the way of reaching climate targets (Interview 19, December 2011).

²¹⁹ An organisation advising on ethical, socially responsible and environmental investment

²²⁰ An organisation working with shareholders and corporations claiming to disclose the greenhouse gas emissions of major corporations

²²¹ An independent, non-governmental committee aiming at shaping ‘a synergy of climate experts, world leaders, Nobel peace laureates, and shapers of opinion’ to help creating the political will to address climate change. It produced a report *Climate Change – Everyone’s Business* in 2006.

²²² Despite some challenges with current policies, research undertaken by The World Energy Council (WEC, 2012) among 40 energy industry executives shows that major energy firms are still amongst who calls for clear ‘political action and leadership’ for carbon emissions targets.

²²³ Big energy industry companies are the most influential. Their objective is to make money... They are happy with new objectives, once the cost of new policies is paid by others, particularly the government and consumers... Actually they see new investment as a *gigantic opportunity* at relatively low risk similar to the introduction of rail industry in US (Interview 1, Formerly in Scottish energy policy and member of UKERC advisory board, November 2011).

²²⁴ Such form of inter-dependency between government and incumbent businesses was also mentioned in interviews with business representatives (Interview 33, 38, 41 and 44). A regulatory economist explained how opportunistically businesses have shifted their approach towards state intervention:

‘The energy companies have been moving around, they have tried to adapt with the situation. Possibly they originally have been pro-market, but they always are willing to support an intervention which they think is good for their strategy. If any form of government regulation could secure their market and profit, they do not like real competition. Therefore, they prefer shifting their ‘commercial decision making’ towards ‘a political rent seeking’ model’. (Interview 17, Senior policy research fellow at Policy Exchange, December 2011).

²²⁵ The breadth of that consensus was reflected in almost 17,500 responses to the bill consultation call and high-level cross party supports in Parliament.

²²⁶ This term is quoted from an interview with the then PM energy advisor in Lockwood (2013: 28).

²²⁷ Lockwood (2013: 14, 26) uses the metaphor of ‘binding the hands of future government’, regarding the problems of ‘time-inconsistency’ and ‘credible commitments’.

²²⁸ The cultural implications of the CCA have been mentioned in several interviews I have done. Whether admiring or criticising, they acknowledged that since the CCA, the UK energy policy is locked in low-carbon paradigm (Interviews 4, 11, 13, 15). Nonetheless, it by no means has ended political debate over climate, as seen over the gas-renewable conflict in the 2012 Energy Bill.

²²⁹ As an example, when Chancellor resisted against the Fourth Carbon Budget in 2011, it ultimately was passed just by increasing the risk of legal claim and the pressure of the CCC.

²³⁰ He referred to one of the Westminster Forums which I interviewed him just after that.

²³¹ In previous chapter, this research claimed that policy changes are not complete just by shifts in objective and institutional levels. It suggested that for a paradigmatic shift, all five policy components need to alter significantly.

²³² As discussed in previous chapter, in continuation of the CCA, this period led to a series of accelerated changes in all levels. Banning the RO, introducing FiT, revising the Ofgem duties and remaking UK energy innovation system were some examples.

²³³ For the UK it means that %15 of whole energy should come from renewable sources by 2020.

²³⁴ One of the few speculations I have heard for that ‘odd’ decision was based on international aspiration of the UK government and Prime Minister ‘to lead Europe-wide debate’ (Interview 41) influenced by an originally ‘German proposal’ (Interview 39) more than a deliberate and well-analysed

policy decision (Interviews 39, 22). Another interviewee highlighted the indirect influence of the European environmental groups in Brussels on the UK policies (Interview 41).

²³⁵ Following quotation from the DECC EMR team senior member shows how serious is that obligation.

I think, as I've described in terms of the renewables goals, that is the statutory EU targets, that's not something that we can go back to Europe and change. The renewable goals are agreed, group EU statutory goals; therefore we will face infraction proceedings if we do not hit our renewable targets. Now the implications of those proceedings are not clear right now, they could, and are likely to involve, some sort of fine and some sort of penalty, but a lot will depend on progress elsewhere and what's happening across the EU, but Government is 100% committed to delivering against its renewables goals.... (Interview 29, July 2012).

²³⁶ It is deterministic because it is not about what market wants but it aims at bringing something that is not 'already marketised' (Interview 31).

²³⁷ This dynamic was partly mentioned by many other interviewees. A then member of DECC EMR team argued that by bringing RO from 'margin' to the 'centre', the Directive made it as a '*machine of subsidy*' (Interview 34, August 2012). Therefore, particularly regarding the era of austerity, such dramatic growth in the cost of RO was neither economically affordable nor politically acceptable. In the next chapter, its specific implications for nuclear and renewable technologies have been discussed.

²³⁸ I got this term from an interview with a policy research fellow at Green-alliance (Interview 14, December 2011).

²³⁹ It reflected also a shift in understanding of the 'uniquely difficult nature of climate change as a public policy problem'. From this point of view, climate change and renewable targets were accelerating rationales for more influential and powerful government ideology (Interview 12, Government advisor and the EMR Technical Expert Panel, December 2011). Henney (2011a: 336) concludes that 'now the world looks different'. It seems that liberalised competitive market and 'political objectives of de-carbonisation' and almost social targets are fundamentally 'divergent'. Similarly, a former politician and head of an Energy Institute said:

Obviously there are also ideological issues here. The fact that carbon is, in the word of Lord Stern, an enormous market failure means that to reduce carbon emission you need a strong government action, and for some people ideologically strong government action is unacceptable. The way that I try to characterise that is for these people, strong governmental action as an answer under a big question, because that is not an acceptable answer to anything. Obviously part of that comes from neo-liberal assumption that markets basically provide progress and solution to societal problems and clearly climate change strays very strongly at that (Interview 15, December 2011).

²⁴⁰ The Prospect is the union for professionals, representing engineers, scientists, managers and other specialists in areas as diverse as agriculture, defence, energy, environment, heritage, shipbuilding, telecoms and transport. We are the largest union in the UK representing professional engineers.

²⁴¹ Oil and gas prices more than trebled between 2002 and 2007, with oil prices peaking at over \$140 per barrel in 2008 (Youngs 2009: 1).

²⁴² Despite the target set in 2003 that fuel poverty should be eradicated by 2016-18 (DTI 2003: 107), by 2008 this had risen to 3.3 million households, compared to 1.2 million fuel poor homes in 2003. It then increased to 5.5 million by 2009 (DECC 2011b).

²⁴³ Events like the 2013 lobbying scandal around MP Yeo, the then chair of ECC Select Committee, is likely to further damage the already troubled relationship between the wider public, government, and energy companies.

²⁴⁴ A recent report by IPPR suggests that with more competition in the market, bills could be as much as £70 less per year. Similarly, a wide range of interviewees and academic literature (Henney 2011; Kern et al 2013; Lockwood 2013) have highlighted this lack of competition and 'the hegemony of

regime incumbents' in electricity market as a signal for the *market failure* even in meeting its original claims.

²⁴⁵ The Exxon Mobil Energy Outlook to 2040 shows that electricity will be the 'dominant source' of final energy consumption making the power sector the 'focal point of competition' between all the primary fuels. For an estimation of increase in electricity share in end use energy see figure 23 in Appendix B.

²⁴⁶ The weakness of EUETS has been mentioned in several studies (Skea et al 2011, Newbery 2011) and interviews. A former politician and head of an Energy Institute said to me:

Another thing I would add is that the *original hope* had been in a rather reasonably stable and adequately high carbon price would emerge from EUETS, and of course that did not happen for various reasons and that is a very significant lack of incentive for investors to put in low-carbon generation (Interview 15, December 2011).

²⁴⁷ The inadequacy of the RO has been criticised by a wide range of stakeholders. Below is an example of responses to DECC consultation call for the EMR.

The ROC regime has produced a great deal of uncertainty for developers, leading to high finance rates. It has been said of ROCs that never, in the field of renewable, has so much been spent by so many to deliver so little' (London Analytics, 2011: 1).

Based on a scenario building model, only a half of the minimum target, 15.4%, is likely to be met by 2016. (See figure 8 in Appendix B presented by Gaynor Hartnell, the CEO of Renewable Energy Association, May 2012).

²⁴⁸ It happened mainly due to a set of international developments in gas industry like Russian agreement and the discovery of shale gas. They suggest that gas is more plentiful and less geographically concentrated than what people feared.

²⁴⁹ Almost a quarter of peak demand needs to be closed by 2016, due to either the LCPD obligations or the normal retirement. It would increase to three-quarters of the UK's existing generation plant stock by 2025 (Skea et al 2011: 23; Newbery 2011: 1).

²⁵⁰ The risk of blackout culminates when the 'capacity margins could hit 5% with more intermittent supply'. Based on Ofgem's assessment, the risk of power cuts would increase from near-zero in 2012 to one-in-12 by 2015 and one-in-two if demand was very high. However, DECC forecasts are far less gloomy. For more information look at figure 9 in Appendix B.

²⁵¹ Whilst in historic models we have actually been investing £10bn to £12bn per annum, some people put the investment challenge by 2030 at well over £300 billion (Byles MP 2013). For an estimation of investment required in electricity sector by 2020 see figure 12 in Appendix B.

²⁵² There are also remarkable arguments that regardless of low-carbon generation and excess supply required, current energy mechanism is unable even to finance merely the replacement of forthcoming closures (Interview 16; Helm 2010; Henney 2011). By contrast, a group of market economists refer such capacity investment challenge back to the *failure of policymaking* rather than the *failure of market thinking*. In interviews with some academic proponents of market economics from Oxford and Cambridge, they pointed in examples of wrong policies like improper design of NETA, political support of nuclear and technical problems of RO, as the main reasons of current challenge. As such, they claimed that still pure electricity market can work for economic objectives, unless it is counterproductively affected with political interferences (Interviews 16, 19 and 22).

²⁵³ In a further evaluation, Henney (2011b: 55) warned that ironically, as the result of multiple subsidies, even conventional functions of electricity market have also been undermined. In fact, market incentives have been replaced by political lobbying for getting subsidies and the planned CCGT investments have been affected negatively due to increasing capital cost and political risk (Henney 2011b: 55).

²⁵⁴ More importantly, it proposed a 'far reaching energy market reform' (Newbery 2011: 5) through five 'policy packages'. For an overview of those scenarios, look at figure 13 in Appendix B.

²⁵⁵ This document disputed market ability to deliver ‘excess supply’ and ‘a particular technology profile’. Thereby it urged government to ‘re-assess’ the current approach towards a ‘mixed balance between market and government’ (Skea et al 2011: 51, 60-61; Helm 2010: 5).

²⁵⁶ Particularly, it criticised a sense of ‘complacency’ for easy gain of low-carbon target due recession and over-reliance on the adequacy of EUETS (Skea et al 2011: 48; Pearson & Watson 2012: 27; Henney 2011a: 278).

²⁵⁷ The then member of energy policy team in CBI described it as ‘one of the main mechanisms for lobbying and convincing policy makers’. By this, business conveyed this message to them that ‘under current electricity market, we cannot deliver low carbon generation. We need a new electricity market’. (Interview 35, August 2012).

²⁵⁸ While Labours claim a lot of continuity and consensus between the two Governments in 2010, their decision to defer market reform has received several criticisms, mainly from businesses, for ‘late diagnosing’ and ‘slow responding’ to the challenges of electricity market (Interview 41, CBI Energy Group member, August 2012).

²⁵⁹ It consisted of a complex package of measures like smart grid; feed-in tariff; emission performance standard; a floor price for carbon; a review in the Ofgem's role; and, de-centralised community-based power generation.

²⁶⁰ Several interviewees within civil service also pointed to the role of international policy learning in EMR. A member of EMR team in the DECC told me that they had arranged a team for comparative studies and also kept their connection with other countries in different levels. As such, one important institutional platform facilitating cross-European learning was the European commission which informally connects different countries policy makers under its European forums and initiatives (Interview 34, DECC EMR team, August 2012). Experiences of other countries were reflected, particularly, in design of CM and CfD (Interview 35 and 36, Ofgem Wholesale Market team members, August 2012)

²⁶¹ A part of interviewees, mainly from academia and NGOs, complained that ‘policymakers listen to somebody who says what they want’ and critics are always marginalised (Interview 6, professor of energy policy and head of a research institute on energy governance, April 2013). Such imbalance influence also has been evident in the next chapter about renewable and nuclear lobbies.

²⁶² I got this term from an interview with a senior member of energy policy team in Consumer Focus (Interview 40, August 2012).

²⁶³ The appointment of Owen Paterson as new Environment Secretary and the replacement of renewable-fan Energy Minister Charles Hendry were described by the environmentalists as “declaring war” from Mr. Cameron on the environment: “There is a shift away from greener ministers in posts towards less green ministers and I think that's serious” (Whitehead, a member of the Commons Energy Committee, in Harrabin 2012).

²⁶⁴ Such tension was mentioned in the media as ‘an unholy war’ (Carrington 2012b) and ‘battle royal being waged at the heart of government’ over the future role of gas (Ekins 2012). The Lib-Dem Leader made it clear when he said:

We made no secret of the fact we wanted to set a target in this Parliament, but as it was not in the coalition agreement or any of the parties’ manifestos, the Conservatives flatly refused (Nick Clegg, Deputy Prime Minister, 2012).

²⁶⁵ While in Coalition Agreement, New Conservatives compromised within party tensions over climate, but soon after such conflicts started to arise: ‘[intra-government] tensions are there – but it’s less Lib Dem-Tory, more Tory on Tory’ (Ellis 2012). A backbencher Conservative MP told me:

A growing number of Tory MPs privately do not believe climate change, because it is ineffective. We are not in empire era, we can’t change the world. Support for climate change came not from a deep intrinsic belief. But resulted from modernisation of the party: retreating glassier. If after next election we went alone without Lib-Dem, then by speculate we reduce our coalition-driven commitment to climate change. (Interview 32, Formerly minister in Department of Energy, Conservative MP, August 2012)

²⁶⁶There are potential ‘setbacks’ for climate ideas. Geels (2013) points to changing public concerns, weakening supportive policies and additional system costs as the main reasons. The following quotation shows such a divergence:

‘I think security concern could be met through different policies other than merely environmental ones. Potentially the emergence of unconventional resources and particularly shale gas could distinct climate and security objectives. Similarly any likely decrease in gas price too’. (Interview 15)

²⁶⁷As an example, previous chapter indicated the introduction of the LCF and Carbon Intensive Business Exemption as two additions derived from the rise of affordability.

²⁶⁸Though, nobody is fully satisfied by the whole package, although each coalition has some partial gains. It is a ‘heterogeneous mixture’ of different mechanisms that are not only inconsistent, but also sometimes redundant. As the former senior member of DECC energy team described, EMR resulted from different *work streams* regardless of overall coherent idea (Interview 39, August 2012).

²⁶⁹Though in the literature, there is at least some level of *overlap* between problem definitions and policy design components (Nohrstedt & Weible 2010: 22).

²⁷⁰As shown before, whilst there was no explicitly anti-market advocacy coalition, a wide range of policy actors became gradually less committed to pure market policies. They included growing market sceptic environmentalists like NGOs and even public bodies like CCC. The situation was partially the same for the DECC which was echoed in EMR draft as well. More importantly devolved areas like Scottish Government were more ambitious in supporting their renewable industrial policy. Also consultancy institutions, with leftist ideas and socio-political perspective about energy like the Institute for Public Policy Research (IPPR) and academic departments associated with evolutionary economists and STSers, were less committed to the market thinking. Sussex Energy Group and Exeter University are two examples. More importantly, in line with their business opportunity, low-carbon electricity supply chain industries in general and renewable and nuclear in particular were emphasising on the more direct governmental interference.

²⁷¹Though that in the literature, some other contextual features also have been mentioned as important in policy impact. The issue of ‘timing’ (Boin et al 2009) and a form of serendipity and coincidence of multiple streams (Kingdon 1984, 1995) are two examples.

²⁷²For long time, they had been seen incompatible, due to ontological and epistemological differences between two literatures. This pattern started by the introduction of the Narrative Policy Framework (NPF) by Jones and McBeth (2010).

²⁷³Similarly, policy narrative has also been mentioned as an important ‘coalition’s power resource’ or ‘political agency’.

²⁷⁴Based on the literature, a good policy narrative is characterised as ‘normatively appealing’, ‘cognitively convincing’, ‘interpretively flexible’ and ‘symbolically and simply rationalised’ policy discourses (Kuzemko 2011; Shanahan et al 2011). It has been mentioned as an important ‘coalition’s power resource’ or ‘political agency’.

²⁷⁵The next chapter also shows how nuclear and renewable coalitions constructed policy narratives, such as ‘nuclear as dual solution’ or ‘no public subsidy’, to exploit contextual shifts and present their technologies as common solutions.

²⁷⁶What was in place in 2011-2012 was described as a discursive battle between different advocacy coalitions to frame climate and renewable policies either as ‘green engine of growth’ or by contrast, ‘a barrier to UK competitiveness’ and extra burden of ‘climate costs’.

²⁷⁷In a similar statement, Jones & Baumgartner (2012) describe policymaking as a ‘continual struggle between the forces of balance and equilibrium and the forces of destabilisation and contagion’.

²⁷⁸Following figure developed by Streeck and Thelen (2005) introduces a typology of Policy Change Processes.

	Type of change	
	Continuity	Discontinuity

Process of change	Incremental	Reproduction by adaptation	Gradual transformation
	Abrupt	Survival and return	Breakdown and replacement

²⁷⁹ Streeck and Thelen (2005) followed by Kern and Howlett (2009) argue that ‘gradual transformation’ in a policy mix emerges through one or more of four change mechanisms or pathways, ‘drift’, ‘conversion’, ‘layering’ and ‘replacement’, depending on the level and order of changed policy components.

²⁸⁰ While the notion of policy narrative has been already used in different institutional and social constructivist studies of the UK policy change (Kern 2010; Kern & Mitchell 2011; Kuzemko 2011), it has never been studied complementary to the ACF or other actor-based policy process theories.

²⁸¹ In that category, Gas and CCS have been deliberately overlooked. The inclusion of the first in low carbon options is still controversial, and the latter is yet far to commercialise. Though that both nuclear and renewable represent a wide range of technologies. For example, renewable technology in the UK is largely based on wind technology, both off-shore and on-shore.

²⁸² In that category, gas has been deliberately overlooked, due to controversies around it as a low carbon technology. However, both nuclear and renewable represent a wide range of technologies. For example, renewable technology in the UK is largely based on wind technology, both off-shore and on-shore.

²⁸³ This literature includes historical, social and rational-choice institutionalism. Given ‘*all definitions of institution*’ imply ‘persistence’, they focus mainly on ‘*stability*’ and ‘*continuity*’. Consequently, ‘the inescapable conclusion’ is that any change in ‘self-reinforcing institutions’ requires ‘*an exogenous origin*’ driver and there is no space for an ‘endogenous change driver’ (Mahoney & Thelen 2010: 4, 6 and 7). In other words, given policies firmly consolidated by ‘inert institutional setting’ and ‘policy equilibrium’ status, policy change is rather unlikely unless an external ‘stimulus’ emerges.

²⁸⁴ The UK commissioned the world’s first nuclear power station way back in 1956 at Calderhall .

²⁸⁵ In 2000, electricity produced from renewable sources was still 5% - exactly the same as it had been in 1990 despite a decade of claimed support for renewable, as a part of low-carbon energy, via the NFFO (DTI 2000: 32).

²⁸⁶ Their official optimistic estimation of the cost of nuclear power and the prospect of new generation of less-risky nuclear technology framed the decision of independent politicians (Interview 44). Though based on the Gordon MacKerron (April 2012) report, this estimation has been constantly increased from £1,250/KW in 2007 (DTI) to £3,743/KWh in 2010 (Mott McDonald).

²⁸⁷ Nuclear critics argue that it is not justifiable by either of policy objectives separately. Nuclear is neither competitively economic, regarding its full life cycle and need for subsidy, nor environmentally acceptable, because of its waste pollution and risk. It also could not provide a high level of security regarding its inherited ‘operational inflexibility’ (Interview 10).

²⁸⁸ ‘It’s a *choice of two evils*, but one is much worse than the other’ (Monbiot 2013)

²⁸⁹ They supported nuclear with a wide range of rationales from the safety improvement in new nuclear technology to prioritising carbon over other types of emissions and an inevitable trade-off.

²⁹⁰ My argument here was supported by the Frank Geels’ presentation in the IGov workshop in April 2013, where I attended too.

²⁹¹ This European more ‘receptive political environment’ to green ideas is partially evident in cases that the UK has been influenced ‘indirectly’ by ‘unprecedented’ European policies, as presumably occurred in the case of the Renewable Directive (Interviews 11; 18; 39; 41).

²⁹² ‘At the end of 2011, the poll then showed that support for new build had reached 50% compared to just 20 against, and the latest polls continue to show those in favour of nuclear power outnumbering those against by around 2:1’ (Haslam 2013).

²⁹³ As explained before, publishing reports indicating optimistic estimation of nuclear costs, which are now approved as ‘wrong estimations’, and emphasising the deliverability of nuclear played a substantially important role in shifting the balance of negotiation power of the nuclear lobby (Interviews 43; 44).

²⁹⁴ One important characteristic of current energy civil servants in the UK is their organisational lack of knowledge, experience and expertise. The abolition of the Department of Energy almost 16 years

ago withered away substantially the former policy privilege of the State. This pattern has been intensified by quick job rotating procedures and large scale retirement of experienced staff.

²⁹⁵ This consensus happened through blaming sceptics as ‘left wing dogmatist’ and ‘violent opposition’ (Johnstone 2012: 6).

²⁹⁶ Nevertheless, a group of renewable advocates has criticised renewable targets for the ‘investment uncertainties’ they cause. They emphasise the fact that investors need longer term assurance, beyond 2020, to cover the risks of investment for the people and infrastructure. Given the lack of a ‘renewable specific’ implication of 2050 climate target, a campaigner from Friends of the Earth pointed out that for incentivising investment on renewable ‘2050 target is too far and intangible whereas 2020 target is too close and short-term’ (Interview 25, the then FoE senior policy analyst, January 2012): ‘It is essential that a high level of ambition for renewable technologies is expressed beyond 2020’ (REA 2011: 4).

²⁹⁷ A combination of likely affordability consequences of renewable technologies and their risk of ‘unpredictability’ and ‘intermittency’ has been frequently used by the nuclear lobby to undermine public support for renewable technologies (Interview 44; 43).

²⁹⁸ Note that backbench Tories are mainly climate sceptic and pro-market, but they inevitably prefer nuclear to their low-carbon options: ‘we basically do not like nuclear because it is not justified by market. But we are hoping for engineering solution making nuclear cheaper and competitive’. (Interview 33)

²⁹⁹ One important factor here was the EU Renewable Directive. It incentivised the Coalition Government in a ‘mixed and balanced enthusiasm’ (Interview 25, the then FoE policy director, January 2012). Similar to the partial persuasion of Lib-Dems in the case of nuclear, the Conservatives also accepted a supportive approach towards renewable technologies because of the *banding obligation* of the Renewable Directive.

³⁰⁰ Note that EMR is officially about a trinity of nuclear, renewable and CCS. This chapter has focused on nuclear and renewable technologies because of both their centrality to analytical focus and the practical distance of CCS from market.

³⁰¹ EMR has been widely criticised that its current intellectual design does not reflect explicitly the urgency and the necessity of the renewable target. It relies on further institutional settings of how and by whom CfDs would be finalised (Interviews 25, 30, 33).

³⁰² Particularly there is a challenge between environmental Tories and conventional Tories over renewable subsidy.

³⁰³ ‘I describe *paradoxical* compromise when partners do not like the result contrary to *contradictory* when both sides are satisfied’ (Interview 30)

³⁰⁴ I got this term from Johnstone’s presentation at RGS workshop (2012: 2).

³⁰⁵ Actually the shale gas has shifted intra-government tension from nuclear-renewable in EMR to a gas-low carbon controversy. Accordingly it has been described as a ‘battleground between Chancellor George Osborne, who favours gas-powered generation, and the Liberal Democrats, who want clean energy’ (BBC 2012).

³⁰⁶ Questions like what is strike price and whether there is an auction or not.

³⁰⁷ This term has been used by Kuzemko (2013) for nuclear technology. She argues that different nuclear consequences and risks, i.e. economic and environmental, are often presented subjectively.

³⁰⁸ To re-converge nuclear with renewable, there are some new technical ideas emerging. Very recently, the policy director of the Nuclear Industry Association (NIA) suggested: ‘and the other technical solution we need to find a way that nuclear and renewable technologies can work together, so finding ways to deal with intermittency of renewable’ (Blyth 2013).

³⁰⁹ Presumably, this could be seen as a rationale for the typical shortness of the duration in which negotiated agreements are in place before turning to tension. Given that defected sub-coalitions are more driven by tactical/political interests than stable policy beliefs, changes in political situation could simply lead to their interest divergence. Consequently, such agreements are more likely to encounter fundamental challenges and gradually fail.

³¹⁰ Note that both propositions 2 and 3 relate to the second research question.

³¹¹ In that category, gas and CCS have been deliberately overlooked. The inclusion of the first in low carbon options is still controversial, and the latter is yet far from commercialisation, though both

nuclear and renewable represent a wide range of technologies. For example, renewable technology in the UK is largely based on wind technology, both off-shore and on-shore.

³¹² This literature includes historical, social and rational-choice institutionalism. Given ‘*all definitions of institution*’ imply ‘persistence’, they focus mainly on ‘*stability*’ and ‘*continuity*’. Consequently, ‘the inescapable conclusion’ is that any change in ‘self-reinforcing institutions’ requires ‘*an exogenous origin*’ driver and there is no space for an ‘endogenous change driver’ (Mahoney & Thelen 2010: 4, 6, 7). In other words, given policies firmly consolidated by ‘inert institutional setting’ and ‘policy equilibrium’ status, policy change is rather unlikely unless an external ‘stimulus’ emerges.

³¹³ For a long time, they had been seen as incompatible, due to ontological and epistemological differences between the two literatures. This pattern started with the introduction of the Narrative Policy Framework (NPF) by Jones and McBeth (2010).

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Appendix A: The list of interviewees and interview instrument

Table 6: The list of interviewees

<i>The Position of Interviewee</i>	<i>Interview Date</i>	<i>Interview Code</i>
Scottish energy directorate and member of UKERC advisory board	Nov. 2011	1
Professor of energy policy and advisor of DECC, UKERC and Defra	Nov. 2011	2
Government advisor and Professor of energy economics	Nov. 2011	3
Senior researcher in the politics of energy policy	Nov. 2011	4
Senior member in UKERC and RCUK	Nov. 2011	5
Government advisor and head of a research centre on energy governance	Nov. 2011	6
Policy advisor of DECC and DEFRA	Nov. 2011	7
Board member in the Low Carbon Research Institute	Nov. 2011	8
Professor of environmental sociology	Nov. 2011	9
Emeritus director of an energy and environment research institute	Nov. 2011	10
Senior planning policy officer at RSPB	Dec. 2011	11
Government advisor and the EMR Technical Expert Panel	Dec. 2011	12
Economist at a leading Electricity Policy Research Group	Dec. 2011	13
Policy research fellow at Green-alliance	Dec. 2011	14
Former politician and head of an energy institute	Dec. 2011	15
Former civil servant and researcher in an energy consultancy	Dec. 2011	16
Senior policy research fellow at Policy Exchange	Dec. 2011	17
Senior director at CCC	Dec. 2011	18
Professor of energy micro-economics	Dec. 2011	19
OXERA and UKERC advisory board	Dec. 2011	20
DECC EMR team member	Jan. 2012	21
Former Board member of London Electricity	Jan. 2012	22
Political Analyst of an Electricity Policy Research Group	Jan. 2012	23
An economist and head of a low carbon research institute	Jan. 2012	24
Senior policy fellow at Friends of the Earth	Jan. 2012	25
A senior advisor to Trilemma UK and E3G	Feb. 2012	26
A board member of Energy UK	July. 2012	27
Senior policy fellow at Green peace	July. 2012	28
DECC EMR senior team member	July. 2012	29
Member of Energy & Climate Select Committee, Labour MP	July. 2012	30
A senior lawyer at Norton Rose Consultancy	July. 2012	31
Former minister in Department of Energy, Conservative MP	July. 2012	32
Director of energy policy in one of the Big Six	Aug. 2012	33
DECC, EMR team	Aug. 2012	34
Head of energy in a leading lobby group for UK businesses	Aug. 2012	35
Ofgem, Wholesale market team member	Aug. 2012	36
Ofgem, Wholesale market team member	Aug. 2012	37
Ofgem, Wholesale market team member	Aug. 2012	38
Former DECC Energy team senior member	Aug. 2012	39
Senior policy fellow at Consumer focus	Aug. 2012	40
Member of CBI energy policy team	Aug. 2012	41
Former civil servant at DECC	Aug. 2012	42
SPAD of former DECC Secretary of State	Aug. 2012	43
Head of energy policy at one of the Big Six	Sep. 2012	44
Formerly at DTI energy team	Dec. 2012	45
Former member of DECC ministerial team, Lib-Dem MP	Dec. 2012	46
Former member of DECC ministerial team, Conservative MP	Feb. 2013	47
Former civil servant and fellow at an energy consultancy	Feb. 2013	48
Former civil servant at DECC and Ofgem	Apr. 2013	49
Former in energy industry and energy policy commentator	Apr. 2013	50
Former environmental campaigner and political analyst of energy governance	May. 2013	51

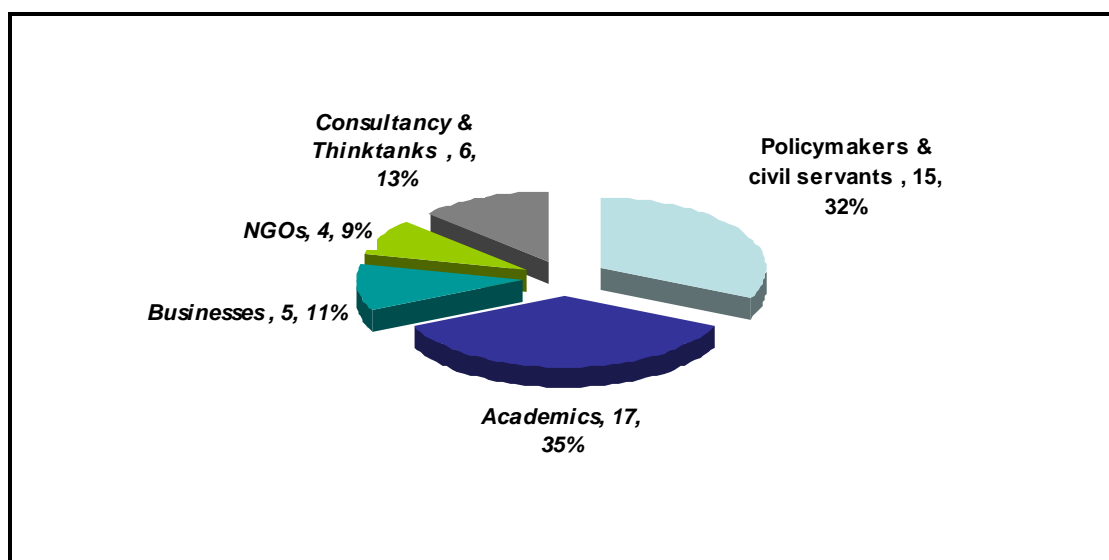


Figure 5: An overview of the composition of interviewees

Interview instrument: An Exemplary guideline for a Semi-Structured Interview

NB1: Note that there is a presumption that this research should conduct two types of interviewees. First, who have a general analysis of the history, evolution and coalitions involved in the UK energy policy and perhaps EMR. Second, some specific policy makers engaged directly in the EMR formulation and are less likely to know about other aspects of energy policy, historical trends and other coalitions. The latter group is expected mostly from governmental organisations due to the less-theorised and neutral nature of civil servants. Obviously the following interview questions have been designed for the first typical group of interviewees.

NB2: to clarify the general questions, they are sometimes followed by a list of likely alternatives and examples as sub questions (SQ).

I. Introduction

- Thank him/her for the time; remind him/her whether it is OK that we talk for one to two hours; and ask for the recording permission.
- Briefly talk about yourself, your background, your research interests, the reasons for the interview, and how you will share the information.
- Explain the aim of your research as the analysis of UK energy policy evolution since late 1990s with focus on the Electricity Market Reform as the case.
- Describe the combination of Advocacy Coalition Framework (ACF) and Epistemic Community (EC) as research analytical framework and resultant presumptions particularly the fact that each policy results from long-term policy evolution and competition between different advocacy coalitions based on their different policy paradigms and beliefs,

- Ask him about any likely question relevant to the introduction.
- Demonstrate your knowledge about the interviewee's background, and then start with some introductory questions about her/himself, the history of engagement with energy policy, and the current position.
- Recognise whether or not s/he is familiar with either TM or ACF; then decide about the level of generality or specificity of further questions.

II. UK Energy Policy Changes and Evolution Patterns Influencing on the Formation of EMR

1. Why did EMR happen in the UK 2011? Since late 1990s, which major policy changes have occurred in the UK energy policy that have had impact on the shape of EMR? Would you please preferably explain your answer distinctively for each of EMR mechanisms, if you think that they have different policy background? Do you conceptualise any of them as a sign of major policy change or energy paradigm shift? If yes, which ones and why?

SQ: Which contextual-institutional factors have facilitated its development in the UK rather than somewhere else? What factors could be regarded as the most influential ones in the shape of current situation in EMR? Any external-landscape shock or crisis e.g. the credit crunch and economic crises (2009)? Role of change in socio-economic or political patterns e.g. change in the UK government (2010)? Role of changes in beliefs, discourses, or paradigms e.g. public attitude? Role of energy challenges e.g. oil peak and nuclear crises in Japan and Germany? Role of change in policy beliefs or membership? Role of new ideas, theoretical findings or academic disciplines? Role of failure in previous experiences like RO?

SQ: What do you think about these events: Utility Act (2000); DTI White Paper (2003; 2007) and the emergence of new trinity policy objectives: low-carbon, security and affordability; Renewable Obligation and EU Renewable Directive; the Creation of DECC (2008); Climate Change Act (2008); Creation of CCC (2008); Carbon Budgets; Ofgem's Project Discovery (2009); the Low Carbon Transition Plan (2009); etc?

III. Policy Subsystem Definition and Coalitions Identification

2. Taking into consideration the policy evolution affecting formation of EMR since 2000, could you categorise divers actors involved in that policy process based on their different approaches, beliefs, paradigms, or discourses? Are there groups who have overall shared frame and competing with each other? Are distinctive advocacy coalitions recognisable in the process of EMR formulation?

NB. Even though you think that in some cases coalition interests play more important role than their beliefs, they need to articulate them in the form of persuasive set of policy beliefs and arguments.

Coalitions' beliefs

3. If yes, what are the main distinctive components of their belief, paradigm or discourse?

SQ: How does each of them frame the major challenges confronting UK energy policy? How different do they prioritise the policy objectives and conceptualise their seriousness? What do they regard as the major causes of those challenges? What are their policy alternatives potentially could tackle the perceived challenges? What do they think about the role of government or market in problem solving? Do they support more interventionist approach or not?

Proposed policy belief dimensions:

4. Do you agree with adequacy of all or some parts of dimensions below to categorise advocacy coalitions in the process of EMR? If yes, with what is their priority and inclusion? If no, what are your different suggestions?
 - The different priority of policy objectives (climate change, security, affordability, competition);
 - Political philosophy (de-politicised market-based vs politicised state interventionist);
 - Different electricity options: fossil fuels vs. nuclear vs. renewable.
 - Top-down centralised and large scale vs. bottom-up decentralised supply;
 - The importance of innovation.

Coalitions' membership

5. Who are their central members?

SQ: Which actors, organisations, institutions and other types of EMR stakeholders etc have been more associated with diverse set of policy beliefs and paradigms? Please expand your view from only governmental department or traditional iron triangle concept to industrial companies; governmental departments; academics; consultancies; NGOs; and political parties.

IV. The Electricity Market Reform

Overall assessment

6. In general, could Electricity Market Reform be conceived as a symbol of major policy change or paradigmatic shift?

SQ: If yes, to what extent and in which aspects? Would you justify the rationales behind your answer? How could bridge between the development of EMR and previous policy changes? Is it a dependent of existing policy changes or a new departure point? Is there any difference between EMR's White Paper (2011) and Energy Bill (2012)?

7. Will EMR be sufficient to meet the UK electricity-specific policy objectives?

SQ: How do you predict likely outcomes of EMR? What are the main achievements and challenges of the work of EMR so far? Is EMR able to fully de-carbonise the base-load of electricity generation? Does it meet the target of 30% renewable by 2020? Could EMR provide enough investment to keep lights on, regarding replacement of old generation and electrification as well as more intermittent supply?

Coalition-based evaluation of EMR

8. Who is the winner in the battle of EMR?

SQ: While there are a lot of uncertainties in implementation, EMR is intellectually a major change. Thus it could be examined in terms of which coalition with which mix of beliefs is intellectually the winner of EMR. E.g. interventionists VS market-fans; nuclear VS renewable or gas; conservative VS Lib-dems; climate skeptics VS environmentalists; Treasury or Ofgem VS DECC or CCC; ...

The explanation of EMR's specific feature

9. How we could explain the dynamics behind these particular features of EMR?

SQ: If you do not agree with these features in EMR, please explain your arguments. Otherwise to answer these questions, please think about different types of dynamics in different level from overall in socio-political and economic area to energy-specific changes and events.

- a) **A step change towards prioritisation of de-carbonisation target in electricity sector:** Arguably EMR is generally in favor of environmentalists who were less powerful before it. Would you please explain which kind of internal and external mechanisms empowered environmentalist coalition to influence in policy process of EMR? Would you please explain historically why and how the objectives adopted, while free-market coalition was fully dominant at that time, and other coalitions were not too powerful to pose their target to policy process? Did this adoption an accident or just a political choice? Or this was a deliberate target setting?
- b) **More interventionist approach:** Also it is clear that EMR reflects more interventionist approach than what was before? Which dynamics enabled this approach to overcome the strong cross-sector commitment to the market in the battle of EMR, while free market coalition and epistemic community is still powerful?
- c) **The gain of nuclear in EMR:** What is your evaluation about nuclear in EMR? Do you agree with this argument that nuclear is clearly one of the winners of EMR? If yes, why that happened, while nuclear was not traditionally supported neither by environmentalist NGO's nor by market logic?
- d) **Inadequate support for renewable:** Also renewable directive is an important driver of EMR, such as third target. From historical point of view, why it was signed? Which coalition did support that? Do you think that EMR could meet renewable targets? Do you agree with relatively insufficient support of EMR for renewable? Do you conceive the gain of nuclear as a barrier for meeting the renewable targets?
- e) **Fossil fuel and CCS advocates:** Arguably nuclear lobby, renewable industries and deep environmentalists are satisfied with some parts of EMR. What about fossil fuel (oil & Gas) industry? Do they gain anything by EMR or are just looser, while EMR clearly pointed in CCS which is associated closely with fossil energies (gas and coal)? Could EMR rule out the fossil fuels entirely?
- f) **Still centralised and top-down:** Do you agree that despite a lot of radical aspects of change, EMR still is incremental in terms of the dominance of centralised electricity supply? If yes, why? Which dynamics consolidate the status quo?
- g) **Required capacity reinvestment and security concern:** how do you evaluate the adequacy of EMR to facilitate re-investment to replace upcoming closure? In general, what are the impacts of EMR on the concern of security of supply?
- h) **Current political consensus around the targets:** Coalition government showed a continual approach with previous government around the policy objectives. What is the reason of this kind of consensus, while other coalition with powerful members like Treasury still exists and a lot of doubts about achievability of targets, reinforced by financial recession, are prompted?

V. The Policy Change Drivers

Specific change factors

10. While your overall explanation of policy change features of EMR was asked before, this question is to ask you about a set of specific factors potentially are likely to contribute in the shape of EMR as a policy change.

SQ: If you think that one factor has been influential, please explain how and to what extent, compared to other factors.

- a. **Political parties:** What is the role of each of three political parties in the formation of EMR? To what extent EMR results from the party politics and how?
- b. **The emergence of coalition government:** Do you see any role for new government in the formation of EMR? In other words, which changes in EMR are envisaged if there was still labour government in power? What about if there was any of the conservative or lib-dem alone? In each sub-question, please explain how it has affected EMR.
- c. **Coalition compromise and negotiated agreement:** What are the specific effects of coalition nature of government, if any? EMR shows some clear signs of compromise driven by coalition government. What happened exactly on that time and which factors facilitated coming to a mutual agreement.
- d. **Civil servant change:** Do you see any special role for civil servant in EMR more than merely realising politician dreams? Which likely changes in structure, culture or capability of energy civil servants paved the way of current shape of EMR?
- e. **Energy policy style and institutions:** Do you see any role for change in British policy style, such as more evidence-informed policy making, in the changes presented in EMR? Is consultation process has been undermined by Planning Act? If yes, how has it influenced EMR
- f. **Within government challenge:** Is EMR affected from conflicts amongst governmental and public bodies involved in electricity policy, i.e. DECC, Treasury, Ofgem and CCC? Is there any role for parliamentary committees e.g. climate and energy select committee? If yes how?
- g. **Business interests and lobbying:** How have business interests framed EMR? Which aspects of EMR results directly from business interests? Which lobby was more influential than others and why?
- h. **NGOs' ideas and campaigning:** Similarly which aspects of EMR are shaped mainly by the impacts of NGOs and which type of NGOs? Please explain how they have affected EMR, if any? Do you see any impact from empowerment of NGOs in changing form of EMR?
- i. **New theories and epistemic communities:** It is acceptable that an epistemic community of Hayekian economists was supporting liberalised system. Do they still dominant after EMR, or any other epistemic community has won the EMR? If yes, who are they? Are still other groups of economist? Or other disciplines like STS and sociology? Are they the driver of EMR or just passive supporters?
- j. **Policy learning from other countries:** do you agree that learning from the experiences of other countries like Feed-in-Tariff in Germany or Capacity Mechanism in US has influenced the EMR formation? If yes please explain how and through which mechanisms?
- k. **Financial recession:** Is EMR framed by the consequences of financial recession? If yes how? Whether EMR is more interventionist because of market discrediting in financial crisis OR is less supportive for renewable in return?
- l. **EU Renewable Directive:** It is argued that signing renewable directive is very important in the shape of EMR. Would you please explain how and to what extent? If it was important, why EMR is not supportive for renewables as much as it hoped and emphasised in Renewable Directive?

The comparative priorities

11. Would you please compare between the levels of influence that each factor has had? In other words, please determine the most influential ones from following dichotomies:
 - a. **Politician and civil servants:** Who has mainly drafted EMR? To what extent the current form of EMR results from politician and political parties' desire rather than civil servants arguments?
 - b. **Interests vs ideas:** Does EMR represent interests more than beliefs and ideas? Whose lobbying was influential, industries or NGOs? Or even political parties? And Why?
 - c. **Political interests VS business interests:** which forms of interests were more influential and in which level? Do you agree that political interests shaped the overall directions in policy objective level, while business interests framed the policy instruments and detail mechanisms?
 - d. **New theories and ideas VS policy failures and practicalities:** Is EMR driven primarily by the emergence of a theory or results inevitably because of failing previous policies and the concern of missing targets?

The prediction of future policy changes

12. What is your prediction of any likely policy changes in response to the EMR's consequences and changes in other factors indicated above?

VI. Conclusions and Closure

- Mention some of the main points learned. Then ask interviewee to comment on the feedback in terms of any important points you may have missed.
- Ask about the recommendations for further potential interviewees or documents could provide new insights into the research.
- Ask him/her about any thing else s/he wants to bring up before interview finishing.

Appendix B: The list of complementary figures

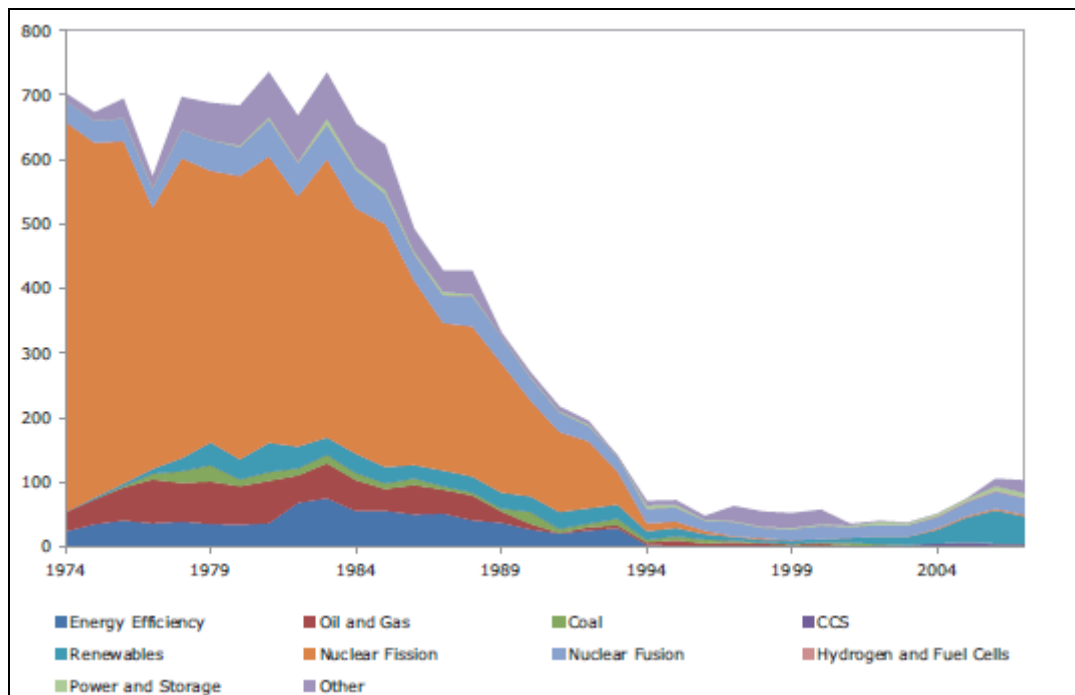


Figure 6: A collapse in the UK energy RD&D expenditure after liberalisation (UKERC 2010)

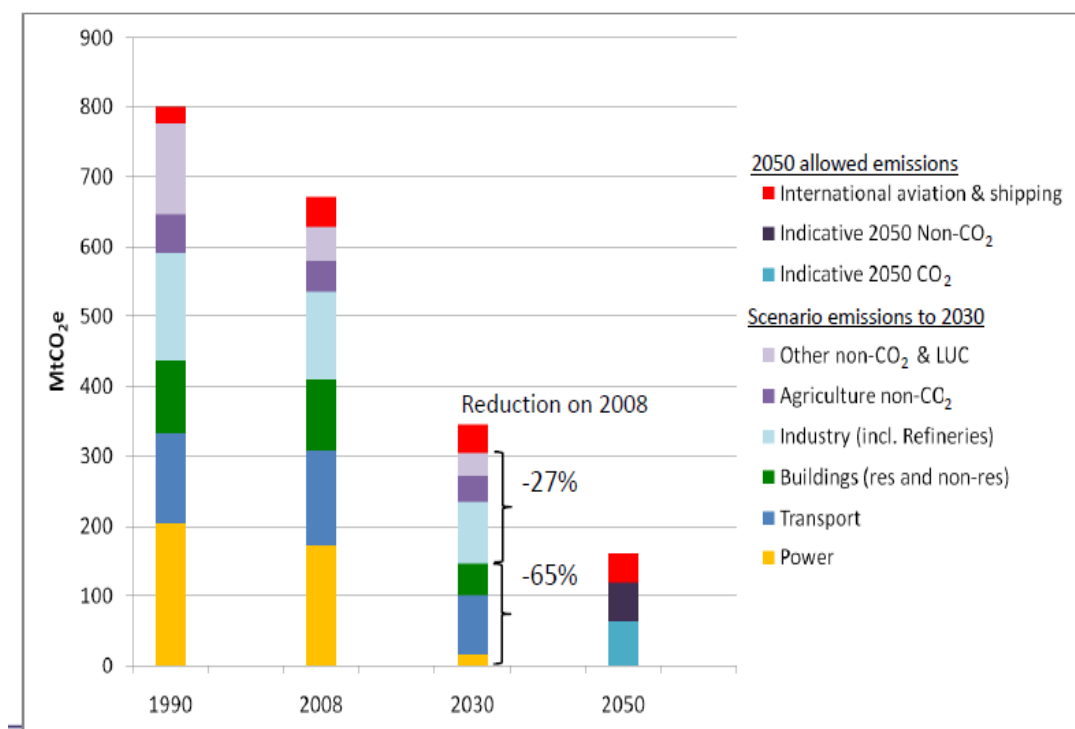


Figure 7: Planning scenario for meeting 2050 target
(Presented by David Kennedy, CEO of CCC, December 2011)

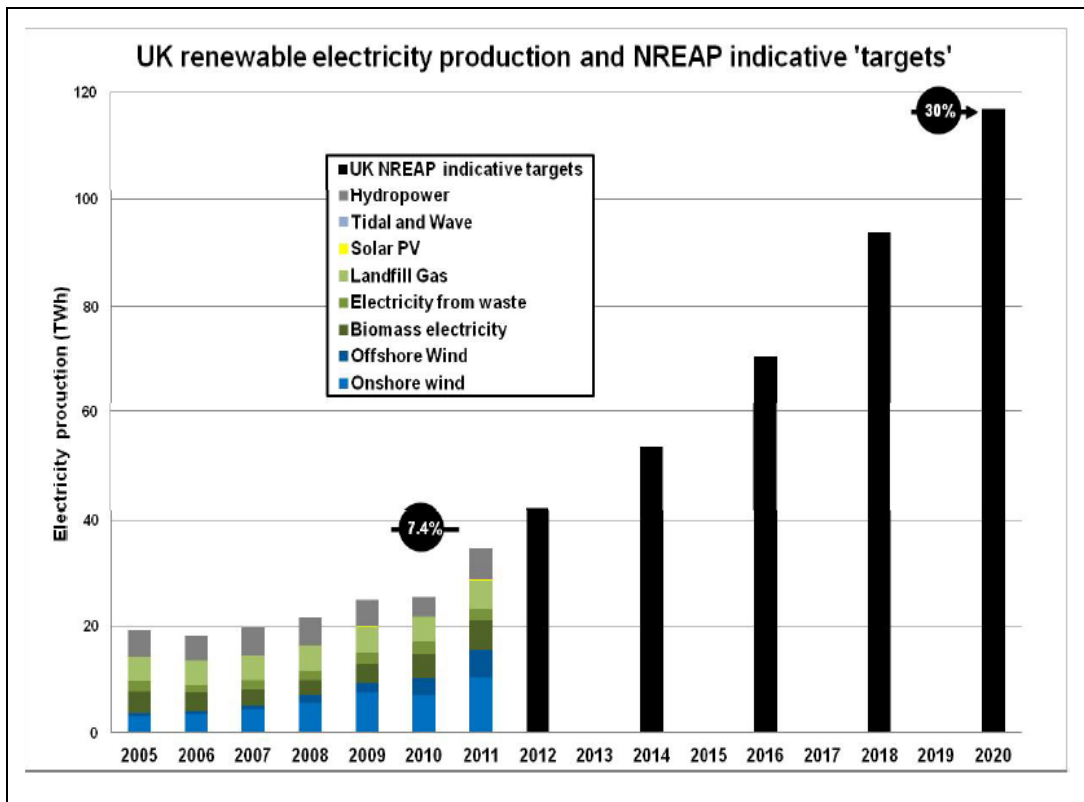


Figure 8: The ambitious Renewable target for electricity sector in 2020 (presented by Gaynor Hartnell, CEO of Renewable Energy Association, May 2012)

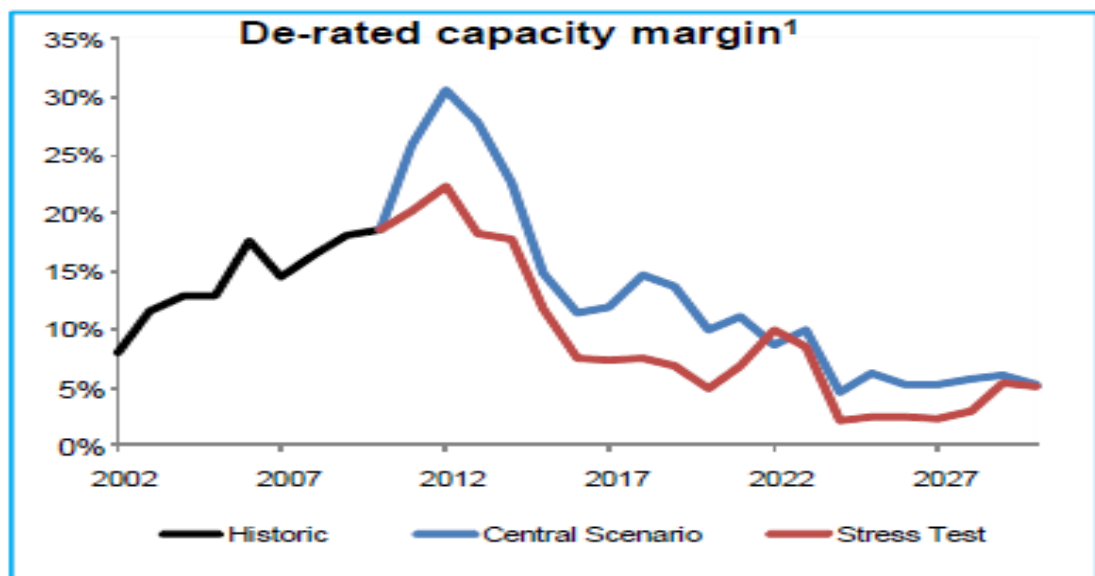


Figure 9 : De-rated capacity mechanism (presented by Jonathan Bearley, Director of Energy Markets and Networks, DECC, July 2012).

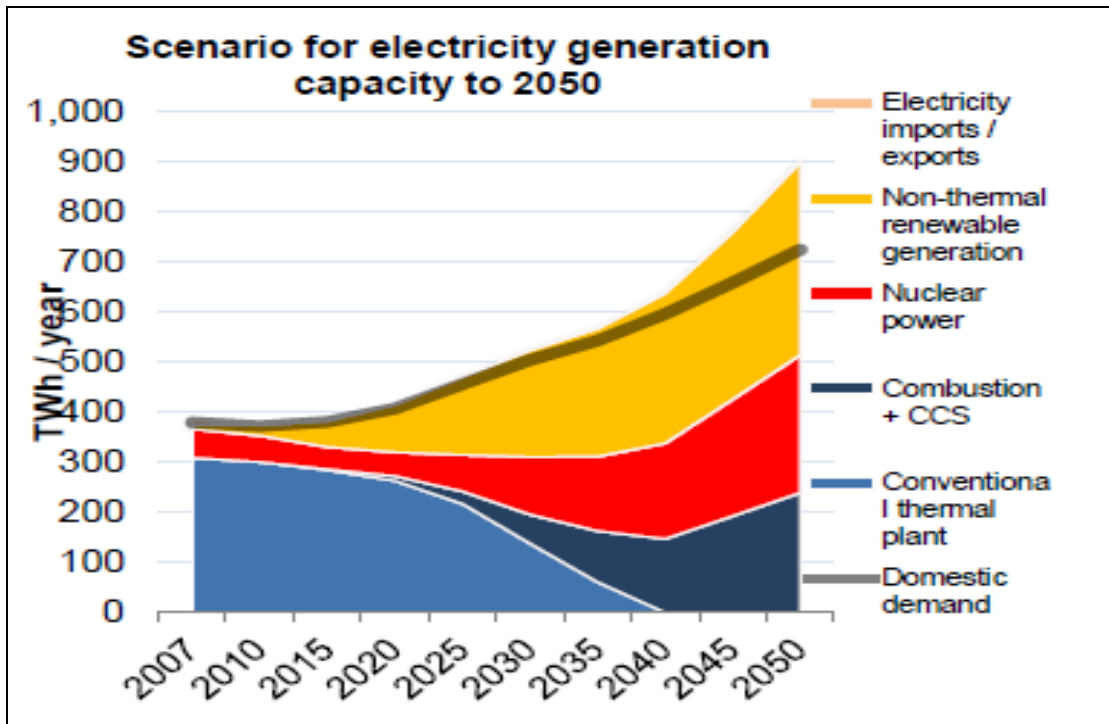


Figure 10: A scenario for electricity mix by 2050 (presented by Jonathan Bearley, Director of Energy Markets and Networks, DECC, July 2012)

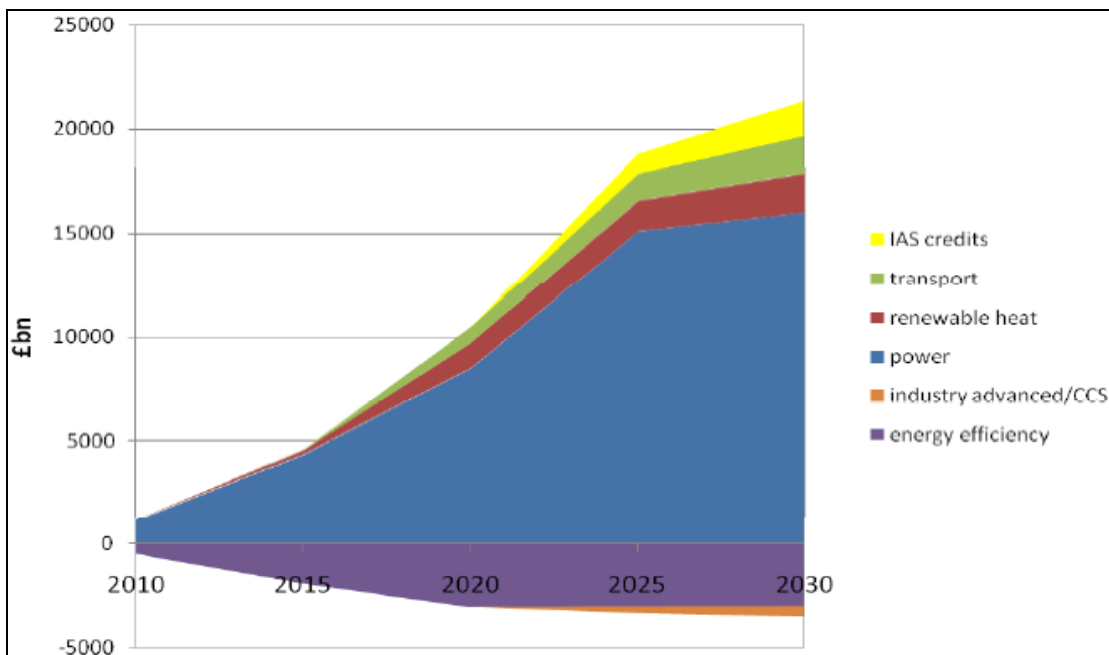


Figure 11: The break down of cost per sector for meeting carbon target (presented by David Kennedy, CEO of CCC, December 2011)

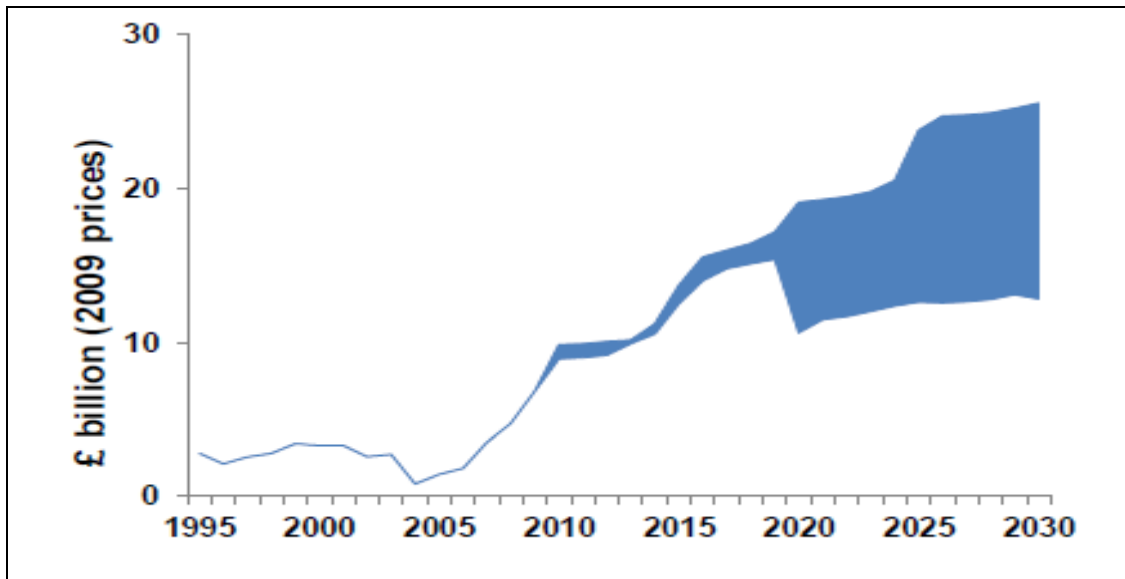


Figure 12: Investment required in electricity sector by 2020 (annual capex)
 (presented by Jonathan Bearley, Director of Energy Markets and Networks, DECC, July 2012)

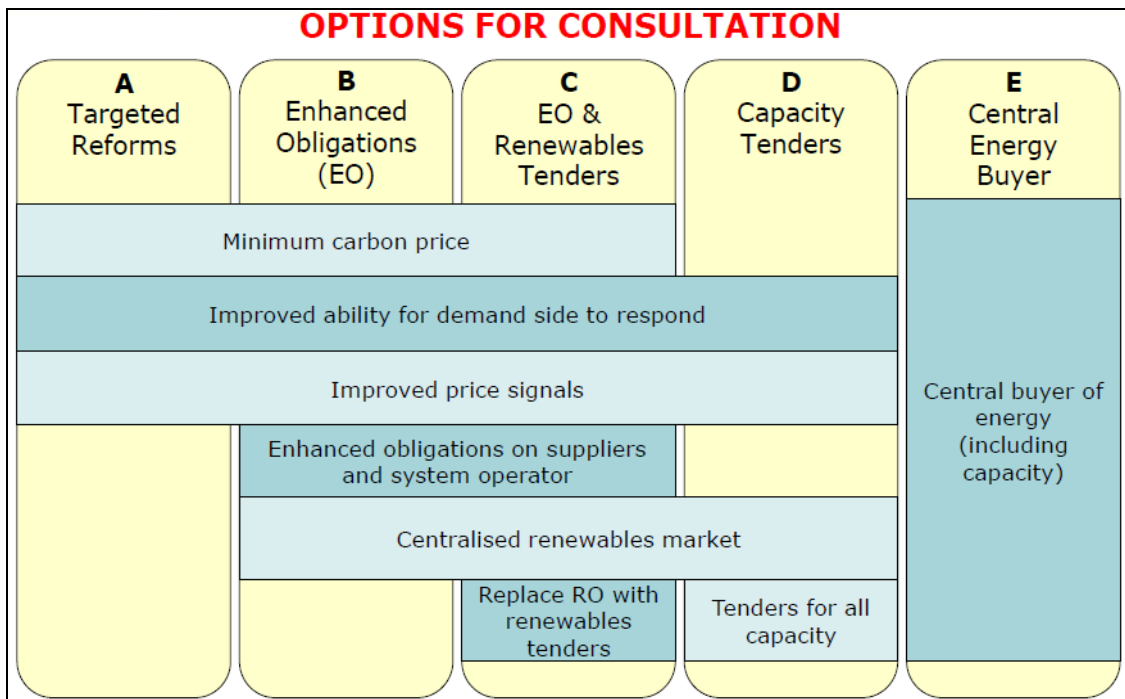


Figure 13: Project Discovery five-folded options
 (presented by Andrew Wright, Senior Partner, Markets, Ofgem, July 2012)

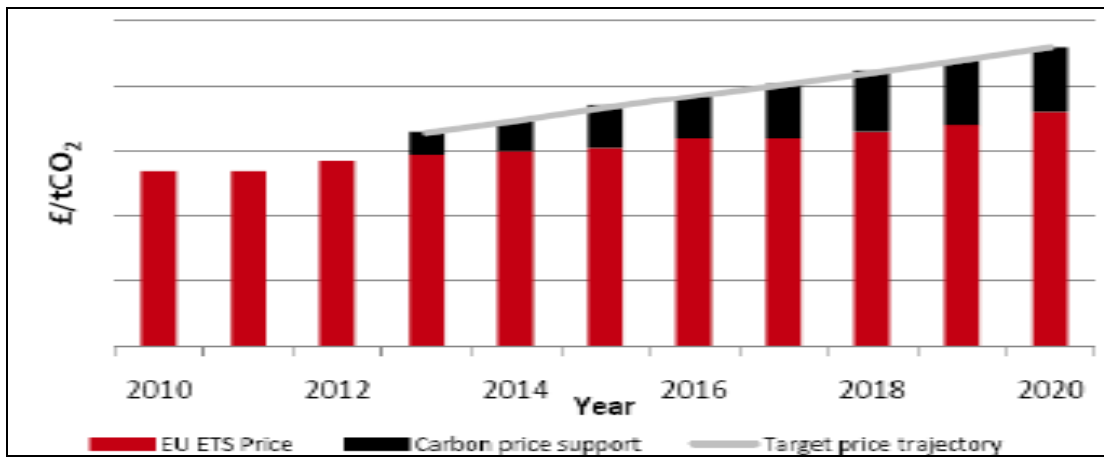


Figure 14: A comparison between EUETS and CPF (presented by Nigel Cornwall, April 2012)

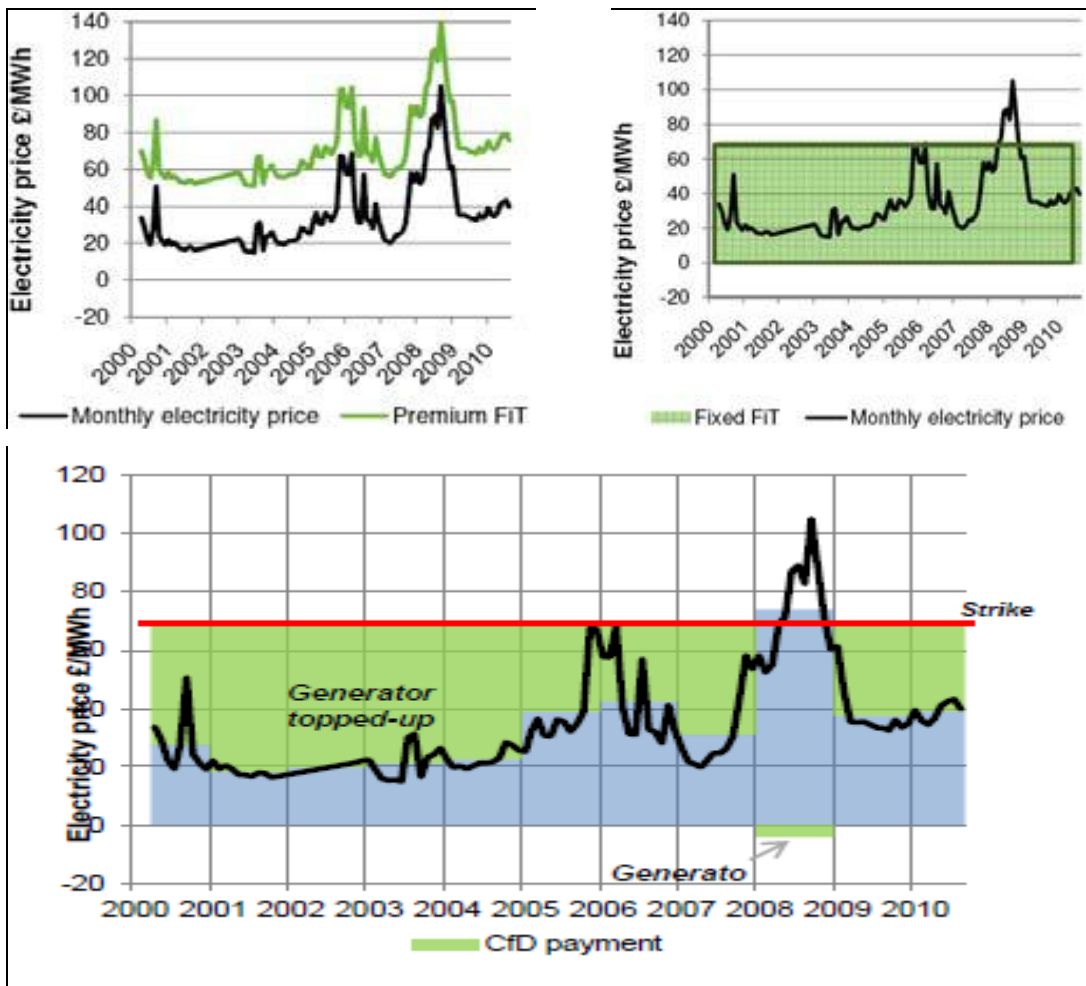


Figure 15: A comparison between Premium FiT, Fixed FiT and CfD (presented by Jonathan Bearley, Director of Electricity market and networks, DECC, April 2012)

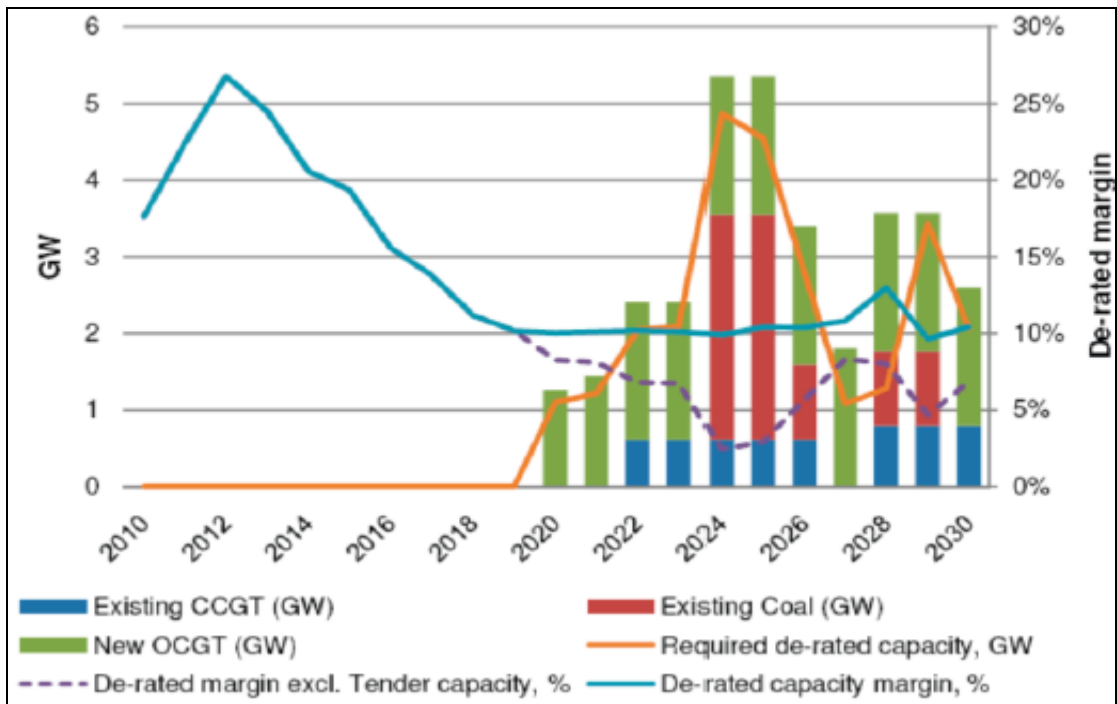


Figure 16: Impact of targeted capacity mechanism on de-rated capacity margin (presented by Nigel Cornwall, April 2012)

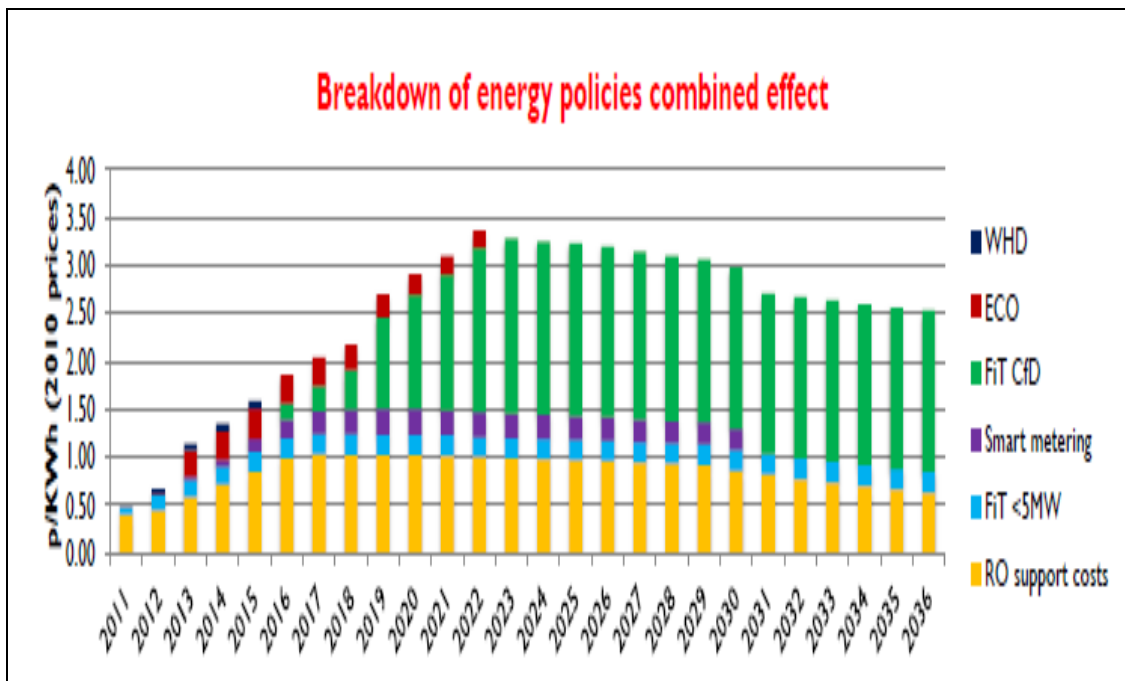


Figure 17: Impact of EMR's mechanisms on future energy price (Nigel Cornwall, April 2012)

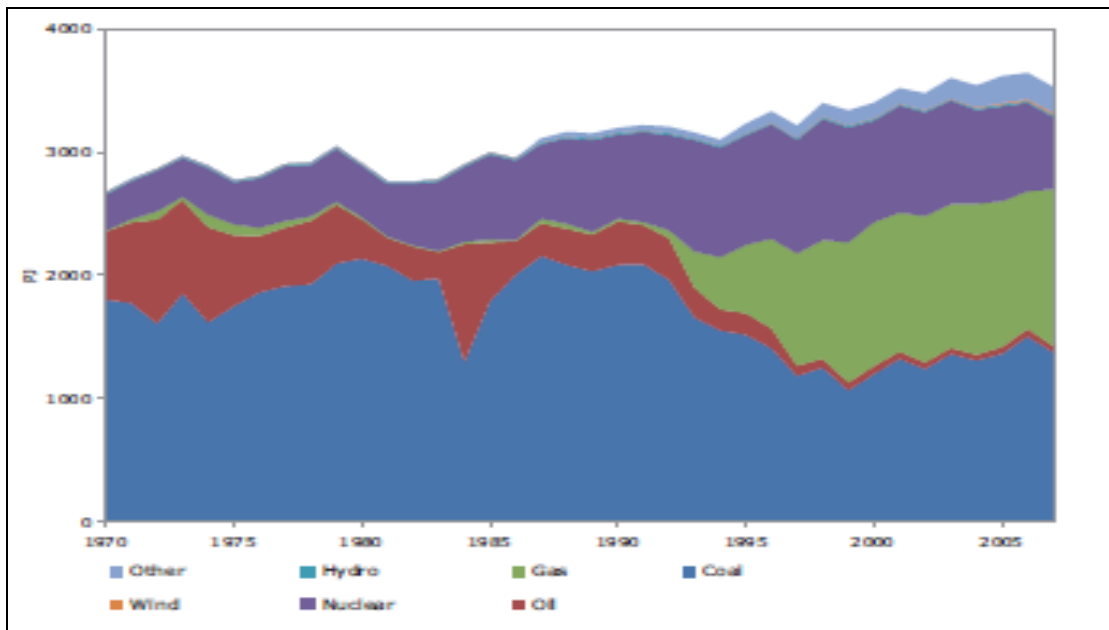


Figure 18: A historical view of the UK electricity fuel mix (UKERC 2010)

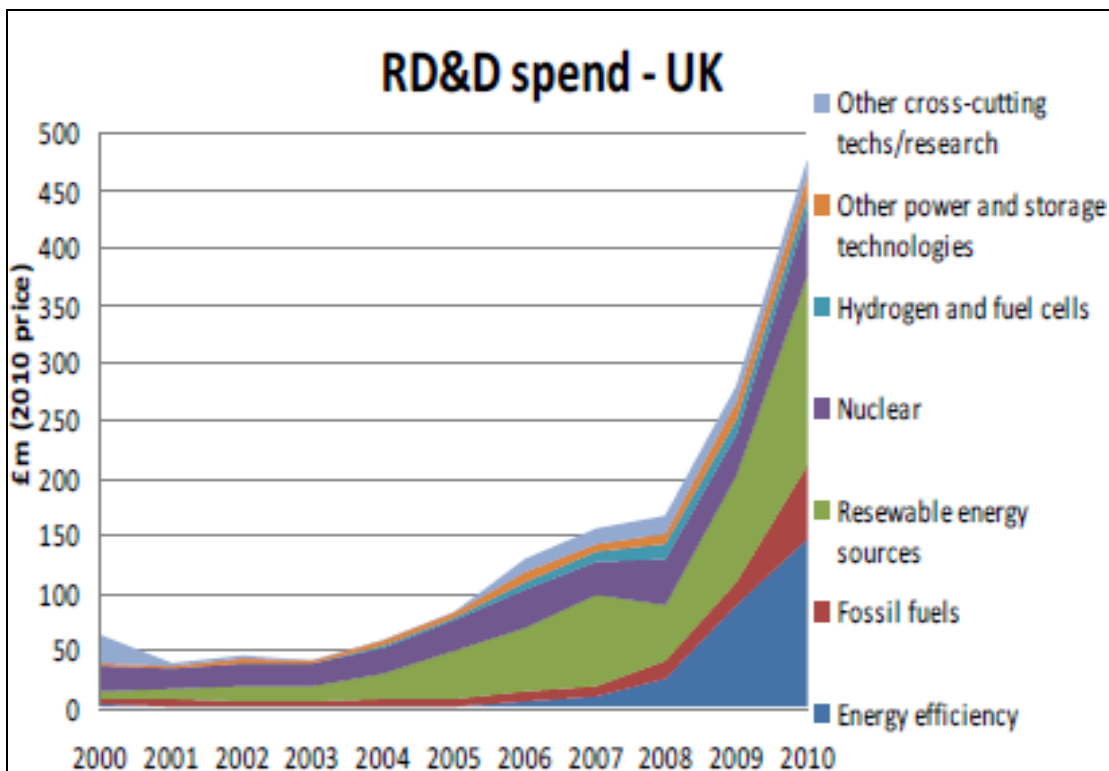
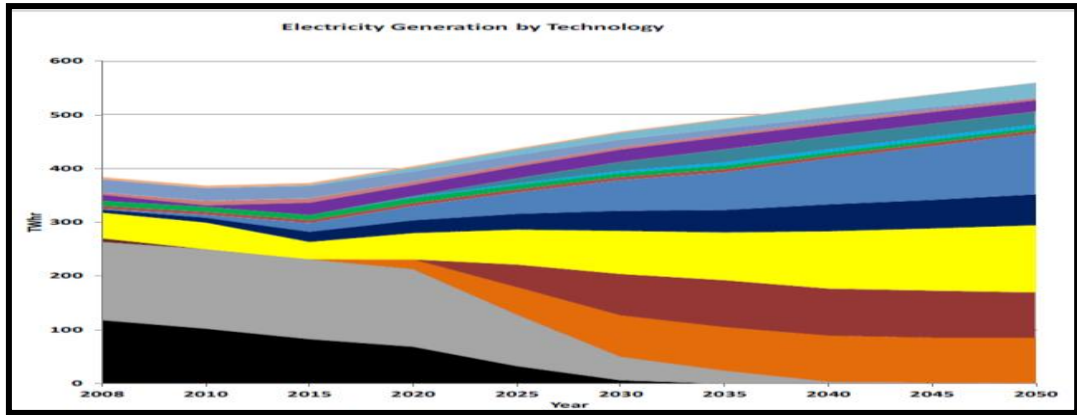
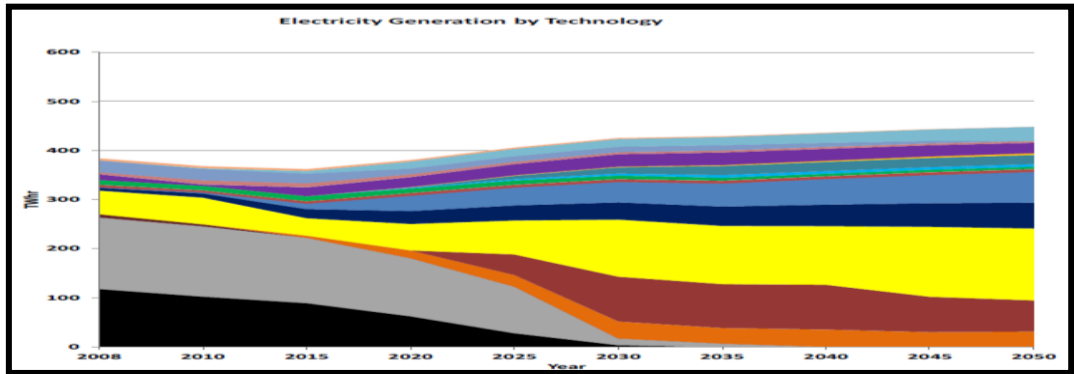


Figure 19: The UK RD&D expenditure trend (Winskel et al 2012)

Electricity generation mix in 'Market Rules' pathway



Electricity generation mix in 'Central Co-ordination' Pathway



Electricity generation mix in 'Thousand Flowers' pathway

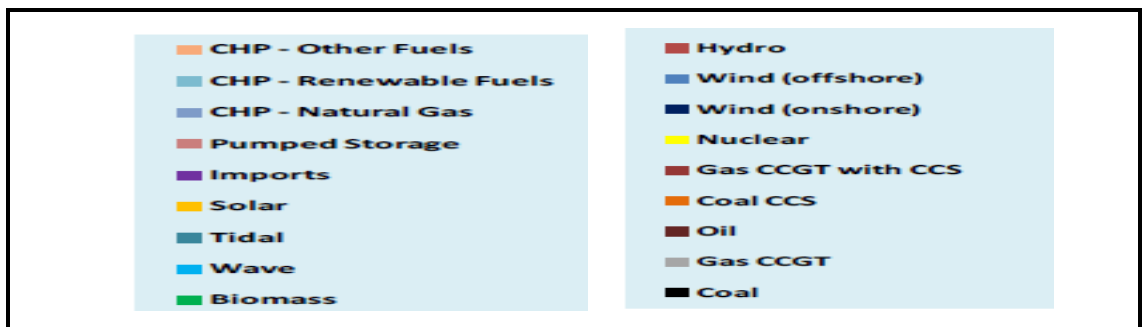
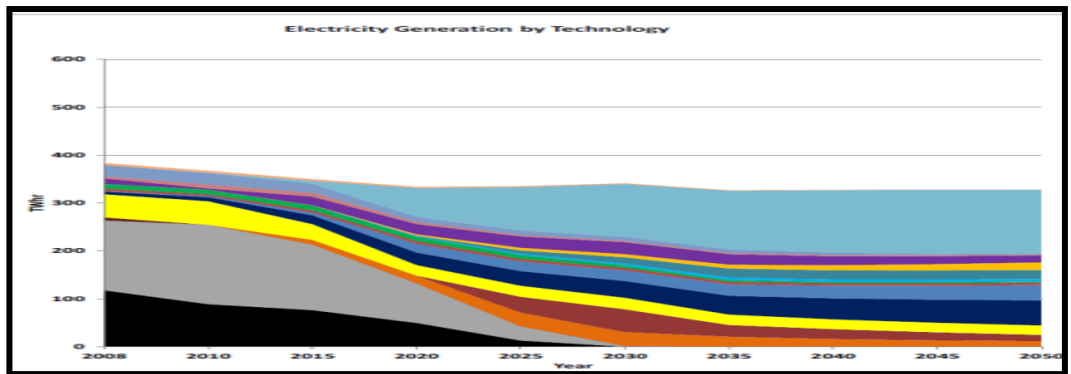


Figure 20: Three scenarios for fuel mix based on different technological structure (Pearson et al 2012)

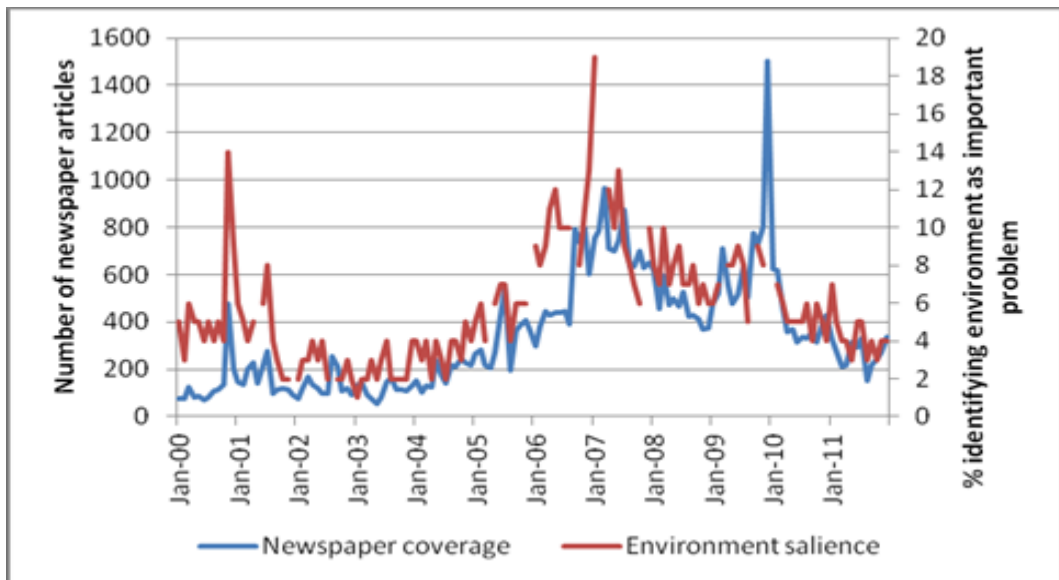


Figure 21: The public salience and newspaper coverage of environmental concern (Ipsos MORI Issues Index 2012)

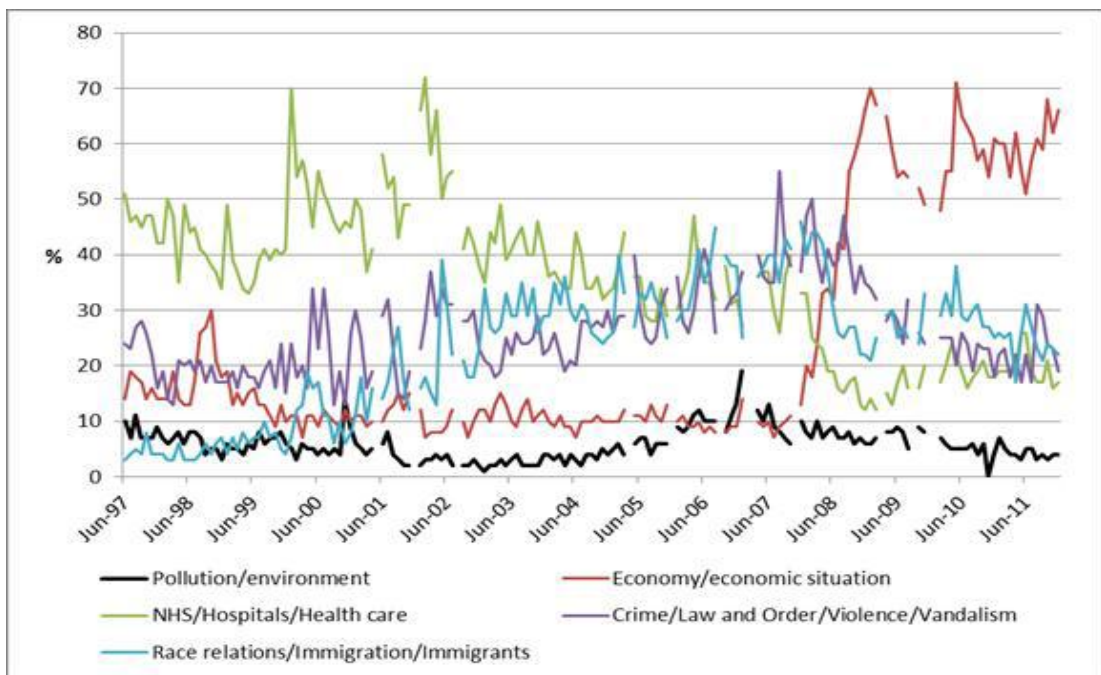


Figure 22: A comparative measure of important issues facing Britain, 1997-2011 (Ipsos MORI Issues Index 2012)

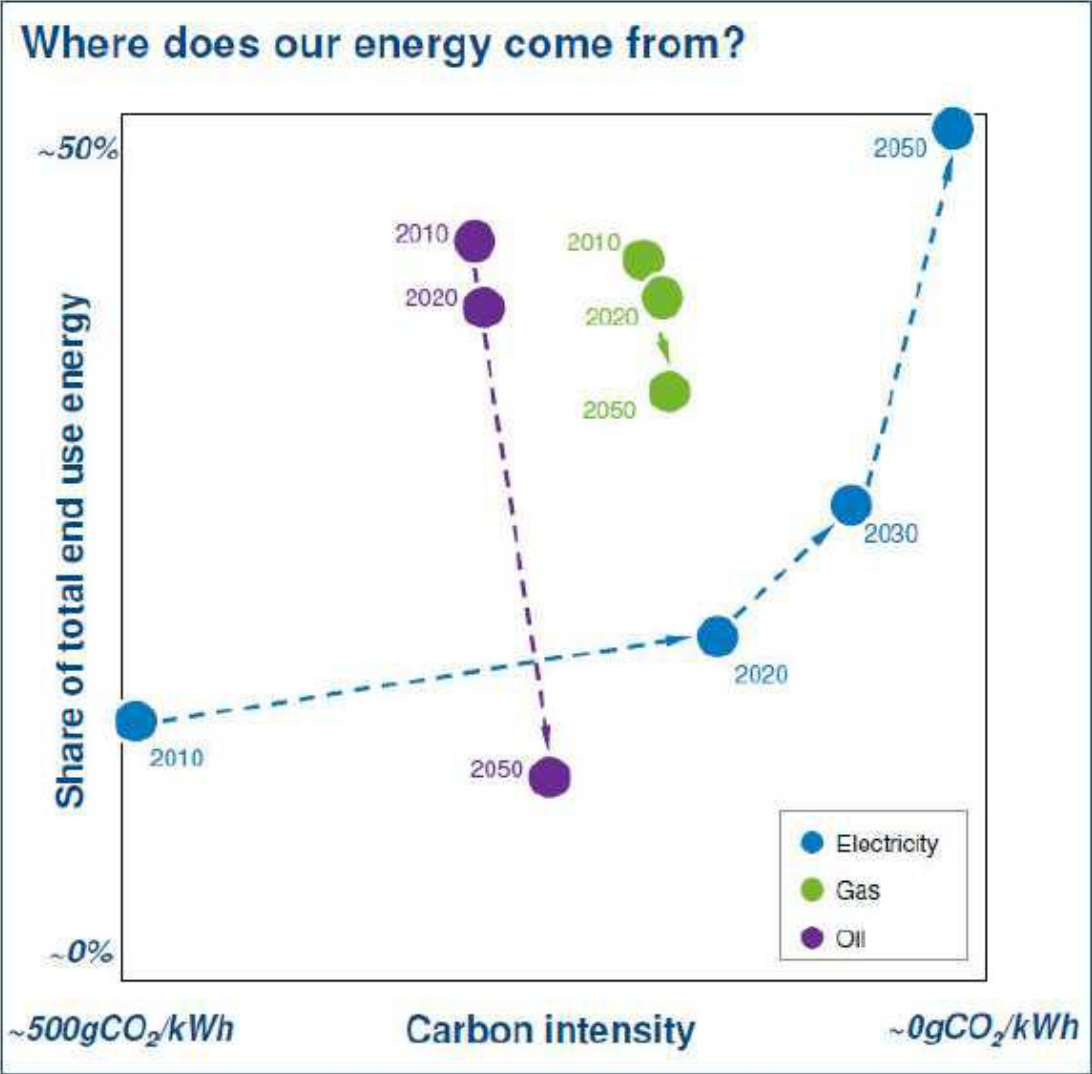


Figure 23: The increasing prospect of electricity share in total end use energy
(Presented by James Greenhalgh, July 2103)

Appendix C: The list of policy conferences and events

Table 7: Westminster Seminar, 8th December 2011
Westminster Energy, Environment & Transport Forum Keynote Seminar: *The UK's emissions reduction strategy: meeting the Fourth Carbon Budget*

<p><u>Session Chair's opening remarks</u> Professor Peter Simpson, Scientific Secretary and Editor of Science in Parliament, Parliamentary and Scientific Committee (<i>transcript</i>)</p> <p><u>Latest advice and progress update from the Committee on Climate Change (CCC) on meeting the UK's carbon budgets</u> David Kennedy, Chief Executive, Committee on Climate Change (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>The Carbon Plan and the Fourth Carbon Budget</u> Ravi Gurumurthy, Director of Strategy, Department of Energy and Climate Change (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Stakeholder perspectives on the Government's Carbon Plan and strategy to meet the UK's Fourth Carbon Budget</u> Professor Paul Ekins, Professor of Energy and Environment Policy, UCL Energy Institute, University College London (<i>transcript</i>) Dustin Benton, Senior Policy Adviser, Green Alliance (<i>transcript</i>) Marcus Stewart, Future Distribution Networks Manager, National Grid (<i>transcript</i>) John MacArthur, Vice President CO₂ Policy, Shell International (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Session Chair's closing remarks</u> Professor Peter Simpson, Scientific Secretary and Editor of Science in Parliament, Parliamentary and Scientific Committee (<i>transcript</i>)</p> <p><u>Session Chair's opening remarks</u> Laura Sandys MP, Member, Energy and Climate Change Select Committee (<i>transcript</i>)</p> <p><u>Meeting the UK's Fourth Carbon Budget: the view from the energy industry</u> Ravi Baga, Head of Energy Policy, EDF Energy (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>The financial, practical and technological challenges to delivering emissions reductions</u> Dr Adam Hawkes, Knowledge Leader, Energy Systems Modelling, AEA Group (<i>transcript</i>) Dr Matthew Brown, Head of Energy and Climate Change, Confederation of British Industry (CBI) (<i>transcript</i>) Prashant Vaze, Chief Economist, Consumer Focus (<i>transcript</i>) Dr Alex Bowen, Principal Research Fellow, Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Session Chair's and Westminster Energy, Environment & Transport Forum closing remarks</u> Laura Sandys MP, Member, Energy and Climate Change Select Committee (<i>transcript</i>) Ben Goodwin, Senior Producer, Westminster Energy, Environment & Transport Forum (<i>transcript</i>)</p>
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Table 8: Cornwall Energy, 17th April 2012
Electricity Market Reform - Playing Out the Middle Game

Electricity Market Reform: Playing out the Middle Game

Confirmed speakers:

- Jonathan Brearley, DECC
- Mark Ripley, National Grid
- David Newbery, Cambridge Electricity Policy Research Group
- Gordon MacKerron, Science and Technology Policy Research Unit
- Phil Burns, Frontier Economics
- Simon Less, Policy Exchange
- Nigel Cornwall, Cornwall Energy
- Robert Buckley, Cornwall Energy

The event will also include two panel sessions composed of industry experts.

Table 9: Westminster Seminar, 10th May 2012
Westminster Energy, Environment & Transport Forum Keynote Seminar: The UK's Renewable Energy Strategy: count down to 2020

<p><u>Session Chair's opening remarks</u> Lord Oxburgh, Board Member, Parliamentary Office of Science and Technology (POST) (<i>transcript</i>)</p> <p><u>Renewables delivery outlook</u> Gaynor Hartnell, Chief Executive, REA (Renewable Energy Association) (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>The UK's Renewable Energy Strategy: progress and next steps</u> Professor Bernie Bulkin, Chair, Office of Renewable Energy Deployment, Department of Energy and Climate Change (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Assessing Government strategy and the role of the renewable energies industry in achieving the 2020 targets</u> David Morgan, Commercial Development Lead, Royal Haskoning (<i>transcript</i>) Sarah Samuel, Head of Sustainable Energy Policy, Ofgem (<i>transcript</i>) Ross Fairley, Partner and Head of Energy and Environment, Burges Salmon (<i>transcript</i>) Professor Peter Fraenkel, Co-founder and Technical Director (2000-2012), Marine Current Turbines (<i>transcript</i>) Alex Nevill, Biofuels Agronomy Manager, Shell (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Session Chair's closing remarks</u> Lord Oxburgh, Board Member, Parliamentary Office of Science and Technology (POST) (<i>transcript</i>)</p> <p><u>Session Chair's opening remarks</u> Laura Sandys MP, Member, Energy and Climate Change Select Committee (<i>transcript</i>)</p> <p><u>The financial, practical and technical challenges to achieving the 2020 targets</u> Ian McCubbin, Senior Consultant, Energy & Climate Change Practice, ERM (<i>transcript</i>) Dr Jonathan Radcliffe, Head, Analysis Team, Energy Research Partnership (ERP) (<i>transcript</i>) Dr Gordon Edge, Director of Policy, Renewable UK (<i>transcript</i>) Gillian Frew, Partner, Pinsent Masons (<i>transcript</i>) Dr Graham Cooley, Chief Executive Officer, ITM Power (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>A vision beyond 2020: the long-term strategy for UK renewable energy</u> Dr Tony Cocker, Chief Executive, E.ON UK (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Session Chair's and Westminster Energy, Environment & Transport Forum closing remarks</u> Laura Sandys MP, Member, Energy and Climate Change Select Committee (<i>transcript</i>) Ben Goodwin, Senior Producer, Westminster Energy, Environment & Transport Forum (<i>transcript</i>)</p>

Table 10: Westminster Ministerial Forum, 5th July 2012
Annual Ministerial Review of UK Energy Policy, Regulation and Delivery

WESTMINSTER ENERGY FORUM

SEMINAR PROCEEDINGS

ANNUAL MINISTERIAL REVIEW OF UK ENERGY POLICY, REGULATION & DELIVERY

Seminar 72 - JULY 5th 2012

Session 1 : Status of UK Energy Policy Objectives

Chair:
Russell Wells, *Partner, Clifford Chance*

Review of policy deployments, progress & expectations for next Parliamentary year
Charles Hendry MP, *Minister of State for Energy, DECC*

Energy scenarios & implications for UK policy
Duncan Sinclair, *Director, Redpoint Energy Consulting*

Developer risk: comparing the UK today with other, regional markets
Clive Warden, *Director, Business Development, International Power & GDF Suez*

Risks to policy & infrastructure delivery: using the market as an early warning system
Chris Lambert, *Director, Westminster Energy*

Session 2 : Delivery Issues - Briefings, & Panel Discussion

Chair:
Sarah McNaught, *Partner, & Lead - Energy & Natural Resources, KPMG*

The regulatory framework, and key dynamics in the market
Andrew Wright, *Senior Partner, Markets, Ofgem*

Finance and funding – issues, and implications, for the UK energy sector
Craig Forrest, *Director Energy Consulting - Energy, ARUP*

Future uncertainties, and their effect on the formation and delivery of energy policy
Dr. Rob Gross, *Director, ICEPT & UK Energy Research Centre*

Energy projects in the context of wider, National Infrastructure needs – avoiding bottlenecks
Keith Waller, *Senior Adviser – Infra UK, HM Treasury*

Table 11: Westminster Seminar, 12th July 2012
Westminster Energy, Environment & Transport Forum Keynote Seminar: Transforming the UK's electricity market: one year on from the Reform White Paper and the Ofgem Review

<p><u>Session Chair's opening remarks</u> Barry Gardiner MP, Member, Energy and Climate Change Select Committee (<i>transcript</i>)</p> <p><u>Transforming the UK's electricity system</u> Jonathan Brearley, Director, Energy Markets and Networks, Department of Energy and Climate Change (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>The security of electricity supply</u> Dr Andy Stanford-Clark, Chief Technology Officer for Energy and Utilities, IBM Global Business Services, UK and Ireland (<i>transcript</i>) Dave Openshaw, Head of Future Networks, UK Power Networks (<i>transcript</i>) Dr Barrie Murray, Managing Director, Electricity Market Services (<i>transcript</i>) Dr Douglas Parr, Chief Scientist, Greenpeace UK (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Decarbonising electricity generation</u> Ronan O'Regan, Director, PwC (<i>transcript</i>) Paul Steedman, Senior Campaigner, Campaigns Specialist Team, Friends of the Earth (<i>transcript</i>) Jeremy Chang, Director, Energy Projects Team, Pinsent Masons (<i>transcript</i>) Professor Catherine Mitchell, Professor of Energy Policy, University of Exeter (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Session Chair's closing remarks</u> Barry Gardiner MP, Member, Energy and Climate Change Select Committee (<i>transcript</i>)</p> <p><u>Session Chair's opening remarks</u> Rt Hon the Lord Fraser of Carmyllie QC, Treasurer, Parliamentary Group for Energy Studies (<i>transcript</i>)</p> <p><u>The long-term strategy for regulation and pricing</u> Malcolm Keay, Senior Research Fellow, Oxford Institute for Energy Studies (<i>transcript</i>) John Wood, Partner, Norton Rose (<i>transcript</i>) Jostein Kristensen, Managing Consultant, Oxera (<i>transcript</i>) Audrey Gallacher, Director of Energy, Consumer Focus (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Regulation and pricing: the view from the energy industry</u> David Porter, Chief Executive, Energy UK (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Session Chair's and Westminster Energy, Environment & Transport Forum closing remarks</u> Rt Hon the Lord Fraser of Carmyllie QC, Treasurer, Parliamentary Group for Energy Studies (<i>transcript</i>) Ben Goodwin, Senior Producer, Westminster Energy, Environment & Transport Forum (<i>transcript</i>)</p>

Table 12: Oxford UK Energy Policy Day, 31st May 2013
Will Britain have a secure, clean and cheap energy system in 2020/30...? If we can't have everything, how should we make trade-offs between those objectives?

UK Energy Policy Day 31 May 2013	
Agenda	
9.30-10.00	Registration. Coffee/tea

Session 1	Chair Richard Nourse (Greencoat Capital)
10.00 -10.15	Welcome/context/background - Chris Llewellyn Smith (Oxford)
10.15-10.40	Current UK energy system + past/current UK policies – Cameron Hepburn (LSE/Oxford)
10.40-11.10	Future Scenarios for the UK – Michael Grubb (Cambridge/Senior Advisor Ofgem)
11.10-11.30	The UK's Energy and Climate Policies – Dieter Helm (Oxford)
11.30-13.00	Potential and likely cost (in the UK context) of <ul style="list-style-type: none"> • CCS – Bill Spence (Shell) • Nuclear – Tim Stone (former Chair, Office for Nuclear Development) • Gas – Howard Rogers (OIES, Oxford) • Wind – Andrew Garrad (Garrad-Hassan) • Bioenergy – David Ward (Culham/OIES, Oxford)

Session 2	Chair Chris Allsopp (Oxford Institute for energy Studies)
14.00- 14.30	National Grid Scenarios – Chris Train (National Grid)
14.30 -15.00	Policies and potential for managing demand and improving efficiency in the UK - Nick Eyre (Oxford)
15.00 -15.30	Policy options for electricity generation - John Rhys (OIES, Oxford)

Session 3	
16.00 - 17.00	Panel 1* - Pathways: James Cameron (Climate Change Capital) – Chair, John Beddington (Oxford-Martin School), Tony Cocker (E.ON), Juliet Davenport (Good Energy)
17.00 – 18.00	Panel 2* - Policies: Guy Chazan (FT) – Chair, Steven Fries (DECC), Phillip Lee MP (ECC Select Committee), Ben Moxham (Senior Policy Advisor, Cabinet Office), Rupert Steele (Scottish Power)


Table 13: Westminster Seminar, 23rd April 2013
Westminster Energy, Environment & Transport Forum Keynote Seminar: Next steps for UK nuclear energy: funding, safety and new build


<p><u>Session Chair's opening remarks</u> John Robertson MP, Chair, All-Party Parliamentary Group on Nuclear Energy (<i>transcript</i>)</p> <p><u>New nuclear technology: climate change and the UK's energy future</u> Baroness Worthington, Shadow Minister for Energy and Climate Change (<i>transcript</i>)</p> <p><u>Building new nuclear in the UK: funding, delivery and sustainability</u> Julian Boswall, Partner, Burges Salmon (<i>transcript</i>) Dr William Blyth, Associate Fellow of Chatham House, Visiting Research Fellow, London Business School and Director of Oxford Energy Associates (<i>transcript</i>) Sian John, Director, Environment, Energy and Infrastructure Consenting, Royal Haskoning DHV (<i>transcript</i>) Morgan Powell, Head of Commercial, Horizon Nuclear Power (<i>transcript</i>) Questions and comments from the floor with Baroness Worthington, Shadow Minister for Energy and Climate Change (<i>transcript</i>)</p> <p><u>Next steps for UK nuclear energy: funding, safety and new build</u> Mark Higson, Chief Executive Officer, Office for Nuclear Development, Department of Energy and Climate Change (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Developing a skilled workforce to deliver and operate new nuclear power in the UK</u> Jean Llewellyn, Chief Executive, National Skills Academy for Nuclear (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Nuclear new build case study</u> Nigel Knee, Head of Nuclear Policy, EDF Energy (<i>speaker submitted text</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Session Chair's closing remarks</u> John Robertson MP, Chair, All-Party Parliamentary Group on Nuclear Energy (<i>transcript</i>)</p> <p><u>Session Chair's opening remarks</u> David Mowat MP, Vice-Chair, All-Party Parliamentary Group on Nuclear Energy (<i>transcript</i>)</p> <p><u>Nuclear safety, security and disposal</u> Paul Flynn MP Professor Laurence Williams, Chair, Committee on Radioactive Waste Management (CoRWM) (<i>transcript</i>) Stewart Kemp, Executive Co-Director, Local Government Association's Nuclear Legacy Advisory Forum (<i>transcript</i>) Michael Farrer, Principal Consultant, Nuvia (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>The long-term outlook for nuclear power in the UK</u> Peter Haslam, Public Policy Advisor, NIA (Nuclear Industry Association) (<i>transcript</i>) Questions and comments from the floor (<i>transcript</i>)</p> <p><u>Session Chair's and Westminster Energy, Environment & Transport Forum closing remarks</u> David Mowat MP, Vice-Chair, All-Party Parliamentary Group on Nuclear Energy (<i>transcript</i>) Ben Goodwin, Senior Producer, Westminster Energy, Environment & Transport Forum (<i>transcript</i>)</p>

Table 14: Westminster Seminar, 16th July 2013
Westminster Energy, Environment & Transport Forum Keynote Seminar: Delivering Electricity
Market Reform (EMR): Contracts for Difference, the Capacity Market and the Emissions
Performance Standard

<p><u>Session Chair's opening remarks</u> Dan Byles MP, Member, Energy and Climate Change Select Committee <i>(transcript)</i></p> <p><u>The investment challenge, contracts for difference (Cfd) and delivering a fair strike-price for all</u> Gaynor Hartnell, Chief Executive, REA (Renewable Energy Association) <i>(transcript)</i> Charles Yates, Director, Energy, Environment and Sustainability Team, Grant Thornton <i>(transcript)</i> Chris Andrew, Partner, Allen & Overy <i>(transcript)</i> Ronan O'Regan, Director, PwC <i>(transcript)</i> Questions and comments from the floor <i>(transcript)</i></p> <p><u>Securing supplies and next steps in delivering the capacity market</u> Stephen Woodhouse, Director, Pöyry Energy Consulting <i>(transcript)</i> Richard Hall, Head of Energy Regulation, Consumer Futures <i>(transcript)</i> Steve Mancey, Power Strategy Advisor, Centrica <i>(transcript)</i> Michael Dodd, Head of GB Regulatory Affairs, ESB International <i>(transcript)</i> Questions and comments from the floor <i>(transcript)</i></p> <p><u>Decarbonising supplies, the Emissions Performance Standard and meeting the UK's carbon targets</u> Dr Doug Parr, Chief Scientist and Policy Director, Greenpeace UK <i>(transcript)</i> Dr Michael Pollitt, Assistant Director of the Energy Policy Research Group, University of Cambridge <i>(transcript)</i> Jeremy Sainsbury, Director, Natural Power <i>(transcript)</i> Questions and comments from the floor <i>(transcript)</i></p> <p><u>Session Chair's closing remarks</u> Dan Byles MP, Member, Energy and Climate Change Select Committee <i>(transcript)</i></p> <p><u>Session Chair's opening remarks</u> Albert Owen MP, Member, Energy and Climate Change Select Committee <i>(transcript)</i></p> <p><u>Delivering EMR: Contracts for Difference, the Capacity Market and the Emissions Performance Standard</u> Jonathan Brearley, Director, Energy Markets and Networks, Department of Energy and Climate Change <i>(transcript)</i> Questions and comments from the floor <i>(transcript)</i></p> <p><u>Meeting the practical and financial challenges in delivering EMR in the UK</u> Dr Keith MacLean, Policy and Research Director, SSE <i>(transcript)</i> Questions and comments from the floor <i>(transcript)</i></p> <p><u>The role and challenges for the system operator in delivering EMR</u> James Greenhalgh, Stakeholder Manager, Electricity Market Reform, National Grid <i>(transcript)</i> Questions and comments from the floor <i>(transcript)</i></p> <p><u>Session Chair's and Westminster Energy, Environment & Transport Forum closing remarks</u> Albert Owen MP, Member, Energy and Climate Change Select Committee <i>(transcript)</i> Ben Goodwin, Senior Producer, Westminster Energy, Environment & Transport Forum <i>(transcript)</i></p>

Table 15: Cornwall energy, 1st October 2013
Electricity Market Reform: Moving towards the end game





Electricity Market Reform: Moving towards the end game

Leading energy industry experts set to attend our one-day conference on 1 October 2013 in London - book now to guarantee your place

DECC's director of EMR Jonathan Mills and Committee on Climate Change CEO David Kennedy now confirmed as speakers

seyed

Get a full view of the impact the implementation of Electricity Market Reform (EMR) will have on the energy markets and your business at this one-day event featuring opinions from a host of leading industry experts.

Representatives from new market entrants, established players, government, consumer bodies, and investors will discuss EMR from their perspective, offering a unique and rounded view on the government's initiative to make sure the UK remains a leading destination for investment in low-carbon electricity.

To book your place contact [Maria Gooch](#) on 01603 604400. You can also [book securely online with our new payment system](#).

Confirmed speakers include:

- Jonathan Mills – DECC;
- David Kennedy – Committee on Climate Change;
- Simon Skillings – Trilemma;
- Nigel Cornwall – Cornwall Energy;
- James Greenhalgh – National Grid;
- Keith MacLean – SSE;
- Guy Madgwick – Eneco;
- Edmund Reid – JP Morgan;
- Richard Hall – Consumer Futures;
- Louise Strong – Which?;
- Jeremy Nicholson – Energy Intensive Users Group;
- Richard Nourse – Greencoat Capital;
- Jonathan Smith – First Utility;
- Alex Fergusson – CBI;
- Alastair Martin – Flexitricity; and
- Willy Rickett – former director-general of DECC.

How to book your place

Standard delegate: £400.

Existing Cornwall Energy customer: £350.

All prices exclude VAT; terms of business are available on our website.

To book your place contact [Maria Gooch](#) on 01603 604400. You can also [book securely online with our new payment system](#).

[The agenda is available to view on our website](#).

Download our essential EMR primer

Our essential new primer, *Electricity Market Reform: Putting the pieces together*, tracks EMR from the initial consultation document in December 2010 through to the publication of the draft Delivery Plan in July 2013. It also identifies how at each stage the government's thinking evolved on the reform package's core mechanisms. [Download the primer](#).

Appendix D: Different lists of policy stakeholders

Table 16: Industrial companies and trade associations involved in the EMR policy process

	<i>The Name of stakeholder</i>	<i>Field of work</i>	<i>Category</i>
1	EDF	Generator, nuclear	Big Six
2	Centrica	Generator	Big Six
3	E.On	Generator	Big Six
4	Scottish and Southern Energy	Energy generator	Big Six
5	Scottish power	Energy company	Big Six
6	RWE npower	Generator	Big Six
7	GE energy	Generation supplier and delivery	EngSC Business
8	InterGen UK	New independent generator	EngSC Business
9	International Power	Independent generator	EngSC Business
10	AES	NI Independent generator	EngSC Business
11	Endesa Ireland	Power generator	EngSC Business
12	First utility	Energy utility	EngSC Business
13	Smartest Energy	Energy supplier	EngSC Business
14	Utilita Electricity Limited	Energy company	EngSC Business
15	Viridian Power & Energy	NI energy supplier	EngSC Business
16	Welsh power	Energy company	EngSC Business
17	West Coast Energy	Energy company	EngSC Business
18	Aggreko	Flexible power provider	EngSC Business
19	National grid	Network Administer	EngSC Business
20	CE Electric	Electricity Distributor	EngSC Business
21	EirGrid	NI Transmission and Market Operator	EngSC Business
22	Electricity North-West	Electricity distributor	EngSC Business
23	EnerNOC	Network operator	EngSC Business
24	Statnett	Transmission System Operator	EngSC Business
25	RLTec	Demand side service provider	EngSC Business
26	Royal Bank of Scotland	Financier	EngSC Business
27	Siemens	Energy infrastructure	EngSC Business
28	Wärtsilä Corporation	power generation technology developer	EngSC Business
29	Advanced Plasma Power	Gasification from Waste	EngSC Business

30	Atkins	Engineering and design consultant	EngSC Business
31	Banks Group	Developer and constructor	EngSC Business
32	Carlton Power	power station developer	EngSC Business
33	Petrofac	Energy infrastructure	EngSC Business
34	Agri energy	Cooking oil distributor	EngSC Business
35	Alstom UK	Plant installer	EngSC Business
36	Deutsche Bank CCA	Climate change investment	EngSC Business
37	Elexon	Electricity Settlement service	EngSC Business
38	eMeter	Smart meter software	EngSC Business
39	ECS	Energy Curtailment Specialists	EngSC Business
40	Flexcitricity	Smart grid	EngSC Business
41	Highview Power Storage	utility-scale energy storage	EngSC Business
42	Marine Current Turbines	Technology developer	EngSC Business
43	Invesco Perpetual	Investment company	EngSC Business
44	KiWi Power	Demand side management	EngSC Business
45	Lloyds Bank	Investor	EngSC Business
46	Nuclear Industry Association	Nuclear Industry	EngSC Trade Union
47	EIC	Energy industry supply chain	EngSC Trade Union
48	Advanced Power Generation technology Forum (APGTF)	Industry-led stakeholder group	EngSC Trade Union
49	IGG	Independent Generators Group	EngSC Trade Union
50	ESTA -	Energy Services Association	EngSC Trade Union
51	EFET	European Federation of Energy Traders	EngSC Trade Union
52	EIC	Energy Industry Council	EngSC Trade Union
53	Peabody Energy	Coal investor	Fossil Fuel Buz
54	Scottish Coal	Coal producer	Fossil Fuel Buz
55	Scottish Resources Group	Coal producer	Fossil Fuel Buz
56	Shell	energy and petrochemicals company	Fossil Fuel Buz
57	Statoil	Gas company	Fossil Fuel Buz
58	B9 Coal	Coal CCS	Fossil Fuel Buz
59	BG Group	Gas Supplier	Fossil Fuel Buz
60	BP	Oil & gas producer	Fossil Fuel Buz
61	Calor Gas Ltd	Gas service	Fossil Fuel Buz
62	ATH Resources	Coal Producer	Fossil Fuel Buz
63	Ceres power	Micro-CHP developer	Fossil Fuel Buz
64	ConocoPhillips	Energy company working on Gas-CHP	Fossil Fuel Buz

65	Eggborough Power	Power Generator (Coal)	Fossil Fuel Buz
66	ESBI	Generator CCGT	Fossil Fuel Buz
67	ExxonMobile	Oil & Gas	Fossil Fuel Buz
68	CHPA	Combined heat and Power Association	F F Trade Union
69	World Coal Association		F F Trade Union
70	Oil & Gas UK	Fossil fuel industry	F F Trade Union
71	CoalPro	Coal Producers Confederation	F F Trade Union
72	Coallmp	Coal users Assoc.	F F Trade Union
73	CDC	Cornwall Development Company	RE Business
74	Gaelectric Electricity Storage	Renewable and storage	RE Business
75	Fred Olson Renewable	Renewable generator	RE Business
76	Good energy	RE supplier	RE Business
77	Green company	PV solar investor	RE Business
78	Green power	RE supplier	RE Business
79	Hargreaves + Orchid	RE from waste	RE Business
80	HES Biopower	RE biopower	RE Business
81	HG capital	RE investor	RE Business
82	Low-carbon Group	RE producer and investor	RE Business
83	MIRAEL	RE investor	RE Business
84	AvVail UK	Waste energy, RE	RE Business
85	B9 energy offshore	RE Ireland	RE Business
86	Blue NG	Renewable	RE Business
87	BHA	Hydropwer Association, RE	RE Business
88	Ecotricity	RE company	RE Business
89	Element Power	RE developer	RE Business
90	Eneco	RE generator	RE Business
91	Energiekontor	Wind farmer	RE Business
92	Energy Developments	RE company	RE Business
93	New Earth Energy (NEE)	RE company	RE Business
94	Partnerships for Renewables	RE provider	RE Business
95	MGT power	RE generator	RE Business
96	Peel Energy	Low-carbon (RE & CCS) generator	RE Business
97	REG- Bio- Power	RE company	RE Business
98	REG- Wind- Power	RE company	RE Business
99	RES	Renewable Energy Systems	RE Business
100	SeaEnergy Renewables	RE company	RE Business

101	Statkraft AS	RE investor	RE Business
102	Summerleaze	Aggregate and RE company	RE Business
103	Vattenfall	RE Energy supplier	RE Business
104	Vestas	Wind turbine manufacturer	RE Business
105	Air fuel synthesis	Renewable	RE Business
106	Air Products PLC	Renewable	RE Business
107	Aquamarine Power	Renewable	RE Business
108	ADBA	Biogas Association	RE Business
109	Covanta Energy	Waste energy	RE Business
110	KTI energy	CHP from waste	RE Business
111	REA	RE Association	RE Trade Union
112	RenewableUK	Renewable	RE Trade Union
113	ESA Environmental Services Association	Waste managers' association	RE Trade Union
114	IWEA	Irish Wind Energy Association	RE Trade Union
115	Low-carbon finance group	RE investor association	RE Trade Union
116	Scottish Renewables	RE industries association	RE Trade Union
117	NIRIG	Northern Ireland Renewables Industry Group	RE Trade Union
118	NOW	National Offshore Wind Association of Ireland	RE Trade Union
119	Carbon Cycle	CCS	CCS Business
120	CCS TLM	CCS developer	CCS Business
121	2Co Energy	CCS deployment	CCS Business
122	Sheffield Forgemasters	Steel manufacturer	EI Business
123	INEOS CHLOR	Energy intensive manufacturer of chlor-alkali	EI Business
124	MPA	Mineral Products Association	EI Trade Union
125	EIUG	Energy intensive	EI Trade Union
126	EEF	UK Steel manufacturer's association	EI Trade Union
127	CPI	Confederation of paper industry	EI Trade Union
128	BGMC	Glass Manufacturer's Confederation	EI Trade Union
129	BCC	Ceramic Manufacturer's Confederation	EI Trade Union
130	TESCO	Retailer	Business

131	Veolia Environmental Services	Waste management	Business
132	Viridor	Waste management	Business
133	Wessex Water Services		Business
134	BSG	Sugar producer	Business
135	BT	Communication service	Business
136	Co-operative	Food retailer	Business
137	Argus media	Price reporting agency	Business
138	Costain Group	Engineering and delivery	Business
139	Crown Estate	Estate managing	Business
140	EDP Renovaveis		Business
141	Enza capital		Business
142	GrowHow UK	Fertiliser manufacturer	Business
143	Asda	Retailer	Business
144	IMSL	producer of refined petroleum products	Business
145	Microsoft	IT developer	Business
146	Kelda group	Water service	Business
147	NFPA	Non-Fossil Purchasing Agency	Business
148	CBI	Industrial association	Trade Association
149	CLA	Country Land and Business Association	Trade Association
150	CPA	Construction Products Association	Trade association
151	Water UK	Water industry association	Trade association
152	WPIF	Wood Panel Industries Federation	Trade association
153	FDF	Food and drink federation	Trade association
154	Scotch Whiskey Association		Trade association
155	NEPIC	North East Process Industry Cluster (NEPIC)	Trade association
156	NLWA	North London Waste Authority	Business

Table 17: Governmental and public departments involved in the EMR policy process

	<i>The Name of stakeholder</i>	<i>Field of work</i>	<i>Category</i>
1	Committee of Climate Change	Responsible for low carbon budgets	Governmental department
2	Ofgem	Office of Gas and Electricity Markets	National Regulator

3	Scottish Government	Devolved area	Devolved Government
4	Welsh Assembly Government	Devolved area	Devolved government
5	Scottish Environment Protection Agency	Environmental regulator	Local authority
6	NIE Energy LTD	Public procurement agency	Local authority
7	NI utility regulator	Regulator	Devolved department
8	Highlands & Islands Enterprise	RE developer	Local authority
9	Hampshire County Council	Local authority	Local authority
10	DTEI Northern Ireland	Local authority	Devolved department
11	Cumbria County Council	Local authority	Local authority
12	London Croydon	Regional council	Local authority
13	Customer focus	Statutory customer champion	Statutory department
14	Caroline locus mp	Green MP	MP
15	Arc21	NI waste council	Devolved department
16	Scottish Enterprise	Development agency	Local authority
17	NFLA	Nuclear Free Local Authorities	Local authorities
18	IACC	Isle of Anglesey County Council	Local authority
19	Isle of Man Government		Local authority
20	Scottish Water	Public company	Local authority

Table 18: Academic, research institutes and consultancies involved in the EMR policy process

	<i>The Name of stakeholder</i>	<i>Field of work</i>	<i>Category</i>
1	Cambridge university	EPRG	Academic
2	ISRS	Infrastructure security	Research institute
3	Institute of Civil Engineering	Civil Engineer Association	Research institute
4	Exeter university	Energy Policy	Academic
5	Edinburgh University		Academic
6	UKERC	Research Centre	Research institute
7	SEG	SPRU	Academic
8	AMEC	Consultant	Consultancy
9	ICEPT	Grantham Institute Imperial college	Academic
10	Client Earth	European environmental law and policy	Consultancy

11	CO2Sense	Environmental consultancy	Consultancy
12	Blizzard	Energy consultant	Consultancy
13	Fichtner Consulting Engineers	RE engineering consultant	Consultancy
14	Oxera	Oxera	Consultancy
15	JR Power	Plant Site location	Consultancy
16	London analytics		Consultancy
17	Low-carbon innovation centre	East Angelia University	Academic
18	McGrigors LLP	Energy lawyer	Consultancy
19	SWAN centre	Newcastle university	Academic
20	Norton Rose LLP	Law firm	Consultancy
21	Poyry		Consultancy
22	Regulatory Policy Institute	Think tank	Consultancy
23	Respect Energy		Consultancy
24	Scottish Industrial Advisory Group on Thermal Generation and CCS	Advisor	Consultancy
25	Cornwall Energy	Advisor	Consultancy
26	University of Birmingham		Academic

Table 19: Different NGOs and civil society activists involved in the EMR policy process

	<i>The Name of stakeholder</i>	<i>Field of work</i>	<i>Category</i>
1	FoE	Environmental NGO	NGO
2	Energy Institute	Broad Association	Civil society
3	Green Alliance	Environmental	NGO
4	Green Peace	Environmental	NGO
5	Institution of Mechanical Engineers	Mechanical engineer association	Civil society
6	WWF	Environmental	NGO
7	SONE	Nuclear supporters	Civil society
8	REA	Renewable association	Civil society
9	ACE	Energy efficiency campaign	Civil society
10	CPRE	Campaign to Protect Rural England	Civil society
11	Transform UK	Environmental campaign	Civil society
12	Coal forum	Coal industry Confederation	Civil society

13	Common Good Party		Civil society
14	ESN	Electricity Storage Network	Civil Society
15	IET,RAE,IChemM	Engineering institutions and association	Civil society
16	Institute of Directors	Political organization	Civil society
17	IESIS	Engineering organization	Civil society
18	John Muir Trust	Wild land charity	NGO
19	MEUC	Major Energy Users' Council	Civil society
20	National Rights to Fuel Campaign	Fuel poverty campaign	NGO
21	Prospect	Trade union	Civil society
22	RICS	Royal Institution of Chartered Surveyors	Civil society
23	Tees Valley	Tees development	Civil society
24	TU	Trade union congress	Civil society
24	TUC Clean Coal Task Group	Trade union congress	Civil society
25	UK District Energy Association (UKDEA)	Decentralized energy association	Civil society
27	UKHFCA	UK Hydrogen and Fuel Cell Association	Civil society
28	UFUNI	Ulster Farmers Union (UFUNI)	Civil society
29	UNISON	Energy industry trade union	Civil society
30	NFLA	Nuclear Free Local Authorities	Civil society
31	Customer focus	Statutory customer champion	Civil society
32	Bio fuel Watch	Anti bio-fuel	NGO
33	Regen SW	RE promoter	NGO

Table 20: Respondents to the consultation call for BETTA in December 2001 (Ofgem 2002)

<i>The Name of Respondent Organization</i>	
1	Alcan Smelting and Power UK
2	Association of Electricity Producers
3	BOC Gases
4	British Energy plc
5	British Wind Energy Association
6	Centrica plc
7	Chemical Industries Association

8	DTI Engineering Inspectorate
9	EDF Energy Merchants Limited
10	Edison Mission Marketing & Services Limited
11	ELEXON Limited
12	energywatch
13	Grangemouth CHP Limited
14	Health & Safety Executive
15	Institution of Electrical Engineers
16	LE Group
17	Magnox Electric plc
18	Natural Power Consultants Ltd
19	Powergen UK plc
20	Scottish and Southern Energy plc
21	Scottish Electricity Settlements
22	ScottishPower UK plc
23	SEEBOARD plc
24	The National Grid Company plc
24	TXU Energy Limited
25	Wisenergy
