UK Climate Change and Energy Policy under the Conservatives since 2010: Multiple-elitism or Neo-pluralism?

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Abstract

This study focuses on exploring the UK's climate change and energy policies since 2010, under the Coalition and successive Conservative governments. As the concern over climate change has raised awareness of the need to reduce greenhouse gas emissions, the UK was among developed countries to focus on delivering affordable and clean energy, to reduce its contribution to global greenhouse gas emissions. In this context, the energy policies implemented dealt with emissions targets, security of supply and affordability. However, the policies since 2010 have been marked by continuity and change and involved key political actors including the government, environmental NGOs, local campaigners and businesses.

Whilst there has been discussion and concern about the UK's climate change and energy policies in the academic literature since 2010, these studies lack theoretically driven consideration of the policy process, are typically limited to a single policy area and lack a comparative analysis across different energy domains. This study is different from the existing literature because it explores in detail four policy areas: climate change policy, fossil fuels, nuclear power and renewables. It applies two theories of policy process to explore the policy changes in these areas: multiple-elitism and neo-pluralism. The study also engages in a broad comparative study of the four areas to help investigate which theoretical approach can provide a better understanding of each case as well as shedding additional light on the policy areas themselves.

From the analysis of semi-structured interviews with elite participants and the policy documents, I develop four cases of energy policy set against the backdrop of recent developments in climate change policy. Individual and comparative analysis of these four cases reveals that continuity and change are a feature across each policy domain. However, the cases differed from one another to some extent. Greater continuity was found in nuclear power policies compared to those of climate change, fossil fuels and renewables. Meanwhile, climate change, renewables and fossil fuels experienced greater policy changes than nuclear power since 2010. Across the four cases, policy reforms emerged following battles between environmental NGOs, business groups and the government. Further, elections seemed to play a role in changing policy directions, which were aimed at attracting voters. Across the four policy areas, countervailing power associated with neo-pluralist theory emerged significantly to oppose special interests emphasised by multiple-elite theory. This countervailing power appeared in different forms: the emergence of social movements in climate change, fossil fuels and nuclear power, the communication between different actors on the issue of nuclear power, and a coalition between businesses and environmental NGOs in renewables. Natural gas, shale gas and nuclear power emerged as privileged technologies in the energy mix. These enjoyed government and business support, and key elite positions were found to advocate for these technologies despite some opposition. On the other hand, renewables were more informed by tough planning policies, and ministers were found to be important advocates against the technologies, notably onshore wind and solar photovoltaic. Overall, a combination

of multiple-elitist and neo-pluralist features were found in the policies pertaining to climate change, fossil fuels and nuclear power, whereas policies linked to renewables were best described as neo-pluralist.

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List of abbreviations and acronyms

ACORD	The Advisory Council on Research and Development in Fuel and Power
AT	Alternative Technology
BEIS	Department of Business, Energy and Industrial Strategy
BNFL	British Nuclear Fuels
BNOC	The British National Oil Company
BP	British Petroleum
BRECSU	The Building Research Energy Conservation Support Unit
CBI	Confederation of British Industry
CCA	Climate Change Act
CCC	Committee on Climate Change
CCGT	Combined-cycle gas turbines
CCL	Climate Change Levy
CCP	Climate Change Programme
CCPR	Climate Change Programme Review
CCPRS	The Central Policy Review Staff
CCR	Carbon Capture Ready
CCS	Carbon Capture and Storage
CCUS	Carbon Capture Usage and Storage
CDM	Clean Development Mechanism
CEGB	The Central Electricity Generating Board
CfD	Contracts for Difference
CGN	China General Nuclear Power Corporation
CHP	Combined Heat and Power
CND	Campaign for Nuclear Disarmament
CoMARE	The Committee on Medical Aspects of Radiation in the Environment
CPF	Carbon Price Floor
CPRS	The Central Policy Review Staff
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DE on	Department of Energy
DTI	Department of Trade and Industry
DWMP	Decommissioning and Waste Management Plan
EA	Environmental Agency
EC	European Community
EEF	Engineering Employers' Federation
EDF	Electricite de France
EMR	Electricity Market Reform
EPS	Emissions Performance Standard
ETSU	The Energy Technology Support Unit
EU	European Union
EUETS	EU Emissions Trading Scheme
FAP	Funded Arrangement Plan
FDP	Funded Decommissioning Programme
FFF	Friday for Future
FID	Final Decision on Investment

FiTs	Feed-in-Tariffs
FoE	Friends of the Earth
GDA	Generic Design Assessment
GDF	Geological Disposal Facility
HFP	Hydraulic Fracture Plan
IPC	Infrastructure Planning Commission
IPCC	Intergovernmental Panel on Climate Change
LCCC	Low-Carbon Contracts Company
LPG	Liquefied Petroleum Gas
MRWS	Managing Radioactive Waste Storage
NEPA	Non-Fossil Fuels Purchasing Agency
NIA	Nuclear Industrial Association
NIC	Nuclear Industrial Council
NICs	National Insurance Contributions
NPS	National Policy Statement
NUM	National Union of Minerswork
OGA	The Gas and Oil Authority
OND	The Office for Nuclear Development
ONR	Office of Nuclear Regulations
OPEC	Organisation of Petroleum Exporting Countries
OUGO	Office of Unconventional Gas and Oil
PEDL	Petroleum Exploration & Development Licence
PINS	Planning Inspectorate
PUNE	Public Understanding of Nuclear Energy
PV	Solar Photovoltaic
PWR	The American Pressurised-Water Reactor
REA	Renewable Energy Association
RO	Renewable Obligations
RSPB	The Royal Society for the Protection of Birds
SMR	Small Modular Reactor
SSEB	The South of Scotland Electricity Board
STA	The Solar Trade Association
TUC	Trade Union Congress
WWF	World Wildlife Fund
XR	Extinction Rebellion

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1. **Chapter1**: Introduction

This thesis presents an analysis of climate change and energy policies in the UK since 2010, associated with the Coalition government and successive Conservative governments implementation of policies to address climate change and to deliver affordable and clean energy. From this time, the government's approach has been to achieve high economic growth with lower carbon emissions (BEIS, 2017a). In this regard, the transition to a low-carbon economy has had an impact on the energy sector. As such, the government designed policies to reduce greenhouse gas emissions from fossil fuels on the one hand, and increase the share of nuclear power and renewables on the other. More specifically, this thesis focuses on electricity generation from fossil fuels, nuclear power and renewables. This includes the policies on improving electricity generation from low-carbon sources.

Over the last two decades, the energy policies in the UK have sought to facilitate investment in low-carbon technologies and deliver climate change targets. In fact, the UK is the first country to legislate the Climate Change Act in 2008, to cut 80% of greenhouse emissions by 2050, from 1990 levels (BEIS, 2017a, p 5). In 2019, the UK amended the Climate Change Act 2008, and has become the first major economy in the world to legislate net-zero greenhouse emissions by 2050 (BEIS, 2019a). Both targets required the UK to pass laws to bring an end to its global greenhouse gas emissions. At the heart of the policies is electricity generation from fossil fuels, nuclear power and renewables.

Several studies have been carried out to describe and explain climate change and energy policies in the post-2010 period. These research studies provide some understanding of the four policy areas of interest in this thesis: climate change, fossil fuels, nuclear power and renewables (See for example, Carter, 2014; Carter and Clements, 2015; Corner *et al*. 2011; Evans, 2010; Elliot, 2019; Jenkins, McCauley and Warren, 2017; Johnstone, Stirling and Sovacool, 2017; Lockwood, 2013). However, most of the academic literature has focused on exploring a single policy area. The studies have rarely conducted a comparative empirical analysis of climate policies since 2010, for fossil fuels, renewables and nuclear power (See for example Johnson *et al*. 2017). Further, the studies often lack more in-depth theoretical analysis.

To this end, this thesis will make an original contribution to the existing literature. The thesis will explore in detail the four policy areas: climate change, fossil fuels, nuclear power and renewables. Significantly, the thesis will examine the four cases through a more theoretically driven approach. The thesis will apply two different theories of political process, namely multiple-elitism and neo-pluralism, to inform and guide the empirical inquiry. The use of these theories will help explore the cases from a conceptual approach that is different from the existing literature. In so doing, I am going to explore climate change, fossil fuels, renewables and nuclear power, taking into account the continuity and change of policies in each area. In this thesis, I also aim to explore the utility of each theoretical framework in analysis of these four cases. The theories will help understand the competing interests

between different actors in these policy areas. This also will allow us to gain a better understanding of policy outcomes, group organisation and presentation of their preferences. The study will also broadly compare the four cases to understand similarities and differences of policy in each energy area and attempt to identify the impact of interest group dynamics on policies. Given that the thesis provides a comparative study of the four cases, this will further help us identify which theory can make sense of the energy policies in the UK since 2010.

1.1. Research questions

Given the focus of the thesis, this study will attempt to answer the following questions: 1) What are the climate change and energy policies adopted under the successive Conservative governments since 2010? 2) Were the polices marked by continuity or change from the previous New Labour governments? 3) Why did the policies continue and/or change in each sector (climate change/fossil fuels/ nuclear power/ renewables)? 4) How can we explain this continuity and change from our two theoretical perspectives that emphasise interest groups mobilisation? This final question was further divided into: a) how interest groups influenced policies? And b) why they achieved certain policy outcomes? Finally, I ask: which energy area experiences greater/less continuity and change? What are the similarities and differences between climate change, fossil fuels, nuclear power and renewables policies in terms of interest groups' power and influence? And does the socio-political dynamics in each policy area reflect either a multiple-elitist or neo-pluralist theoretical perspective?

1.2. Theory

This study will apply the most contemporary theories of policy process, multiple-elitism and neo-pluralism, to examine interest groups' influence in policy. Multiple-elitism expects that a policy area can be occupied by multiple elites who exchange money, information and expertise in a sub-government to control a policy. Sub-government refers to a narrow coalition of elites that excludes countervailing power and gets discrete benefits from the government. This coalition also seeks control of the government's regulations to block reforms that serve the public interest. Meanwhile, neo-pluralism believes that a policy area is marked by competition from a welter of different interest groups. In this context, a policy area can include interest groups that are excluded from sub-government such as citizen groups. Interest groups are expected to countervail against one another to achieve reforms. This can be realised by social movements, issue network, formation of a coalition between business groups and citizen groups, or business groups countervailing against other business groups. I shall discuss the theories further in chapter 4 below, highlighting that multiple-elitism and neo-pluralism are evident in explaining interest groups' dynamics in environmental and energy policy processes in the academic literature (see chapter 4).

1.3. Research design

This thesis adopts a case-based approach to explore climate change policy and three different energy areas. A case-based approach is used for two main reasons. First, a case study-based approach was necessitated by the theoretical frameworks as this is the main research method adopted by pluralists and multiple-elitists (For example, Dahl, 1961; Gray *et al*. 2004; Godwin, Ainsworth and Godwin, 2012; Sayre and Kaufman, 1960). Second, a case study approach allows for a detailed examination of the research subject (see chapter 5 below), that is, it helps define the focus of the research and facilitates an in-depth description and analysis of the research subject (Zainal, 2007). Since my topic of research looks at climate change in general and in particular at fossil fuels, renewables and nuclear power as separate individual cases, I apply a specific type of case study method, known as a multiple-case study, to serve this overall aim. The multiple-case study will look at each case as if it is the only one studied in the thesis (Yin, 2018). It also allows the researcher to discover the similarities and difference between the cases. This means that the findings in the case studies will also be analysed through a comparative approach.

In order to develop the cases, data was collected from 30 semi-structured interviews and 76 policy documents, many of notable size. My approach to data collection and analysis was informed by the theoretical framework. The theories provided themes to guide the interview questions and the analysis of the original findings. It should be noted that data has been gathered through semi-structured interviews with stakeholders, notably politicians, environmental groups and businesses (see chapter 5). Policy documents have also offered a detailed explanation of policies and events, these were mainly collected from the websites of the Department of Energy and Climate Change (DECC), the Department of Business Energy and Industrial Strategy (BEIS) and the Committee on Climate Change. Data was also collected from quality newspapers, and newsletters from business groups and NGOs, which were secondary sources of data.

1.4. Thesis structure

Given that the thesis focuses on the most contemporary period of climate change and energy policies in the UK, it needs to provide the most recent policy development in the energy area and present a detailed understanding of multiple-elitism and neo-pluralism, including their application to the energy policy process. Therefore, the thesis introduces the rationale of the study and outlines the structure of the thesis in chapter 1. After this chapter, the thesis is then divided into two parts. Part 1 includes a historical background of climate change and the energy sector in the UK (chapter 2), a review of research into climate change and energy policy in the UK since 2010 (chapter 3), a detailed account of the theoretical frameworks informing the empirical analysis (chapter 4), and research design (chapter 5). These four chapters form the first part of the thesis. In chapter 2, I explore the story of climate change at international and national levels. I look at the main climate events that marked the history of climate change: the first climate conference in 1992, also known as the Earth Summit; the Kyoto Protocol 1997;

and the Paris Agreement 2015. Then I move on to tell the story of climate change and energy policies in the UK, examining the four sectors: climate change, fossil fuels, nuclear power and renewables. This offers a detailed view of climate change political history beginning from the 1970s up to the successive Labour governments (1997-2009). This background helps us understand in detail the emergence of climate policies in the UK and to provide historical context upon which this thesis is grounded.

After setting the scene of the history of climate change and energy policies in chapter 2, I move to chapter 3 to review the academic literature on climate change and energy since 2010. Chapter 3 will emphasise the contribution of this thesis, in reviewing the studies that have been developed during the period. Later, in chapter 4, I give an account of the theories of multiple-elitism and neo-pluralism. I will discuss the development and the themes of both theories. This theoretical overview is important to 1) provide an understanding of the theoretical orientation of the thesis, i.e. the dynamics and impact of interest groups politics; and 2) provide an understanding of the different concepts and ideas within each theoretical perspective, which will then be taken forward to inform empirical analysis in part 2. Then in chapter 5, I explore the research design and methods, to further explain how data was collected and analysed, and to justify my choice of methods of research.

In contrast to part 1, part 2 is exclusively dedicated to primary empirical research. Here, I focus more on describing and explaining the original findings in the four cases: climate change, fossil fuels (chapter 6) and (chapter 7), nuclear energy (chapter 8), and renewable energy (chapter 9). Part 2 will offer an analysis of the policies and events that marked the post-2010 period. This will be informed by the theoretical themes and concepts. In this section, the theoretical framework will help to describe and explain the dynamics and outcomes in each case study. This will progress via comparative analysis in chapter 10, to bring all the four cases together and expand the theoretical framework of the thesis. Part 2 will make an original contribution to our understanding of climate change and energy policies in the UK since 2010.

Part 1

2. **Chapter 2**: History of climate change and energy in the UK

Throughout recent history, the role of energy resources or fossil fuels has been significant in facilitating industrialisation and economic growth. However, the use of fossil fuels has been linked to increasing levels of greenhouse gas emissions, leading to global warming and climate change. This situation sparked off significant scientific and political concern leading to international negotiations led by the United Nations to collaboratively reduce greenhouse emissions globally. A starting point was the Rio Earth Summit in 1992, which was followed by the Kyoto Protocol in 1997. However, the negotiations over reducing greenhouse emissions are still ongoing. Of significant importance is the 2015 Paris Agreement, which pushed countries to deliver climate change policies at the national level to limit global warming to well below 2° C above pre-industrial levels and pursuing efforts to limit temperature rise to 1.5℃ compared to pre-industrial levels (United Nations Framework Convention on Climate Change 2015, p 3).

Well before the worldwide concern for climate change, and in particular, following the Second World War, fossil fuels were considered the primary source of energy, and this accounted for the industrialised countries' energy dependency and their struggle to balance supply and demand. In Britain, the industrial sector was fuelled by coal and oil, the latter discovered in the North Sea and was also imported from Organisation of the Petroleum Exporting Countries (OPEC). Therefore, after the 1970s oil crisis and the strike led by the National Union of Mineworkers (NUM), the security of supply and energy dependency became major issues. Nationalisation became the key instrument to improve economic efficiency and stabilise energy supply and demand.

However, by the mid-1980s, the post-war model of energy policies changed. Despite the increased attention to coal at the G7 (see below) to reduce OPEC dependency, Prime Minister Margaret Thatcher, in her speech to the Royal Society, discussed climate change as a global issue. In place of nationalisation, the UK government turned its attention towards privatisation and competition. Furthermore, the government encouraged the use of nuclear power to provide energy and to end the dependency on OPEC. The attention towards electricity generation was intended to develop the renewable energy sector by the 1990s. Notwithstanding the change of the energy policies, climate change did not play a significant role in the energy policymaking during this period.

The changes in energy policies were driven by major political events, such as the first and the second oil shocks of the early and late 1970s, the premiership of Thatcher (1979-1990), and climate change. The UK's framework of energy regulation has accelerated throughout the 1980s and the 1990s, due to the increased demand for electricity, economic growth, and the growing acceptance of climate change.

Given the interest in climate change issues, the UK began to address these issues during the 1990s, when international politics started to link fossil fuels to climate change. Consequently, the UK became involved with the climate change debate and sought to reduce its emissions. Under successive Labour governments (1997-2009), the UK started to take actions to reduce emissions. This resulted in ambitious commitments to reduce emissions, with a target of reducing 20% of CO2 emissions by 2010, which later turned to an 80% reduction of greenhouse emissions by 2050, following the Climate Change Act 2008. The energy policies introduced by the Labour government marked a notable transition in the energy and climate change agenda. As such, the policies supported renewable energy, revived interest in nuclear power, and introduced the Climate Change Act in 2008, which was pushed by cross party agreement and the efforts of the Friends of the Earth.

Necessarily, therefore, in this chapter, I provide a historical account of energy policy and climate change in the UK since the 1970s. I describe and explain the energy and climate change policies to highlight the complex relationship between these issues. I start with an overview of the international climate change politics, then I deal with the policy development of climate change in the UK, in particular up to the point when the Conservative party came to power. I discuss the main political issues that influenced energy and climate change policies. In this regard, I focus on the 1970s to the 1990s, that is, on energy and climate change issues in the post-war period, and then move on to energy policies linked to climate change regulations under the Labour administration. Finally, I explore the interrelationship between climate change and energy that featured in the energy policies of successive Labour governments.

2.1. An overview of international climate change politics

Awareness of climate change started to feature on the political agenda internationally following the increased scientific concern over global warming in the late 1970s and during the 1980s. The first major international conference on climate change, now referred to as the First World Climate Conference, was held in Geneva in 1979 and was sponsored by the World Meteorological Organisation (WMO)[1] . The Conference revealed that burning of fossil fuels, deforestation, and changes in land use have increased the amount of carbon dioxide in the atmosphere by about 15% (WMO, 1979, p 4). Further, a conference was convened at Villach, Austria in 1985, agreed that the global temperature would rise in the first half of the next century, which would be greater than any in human history (Pittock, 2009, p 278). This was followed by a report issued by the International Council of Scientific Unions, which revealed that the global temperature would increase by 1.5°C to 5.5°C towards the end of the twenty-first century

[1] WMO is an intergovernmental organization with a membership of 193 member states and territories. It was established in 1950 and became a specialized agency for the UN on weather and climate (WMO, 2020).

(Pittock, 2009, p 279). These concerns were translated into a proposed target of reducing carbon emissions at the Toronto Conference in 1988, where 300 scientists called for reducing CO2 emissions by 20% below 1988 levels by 2005 (Pittock, 2009, p 279). As a response, the WMO and the UNEP[2] established the Intergovernmental Panel on Climate Change (IPCC) in 1988, as a leading body to provide scientific assessments on the state of climate change. The IPCC was expected to examine the feasibility of the target suggested at the Toronto Conference, and to report its findings to the Second World Climate Conference[3] in 1990 (Pettenger, 2007, p 41).

In 1992, global commitments to reduce greenhouse emissions appeared in the form of the United Nations Framework Convention (UNFCCC), established at the United Nations Conference on Environment and Development (UNCED), also known as the Rio de Janeiro Earth Summit. The Convention did not set any binding target, although it called for stabilising greenhouse emissions at the 1990 level by 2000 (United Nations Framework Convention on Climate Change, 1992, p 12). Whilst this seemed significant to fight climate change, the negotiations on reducing emissions continued at the First Conference of the Parties (COP1) to the United Nation Framework Convention (UNFCCC) in Berlin in 1995. The UNFCCC called for binding targets taking into consideration the social and economic differences between developed and developing countries (Wolinsky-Nahimas 2015, p 4). The COP produced the Berlin Mandate, which outlined the establishment of an ad hoc committee to negotiate climate change instruments, by 1997. It suggested the use of the Global Environment Facility (GEF)[4] as a financial mechanism to protect the environment (GEF, 2021, p 265).

The ongoing negotiations over climate change emphasised collaborative climate actions by the industrialised countries, to reduce greenhouse emissions and to support climate research under the authority of the IPCC. However, the United States was not convinced of the issue. The U.S called for scientific research based on reducing emissions at the national level rather than setting general targets and timetables to be applied by all industrialised countries.

In December 1997, the parties to the UNFCCC convened their third Conference of the Parties (COP3) to agree on what is termed the "Kyoto Protocol". The Kyoto Protocol set an international commitment of reducing emissions by 5% below the 1990 levels, over the next 10 years. The Kyoto Protocol required industrialised countries to reduce emissions of six greenhouse gases: carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs)

[2] UNEP is a leading global environmental authority that sets the global environmental agenda and serves as an advocate for the global environment (GEF, 2021).
[3] The Second World Climate Conference was convened in 1990, where the IPCC negotiated its First Assessment Report (AR1). The Conference agreed that it was time for the countries of the world to take strong measures to reduce sources and increase sinks of greenhouse emissions (United Nations Framework Convention on Climate Change, 1993, p 2).
[4] GEF is a financial mechanism that includes 18 agencies comprising UN bodies, multilateral development banks, national entities and international NGOs. It provided support to more than 15.000 civil society in 135 countries to protect the ecosystem, build greener cities and promote efficient energy (GEF, 2021).

(Karling, 2001, p 60). In this context, non-Annexe I Parties (developing countries) were not legally bound to the Kyoto commitment. The task of reducing greenhouse emissions was the responsibility of Annexe I countries, since it was their industrialisation that led to the current level of greenhouse emissions. Annex I parties would achieve the Kyoto Protocol target with the application of three mechanisms known as the "Kyoto-mechanisms". They are the Clean Development Mechanism (CDM)[5], Joint Implementation (JI)[6] and the emissions trading scheme[7]. Although those mechanisms could help in fighting climate change, actual emissions reduction was also necessary to achieve the Kyoto protocol target. The Annexe I Parties agreed to a target of 5% reduction in greenhouse emissions below the 1990 level, during the first Kyoto-commitment period (2008-2012); this target would vary from one country to another (Pittock 2009, p 280). The European Union would reduce by 8%, which would be broken down into different national emission targets for the member states under the "Burden-sharing" agreement. For example, Luxembourg proposed a 28% reduction, Germany committed to a 21% reduction, and the United Kingdom agreed to reduce 12.5% of greenhouse emissions (Bohringer, Hoffman and Lange, 2005, p 3).

The European Union was interested in reducing fossil fuel consumption, especially after the oil price shock of the 1970s and early 1980s (Oberthur and Ott ,1999, p 15) (see discussion of the 1970s oil shock below). The EU needed policy changes to reduce dependency on energy imports, which was expected to rise between 50% and 77% by 2020 (Oberthur and Ott, 1999, p 15). This dependency is also linked to the fact that fossil fuel reserves in the EU are limited and production costs are comparatively high, which raises the issue of energy supply and savings. For example, as I discuss below, the United Kingdom, had largely exploited the North Sea oil and gas in the 1980s. The exploitation of the North Sea oil and gas revived the energy security problem in the 2000s because supplies started to decrease. The UK domestic production of gas from the North Sea declined from 108.4 million tonnes of oil equivalent in 2000 to 55.3 million tonnes of oil equivalent in 2010 (BEIS, 2021a, p 8). This increasingly turned the UK to become more reliant on gas imports from Norway, the Netherlands, Qatar and Russia (See BEIS, 2019a) and therefore strengthened the need for sustainable development, which I shall

[5] CDM allows developed countries to reduce their emissions through implementing emissions' reduction projects in developing countries. These projects can earn saleable certified emissions' reduction (CER) credit equivalent to one tone of CO2. The projects can include solar panels or efficient boilers to achieve sustainability and allow developed countries to be flexible in their emission reduction process (United Nations Framework Convention on Climate Change, 2007).

[6] JI allows developed countries to reduce their GHG emissions in developing countries through setting up projects with low costs such as replacing coal fired stations with combined heat and power. JI offers Emissions Reduction Unit (ERU) equivalent to one tone of CO2 for every reduction of emissions project (United Nations Framework Convention on Climate Change, 2007).

[7] Emissions trading scheme allows countries to sell their emission units to other countries that are over their targets. The units are defined under removal unit (RMU) based on land activities and forestry to reduce emissions; emissions reduction unit (ERU) generated under JI; and certified emissions reduction (CER) generated under the CDM. Each unit is equivalent to one tone of CO2 (United Nations Framework Convention on Climate Change, 2007).

discuss below. Overall, prior to the Kyoto Protocol, the EU's greenhouse gases (GHG)[8] emissions were estimated to rise between 5% and 6% by 2010 under a business-as-usual scenario[9] (Oberthur and Ott, 1999, p 16).

The Kyoto Protocol has also called on the United States, who never brough the Treaty to ratification, to reduce by 7% three major greenhouse gases (CO2, methane, Nitrous oxide) to below the 1990 level, and to below the 1995 level for man-made emissions (HFCs, PFCs, SF6) between 2008 and 2012 (Karling, 2001, p 76). However, the U.S. was convinced that emission reduction measures would set its economy back. In 2001, the Bush Administration declared that the U.S. had no interest in the Kyoto-Protocol (Avdeeva, 2005).

The Protocol required ratification by at least 55 countries to account for at least 55 % of CO2 emissions in 1990 by the industrialised countries to enter into force; and Russia's ratification of the Protocol was important to compensate for the absence of the U.S. Russia is responsible for 17.4% of the total global greenhouse emissions. In May 2004, the Russian Academy of Science claimed that the application of the Protocol lacked a scientific background and believed that it would have serious risks for the country's industrial sector (Avdeeva, 2005, p 293). As a world-leading energy exporter, the ratification of the Protocol would cause a reduction of CO2 emissions of hydrocarbon-burning industries such as primary energy, heavy industries, and automobiles (Avdeeva, 2005, p 296). This would require Russia to cover the costs of climate adaptation from the state budget.

Russia, therefore, was given more time to ratify the Kyoto Protocol. This decision was marked at COP 9, which took place in Italy in December 2003. At the 10th session of the UN Conference of the Parties COP 10, the Kyoto Protocol was ratified by Russia in December 2004, and it entered into force in February 2005. The COP served as the Meeting of the Parties to the Kyoto Protocol (CMP). Russia, thus, ratified the Protocol after setting up a plan that ensured the implementation of the Kyoto mechanisms (emissions trading scheme Joint Implementation and Clean Development Mechanism), increased the share of renewables and supported reforestation. Although Russia's ratification of the Protocol seemed an economic burden to the Russians, it was important for encouraging the country to boost technological development to reduce emissions and strengthen its diplomatic status to influence the climate change agenda (Avdeeva, 2005, p 296).

The negotiations over the Kyoto Protocol and the long-term cooperative climate actions resumed in 2011, in Durban. In the seventeenth session of the conference of the parties COP 17, also known as the

[8] GHGs are the gases that absorb infrared radiation such as carbon dioxide, water vapour, methane, nitrous oxide, and fluorinated oxide. The amount of GHGs increased significantly due to the burning of fuel energy, industrial processes, farming and deforestation. The rise in GHG emissions causes global warming (IPCC, 2019).

[9] Business-as-usual scenario refers to normal circumstances where policies, technologies and economics remain unchanged. In terms of climate change, a business-as-usual scenario tends to apply little or no efforts to reducing carbon dioxide emissions. It is also referred to as 'baseline scenario' or 'no policy scenario' (IPCC, 2021).

Durban Climate Conference, the vulnerable countries affected by climate change called for urgent binding commitments to get assistance to deal with their climate crisis. The COP called for another protocol, another legal instrument or an agreed outcome with legal force, for the post-2012 period. This was discussed under the Durban Platform, which was introduced in 2012, to negotiate a future climate regime, emphasising a wide cooperative climate response, applicable to all countries.

The EU, supported by the least developed countries (LDCs)[10], insisted on a legally binding protocol and called for an extended period of five or eight years for the application of the decision (Rajamani, 2012, p 504). This would start with the adoption of an amendment at the Doha Conference of the Parties, marking the second Kyoto Commitment (2012-2017 or 2012-2020). Moreover, the United States accepted to be involved and indicated that the mandate should be "symmetrical", with the participation of all significant emitters.

Meanwhile, Brazil, China, India, and South Africa resisted the amendment and called the parties to start the application post-2020. Considering this view, the Durban Platform negotiations concluded with an agreement that the Durban Platform will come into effect from 2020 onwards. The Durban COP decided that the Second Kyoto Commitment would come into force in either January 2013, December 2017, or December 2020 (Williams, 2016, p 32). The Second Kyoto Protocol was consequently confirmed at the eighteenth session of the Conference of the Parties (COP18) in Doha, Qatar, in December 2012, with a decision on emission reduction between 2012 and 2020. The Amendment was ratified by 145 parties, allowing its entry into force within 90 days from 1 October 2020. The Doha COP, however, represented only 15% of the emissions of countries that offered to support the Protocol in its second period. Canada, Japan, and Russia refused to support the commitment, whereas the EU offered a reduction of 20% of emissions by 2020, of which 18% had been already achieved (Williams, 2016, p 33). Hence, the EU ratification of the Doha Amendment did not indicate any new commitment because the 20% pledge was already considered in the "climate and energy package"[11] (Erbach, 2015).

Following that event, the Parties agreed on a new climate agreement for post-2020. This agreement took place at the 19th session of the Conference of the Parties COP19 in Warsaw, Poland, and at the 20th session of the Conference of the Parties COP20 in Lima, Peru. The negotiations over a new climate agreement were marked by the adoption of the "Lima Call" at COP20, which called on the Parties not to exceed an increase of the global average temperature above the pre-industrial level by 2°C or 1.5°C (United Nations Framework Convention on Climate Change, 2014, p 1).

[10] LDCs are currently 46 countries who are low-income countries and are vulnerable to environmental and economic shocks (see United Nations Framework Convention on Climate Change, 2009, p 2).

[11] The EU package was announced in 2007 and came into force in 2009. It includes 20% cut of greenhouse emissions by 2020 at the level of 1990, 20% of EU energy from renewables and 20% improvement of energy efficiency (Bel and Joseph, 2018, p 3799).

The Lima Call was revised at the Paris Agreement, which was held in Paris, December 2015 (COP21) and came into force in November 2016, at COP23 in Germany. This Agreement was reached after the ratification by 55 countries, which account for at least an estimated 55% of the global greenhouse emissions. Since then, more countries have ratified the Agreement; there are currently 188 Parties to the Convention, out of 197 Parties (United Nations Framework Convention on Climate Change, 2020). The Agreement sets long-term actions to keep global warming below 2°C and aims to pursue efforts to limit the increase in temperature to 1.5°C above pre-industrial level (United Nations Framework Convention on Climate Change, 2015, p 3). Furthermore, it called on the developed countries to support climate actions in developing countries, to provide $100 billion per year over the period 2020- 2025 (United Nations Framework Convention on Climate Change, 2019, p 6).

The negotiations at the Paris Agreement mainly focused on post-2020 targets. The negotiations, therefore, were focused on pushing nations to cut their carbon emissions, but with no specific requirements on how to cut emissions. This meant that the cut depended on the capabilities of the nations to adopt suitable climate change measures. The countries under the Paris Agreement were allowed to design reforms and regulations that suited their interests, under a scheme known as "nationally determined contributions (NDCs)" (Skovgaard and Asselt, 2019, p 5). The scheme would consider the domestic circumstances of each country, including its ambition to reduce emissions (United Nations Framework Convention on Climate Change, 2015, p 4). Under the Agreement, the Parties would have to communicate their NDCs every five years, by providing information on their efforts to and progress in reducing emissions (United Nations Framework Convention on Climate Change, 2015, p 4).

Overall, climate change emerged as a significant issue that required global collaborative efforts by the developed countries to reduce its effects. This started with the Toronto Conference in 1988 and continued with the Kyoto Protocol 1997 and the Paris Agreement in 2015. This to some extent set a guideline of clear targets to reduce national greenhouse emissions, however, climate change negotiations at the international level are still ongoing. The UK will be hosting COP 26 in November 2021 in Glasgow. The UK has become a leading country in undertaking the task of fighting climate change. This start was made under the Thatcher government in the 1980s.

2.2. The advent of climate change in the UK in the1980s

In the latter half of the 1980s, scientific research began to give climate change more attention. The research explored the issue of whether the climate was warming or cooling. Hence, in 1983, the United States Environmental Protection Agency published a report entitled "Can We Delay Greenhouse Warming?" (Nulman, 2015, p 9). The report discussed the concentration of CO2 emissions that contributed to increasing the mean global air temperature. This was followed by the United States Senate Committee on Energy and Natural Resources report, where NASA climatologist, James Hansen, declared that he was 99% confident that climate temperature was increasing and that it was not a natural

variability (Nulman, 2015, p 9). As discussed earlier, during this period, climate change policies were being debated at the global level, with an emphasis on the need to reduce greenhouse emissions. At the same time, the British government started to address climate change, and this started with Thatcher's Premiership.

In the late 1980s, the Conservative Prime Minister, Margaret Thatcher, became convinced of the idea that climate change presented a serious problem and required a national policy response. In 1988, at the Royal Society, Margaret Thatcher made a speech to address climate threats, which raised international concern. Based on her scientific background, Thatcher spoke to the Royal Society about the importance of science, ozone depletion, and global warming effects. Thatcher (1988) claimed, "We are told that a warming effect of 1° C per decade would greatly exceed the capacity of our natural habitat to cope". She also expressed concerns about warming effects, notably melting glacial ice and increasing sea levels, which threatened climate stability.

In the following year, the British Prime Minister continued her efforts to acknowledge the relationship between climate change and politics. Through a speech at the United Nations General Assembly, Thatcher argued for international actions to deal with the challenges imposed by climate change. Thatcher (1989) stated, "the most pressing task which faces us at the international level is to negotiate a framework convention on climate change". In addition to that, she addressed the role of the UK in coordinating within the Inter-governmental Panel on Climate Change, as she promised to take actions to improve agriculture, and water quality, and to take measures to implement nuclear power as an environmentally safe form of energy (Thatcher, 1989).

Thatcher's efforts to realise environmental stability in the UK started in 1979. Thatcher met with the Heads of States of some countries: Canada, the Federal Republic of Germany, France, Italy, Japan, Northern Ireland, and the United States (Nulman, 2015, p 10). They met at the G7 Summit[12] in 1979 which was held in Tokyo. The Tokyo Summit discussed issues related to oil price, inflation, and oil consumption. Although the Summit was devoted to solving economic difficulties and not climate change, the Heads of States agreed to expand alternative sources of energy and to reduce oil consumption. Hence, Thatcher's concern was included in the G7 Summit (Nulman, 2015 p 9). According to the Declaration, the Heads of the States mentioned, "we need to expand alternative sources of energy, especially those which will help to prevent further pollution, particularly, the sources that prevent increases of carbon dioxide and sulphur oxides in the atmosphere" (*Declaration: Tokyo Summit, 1979*).

[12] G7 Summit is an unofficial forum for the leaders of Canada, the European Commission, France, Germany, Italy, Japan, the UK, and the US. The 5th G7 Summit of the 1979 was the first summit for Margaret Thatcher (*Declaration, Tokyo Summit, 1979*).

The Declaration pledged for increasing coal production as a strategy to reduce oil consumption. However, the use of coal had shaped Thatcher's outlook towards privatisation (Helm, 2003). This was due to the conflict between the Conservative government and the National Union of Mineworkers (NUM) under the leadership of Arthur Scargill. As we shall see below, the battle with the miners started between 1970 and 1974 and ended with bringing down the Conservative administration under the Heath Government (Helm, 2003, p 67). Nevertheless, the conflict between the miners and the Conservative government continued in the mid-1980s.

In 1984, the miners struck again, this time against Thatcher's philosophy of privatisation and competition. Thatcher's ideology was to close the uneconomic coal pits. The Conservative strategy to defeat the strike was to increase the use of oil and maximise nuclear output (Helm, 2003, p 86). This strategy weakened the miners' strike, and in 1985, Thatcher defeated Scargill and closed 20 coal pits. Consequently, coal production and consumption decreased sharply in stark contrast to the Declaration's pledge (see Figure 2.1).

The decreasing production of coal was compensated for in the 1990s by the 'dash for gas'. This shift occurred due to the privatisation of the energy utilities, an outcome of Margaret Thatcher's commitment to liberalisation of the market. Consequently, several energy industries were privatised during the 1980s and the 1990s, such as Britoil, British Gas and British Petroleum (Bocse and Gegenbauer, 2017, p 9). The discovery of the North Sea gas was a major factor in encouraging the 'dash for gas', with cheap operating costs leading to peak production of natural gas in the 1990s. This resulted in lower carbon emissions than coal. For example, the electricity generation technology, the combined cycle gas turbine (CCGT)[13] that was developed to generate electricity from gas, emits approximately 60% carbon dioxide of an equivalent-sized conventional coal-fired station and 80% carbon dioxide of oil-fired station (Bocse and Gegenbauer, 2017, p 9). However, according to Nulman (2015, p 9), "Thatcher's motivation for changing policy was ideological, political, economic, but not environmental", and as we will see, this would prove to be an ongoing theme in climate change policy.

Figure 2.1: UK coal supply, 1970 to 2012.

[13] The combined-cycle gas turbine technology (CCGT) is associated with the discovery of natural gas reserves in Europe and North America in the late1950s and early 1960s, which resulted in the installation of a small gas turbine based on Turbojet design (Winskel 2002, p 567). This technology saw a significant rise in the 1990s, due to the availability of natural gas in the North Sea. Moreover, the investment in this technology contributed to reducing CO2 emissions by a third, between 1990 and 2014 (Bocse and Gegenbauer, 2017, p 8).

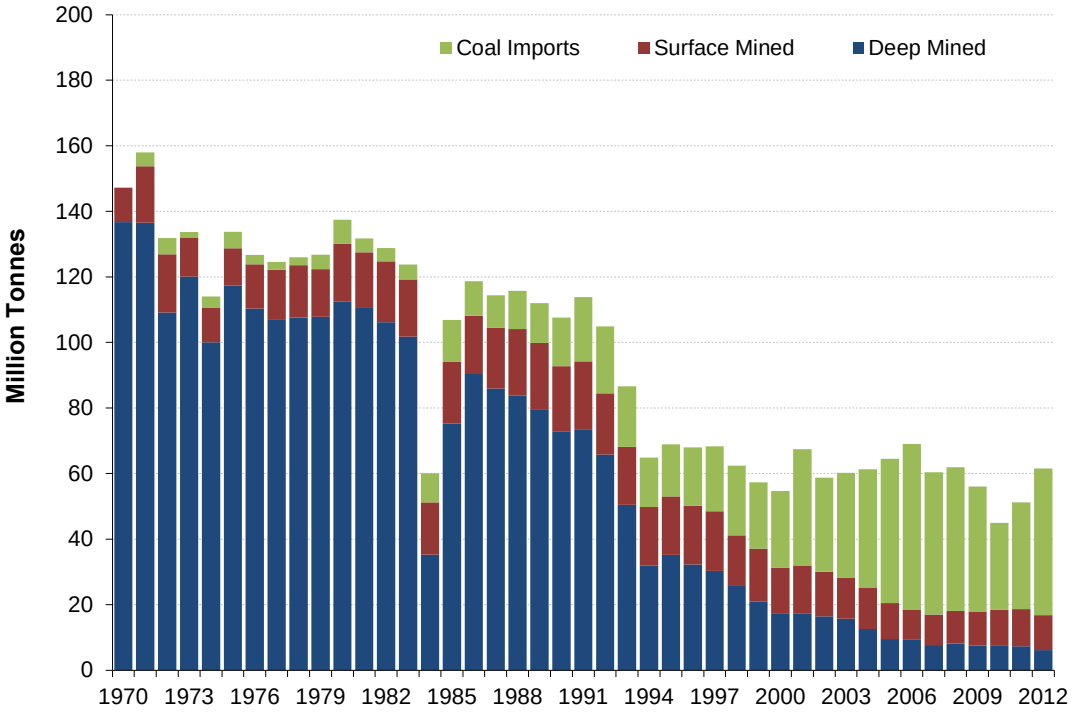


Figure 2.1: Coal production accounted for 84% in 1970s. Deep-mined production represented 93% (137 million tonnes of oil equivalent). Between 1983 and 1984, deep-mined production declined falling by 66 million tonnes of oil equivalent due to miners' strike. Between the late 1940s and 1980s, surface mine production rose to a peak of 21 million tonnes of oil equivalent in 1991. After 1991, production fell steadily as a result of closure of several mines (DECC, 2013a, p 53, chart 1).

During the Premiership of Margaret Thatcher, the UK was given the reputation of "the dirty man of Europe". The UK gained this reputation due to the failure to comply with the EC directives. Hence, in the late 1980s, conflicts arose between the EC under the leadership of Ripa di Meana, about the quality of water and air, and the development of the road construction, particularly M3 motorway extension project at Twyford Down (Garner, 2000, p 112-3). Although it provided an important link between Greater London and the South Coast ports, the project caused the loss of 1.91 hectares of SSSI lands[14]. However, the Directorate-General for Environment (DGXI)[15] was ordered to drop the legal action against the UK. The DGXI toned down its actions in order to decrease the tension between the Euro-sceptics in the Conservative party and the EU (Garner, 2000, p 113).

The Environmental Commissioner, Ripa di Meana accused Britain of not complying with the EU Directives and threatened legal action against the British Government over breaches of the

[14] Site Special Scientific Interest (SSSI) are sites based in Great Britain, they are areas based on high conservation values, including rare species, ancient trees, and ancient woodland. It is notified under the Wildlife and Countryside Act 1981 (BEIS, 2022).

[15] The Directorate-General for Environment is the European Commission department responsible for EU policy on the environment. Its objective is to improve and protect the environment. Its role is to make sure that the EU Members States implement the EU environmental laws (European Union, 2010).

Environmental Impact Assessment (EIA) Directive, water pollution, and the lack of mechanisms to deal with air pollution (Lowe and Ward, 1998, p 19). The decision to threaten the UK with court actions was taken in 1991, when the British Government refused to apply the EIA to the road construction of Twyford Down near Winchester and Oxleas Wood in South-East London. In 1992, the EC dropped the legal action and turned a blind eye to Britain's non-compliance with the EU Directives to improve water quality (Garner, 2000, p 112-3).

However, since Britain had a strong interest in the Single European Act[16], it was obliged to accept the EU environmental policies, which challenged its policy-making at home (Lowe and Ward, 1998, p 19). This acceptance raised Britain's role at the EU level, with reference to its wider international obligations following the Rio Earth Summit 1992 and the Kyoto Protocol 1997. As discussed, the EU for instance, agreed to cut its emissions by 8%, which would be achieved through an agreement called "Burden-Sharing". In turn, the UK committed to cut its CO2 emissions by 12.5% of its 1990 level in five years (2008-2012). This commitment encouraged significant actions to be adopted at the domestic level. Later, the UK joined the EU ETS (EU Emissions Trading Scheme) and the 20-20-20 target (explained further below). The UK started translating the calls on climate actions into policies during the Labour premiership in the 2000s. The UK concern about climate change led to it adopting the EU directives on the one hand and creating the UK's own policies on the other. This discussion now moves on to describe and explain the history of energy policies in the UK.

2.3. The energy situation from 1970s-1990s

Following the Second World War, energy supply in the UK was mainly dependent on coal. Coal was seen as the fuel for electricity and heat. At that time, the energy system was based on building more coal power plants through exploiting state-owned coal mines (Elliott, 2019, p 5). The rise of energy demand by the 1960s brought nuclear power onto the energy agenda. Nuclear power started to operate under the Magnox reactors in 1956 (Elliott, 2019, p 5). This design was scaled to further expand to 10 power stations to be opened in the subsequent 15 years[17] (Roberts and Clark, 2018, p 63). Meanwhile, coal and oil remained at the top of the power system until the oil crisis of the 1970s (Elliott, 2019, p 5). The rapid oil price rise following the oil embargo by the OPEC and economic and political instability heralded a transition in the energy portfolio. The period was marked by the coal miners' strike, fears of resource exhaustion, and the collapse of the Heath government in 1974. As a result of these events, alternative options in the energy system were considered.

[16] Single European Act (SEA) was the first major update to the Treaty of Rome in 1957. It entered into force in 1987 to establish the single market in 1992. SEA ensured cooperation between the European countries to facilitate movement of goods, labour, capital and services (Commission of the European Communities, 1985, p 6).

[17] The Magnox reactor was in operation at the following power stations: Chapel cross (1959-2004), Berkeley (1962-1989), Bradwell (1962-2002), Hunterston A (1964-1989), Dungeness A (1965-2006), Trawsfynydd (1965-1991), Hinkley Point A (1965-2000), Sizewell A (1966-2006), Oldbury (1967-2012), Wylfa (1971-2015) (Roberts and Clark, 2018, p 64).

In the post-Second World War period, the energy industry was nationalised, and public institutions were created to work alongside the government on policies for energy regulation, such as exploiting the North Sea oil and gas. Between 1947 and 1977, many public bodies were created, notably, the National Coal Board (NCB) and the Central Electricity Board, which were nationalised in 1947 and 1948 respectively (Helm, 2003, p 14). This was followed by the Central Electricity Generating Board, Areas Board, and the Electricity Council, in 1957. Moreover, in the interest of controlling natural gas distribution in the North Sea, the Gas Council and Area Boards were monopolised in 1948, followed by the British Gas Corporation in 1972. For nuclear power, the United Kingdom Atomic Energy Authority was set up in 1954 and the British Nuclear Fuels in 1971. As for oil, British Petroleum (BP) was partially owned by the government, and the British National Oil Company (BNOC) was established in 1976 (Helm, 2003, p14).

The nationalisation process was an instrument to facilitate government control and monopoly. It was seen as a vehicle for economic success. More than one million people became state employees (Helm, 2003, p 21). It also played an important part in providing social welfare, through improving health and education. In economic terms, nationalisation meant the elimination of market competition and long-term investment by the government (Helm, 2003, p 21). Moreover, the Labour government's main purpose for nationalisation of the energy sector was to stabilise energy supply and demand.

As the 1973 oil crisis hit the Western World, energy shortage issues were heightened. It had severe effects on industrialisation and on economic growth in Western countries. The decision of the Organisation of Petroleum Exporting Countries (OPEC) to increase oil prices drastically affected energy supply. The OPEC quadrupled oil prices, taking the price from $2.90 to $5.12, and then to $11.65 in 1973 (Helm, 2003, p 36).

Meanwhile, deep coal mined production in the UK, accounting for 137 million tonnes in 1970-1971, was threatened by the coal miners' strike (DECC, 2009a, p 10). This started when the government decided to respond to the oil crisis by freezing workers' salaries. However, it increased the tension between the government and the coal miners. By mid-1973, the latter demanded a 31% increase in their wages, as they were earning 3.1% less than the average worker (Helm, 2003, p 37). The Conservative government under the Premiership of Edward Heath refused to increase their wages, which eventually resulted in a national strike and the Three-Day Week[18]. The national strike ended with a defeat of the Conservative government and a compromise was achieved with the Labour government (1974-1979).

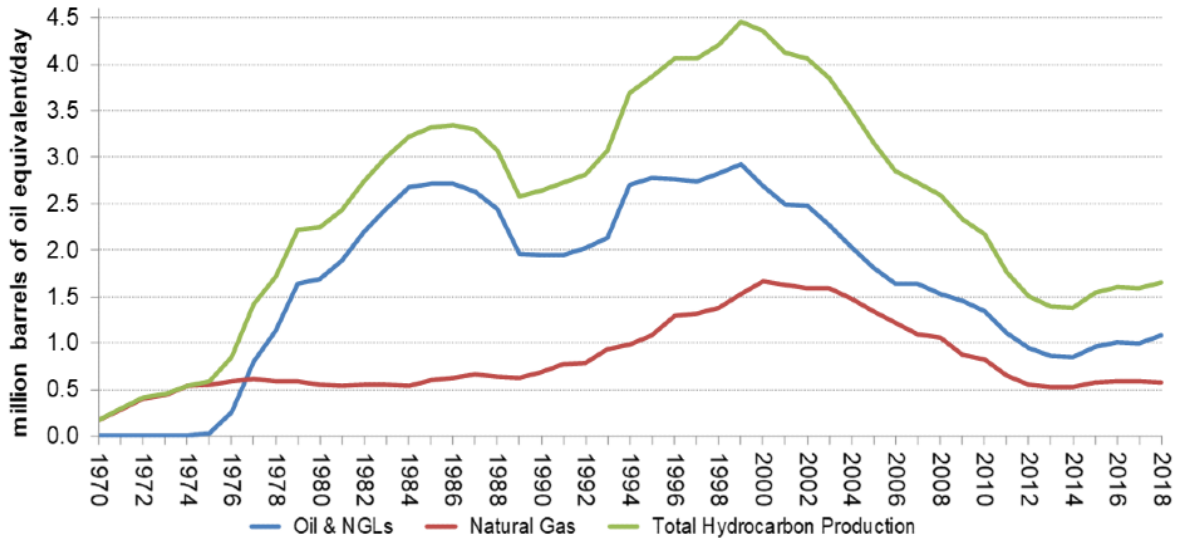
Coal interruption and the OPEC crisis created economic difficulties in the UK. Thus, in 1974, the government decided to establish the Department of Energy (DoE) (which later became the Department

[18] This was one of the measures adopted during the economic crisis of the 1970s. The Conservative government restricted electricity generation; commercial users of electricity were limited to three days consumption in each week (Helm, 2003, p 71).

of Trade and Industry (DTI) in 1992), to oversee the UK's energy policies. One of the energy solutions proposed by the DoE was the "Plan for Coal", a strategy to deal with the coal miners' strike, through financing uninterrupted electricity generation (Fudge *et al.*, 2008, p17). The output of coal would be stabilised and later increased to 150 million tons in 1985, which required adding 42 million tons of new capacity (Helm, 2003, p 72). This would entail improvement of the existing mines and the creation of new ones. The plan also included new wages for workers and other services such as holiday pay[19].

Moreover, the exploitation of the North Sea oil was one of the energy regulations adopted during the period of the economic crisis. This energy planning option enabled the transition from OPEC to non-OPEC supplies, which saw a significant increase in domestic production (see Figure 2.2) (Helm, 2003, p 36). With this in mind, the British government turned its attention to transforming BP into a national company, by increasing its stake from 48% to 68% (Hoopes, 1994, p 58). The deal was to aid Burma Oil, an original shareholder in BP, which sold its holding to the Bank of England for £149 million (Hoopes, 1994, p 58). Nevertheless, although the government increased its holding in BP, it did not nationalise the company.

Figure 2.2: Oil production in the United Kingdom, 1975-2012



[19] New wages included £36 a week for underground workers, £45 a week for surface workers. Also, an increase in holiday pay and to those who retired voluntarily, and improved the death-benefit services (Helm, 2003, p 71).

Figure2.2: Oil production in the mid-1970s increased greatly and reached its peak in 1999. This was due to the availability of oil resources in the North Sea. Moreover, the energy policy proposed increasing production from the North Sea oil to reduce dependency on the OPEC and fluctuation of oil prices (BEIS, 2019b, fig. 4).

By the mid-1980s, the post-war model of energy had changed. Most of the nationalised industries were placed under the private sector (see Table 2.1). This was achieved during the Premiership of Thatcher, to create competition in the energy market, and to bridge the gap between supply and demand, especially after the second oil crisis as a result of the Iranian Revolution in 1979[20] and the Winter of Discontent[21]. The privatisation of the energy industries was a solution to the inflation caused by the oil price hike[22]. This process saw a sale of £50 billion of state-owned assets to the private sector (Martin and Parker, 1995, p 225). Consequently, the proportion of state employees declined from 7.2% of the workforce in 1979 to 1.9% (Martin and Parker, 1995, p 225). The UK experiment with privatisation was to decrease inflation, which accounted for 16.4% in 1980, reduce the power of trade unions, improve industrial efficiency, and raise governmental revenues (Martin and Parker, 1995, p 226).

Overall, the governmental response to the economic instability was to deal with the energy crisis and to plan policies to cut the dependency on OPEC. In addition to privatisation and the North Sea exploitation, the other major energy solution proposed during this period was to create more nuclear power reactors and to search for renewable options of electricity generation. Thus, the UK government's strategy was informed by a need to ensure security of energy supply. Following this background discussion, I now review the government's approach to energy supply, which comprises nuclear power and renewables.

Table 2.1: Changing ownership of the energy industry between 1947-1996

Industry	**Pre-war ownership**	**Nationalised**	**Privatised**
Coal	Private	National Coal Board (1947)	RJB Mining and others (1995)
Electricity	Central Electricity Board, municipalities, and private companies	Central Electricity Authority (1948) and the Central Electricity Generating Board,	National Power Gen (1990), National Grid Company (1990),

[20] The Iranian revolution is also known as the Islamic revolution which involved protests that overthrew the last monarch of Iran (Mohammad Reza Shah Pahlavi). This led to the establishment of the Islamic republic and decreased crude oil production by 7% of world oil production (Hamilton, 2011, p 16).
[21] Between September 1978 and January1979, workers struck against the Labour government asking for a wage increase. This started when the Labour government imposed limitations on the public sector to control inflation, and restricted pay rises to 5%. The strikes were over by 1979, following the victory of the Conservatives.
[22] Oil prices rose to more than $40 in a barrel in 1980 due to the oil crisis resulting from the Iranian Revolution (Howell *et al.*, 1981).

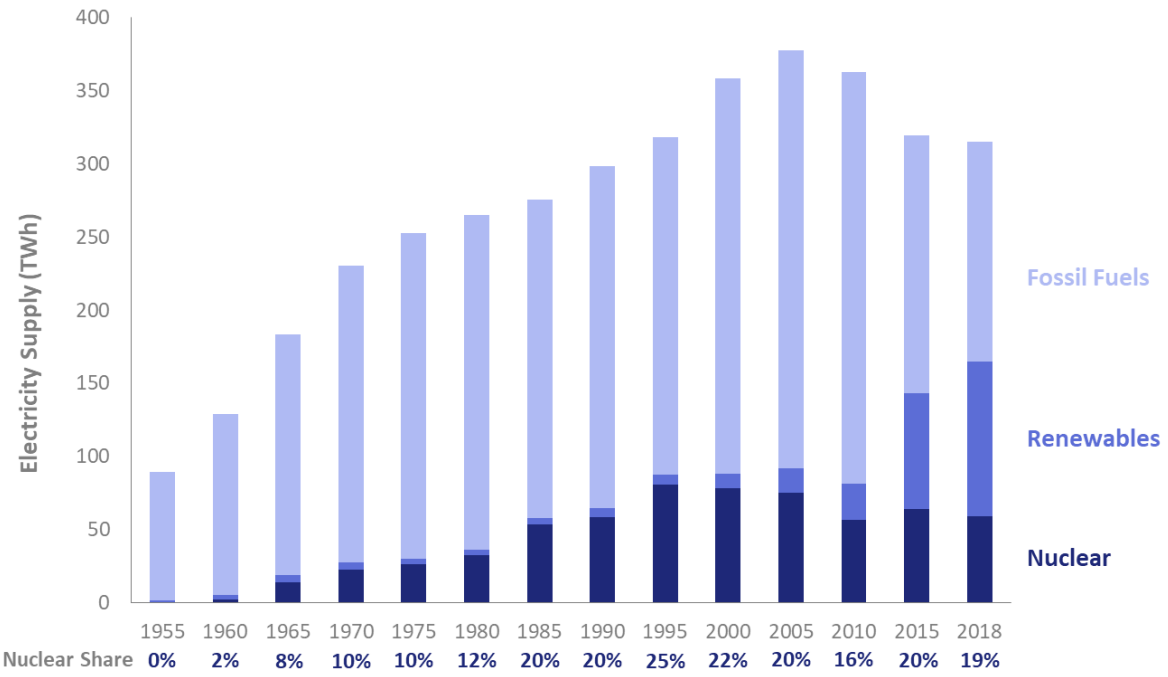
		Area Board, and the Electricity Council (1957)	Regional Electricity Companies (1990), Scottish Power and Scottish Hydro-Electric (1991).
Gas	Municipalities and private gas undertakings	Area Boards and the Gas Council (1948), and then the British Gas Corporation (1972).	British Gas (Gas Act 1986).
Oil	Anglo-Iranian Oil Company	British Petroleum (BP) (the British government was only a shareholder), National Oil.	BP final sale (1987), Britoil (1982), Enterprise Oil (1984).
Nuclear	None	The United Kingdom Atomic Energy Authority (1954), British Nuclear Fuels (1971), Nuclear Electric (1990), Scottish Nuclear (1990).	British Energy (1996)

The Table shows the transition of energy companies from public ownership to the private sector. Most of the companies were privatised in the mid-1980s and early 1990s. Privatisation was a government strategy developed as part of what came to be known as the "Thatcherite Revolution", to weaken trade unions and improve industrial relations internationally (Helm, 2003, p 18, Table 2.1).

2.3.1. The nuclear option

Since the 1950s, the UK has relied on different types of energy supplies, notably coal, natural gas, hydro, nuclear and renewables (see Figure 2.3). Between the 1950s and 1990s, many nuclear power plants were constructed. In the 1950s, the government set up twenty reactors, eighteen in the 1960s, six in the 1970s, five in the 1980s, and none in the 1990s (Thurner, Muller and Schulze, 2017, p 352). Interest in nuclear power was renewed as a response to the oil crisis in the 1970s and the concerns about electricity generation from fossil fuels. However, nuclear power development in the UK generated political discussions around the choice reactors.

Figure 2.3: Electricity supply from nuclear, fossil fuels and renewables, 1955-2018.



The figures show the dominance of fossil fuels in the 1970s and the 1980s. Nuclear energy started to challenge fossil fuels with nuclear power which accounted for 10% in 1970 and expanded significantly in 1980 and 1990 leaving its share of supply at 12% and 20% respectively (BEIS 2019c, p 65, chart 2).

A rapid expansion in nuclear power between the 1970s and the 1980s was linked to large-scale investment in electricity generation. This shaped governmental decisions about the choice of the reactor, with a transition from the Magnox technology in the 1960s to the advanced gas-cooled reactor (AGR) in 1970s and 1980s. Initially, investment in nuclear power started in 1955, with the First Nuclear Programme announcing the implementation of 1500 and 2000 MWe reactors of Magnox capacity (Patterson, 1985, p 5). This was followed by the second nuclear programme which was announced in 1964 and was expected to operate till 1970-1975. During this time, the Central Electricity Generating Board (CEGB) under the Premiership of Heath, sited the first twin AGRs, notably at Hinkley, Hunterston, Heysham, Hartlepool, and Dungeness (Helm, 2003, p 91). The programme under AGR technology faced technical problems and delays (Winskel, 2002, p 443). However, it continued to be adopted in the design of reactors whilst nuclear technology was expanding using the American Pressurised Water Reactor (PWR) (Winskel, 2002, p 443). Thus, the choice of reactor became a key debating point on the nuclear power agenda.

Prior to the miners' strike and the OPEC crisis, the CEGB announced a conversion from the gas-cooled technology to the American Pressurised-Water Reactor (PWR). This conversion was supported by the Chairman of the CEGB, Arthur Hawkins, who ordered in 1973 nine new nuclear power stations

between 1974-1979 and nine more between 1980-1983 (Helm, 2003, p 91). Nonetheless, the plan was opposed by different actors who were concerned about safety matters. The opposing parties were the CEGB and the private General Electric Company (GEC), both which favoured the PWR technology, and the South of Scotland Electricity Board (SSEB), Friends of the Earth, and the Institution of Professional Civil Servants, all of which argued that the PWRs were not safe and cost-effective (Wilson, 1984, p 36).

Whilst the controversies regarding the choice of the type of the reactor escalated, the new Labour Energy Secretary, Eric Varley, announced the third nuclear power programme in 1974. The plan would adopt the steam-generating heavy water reactor (SGHWR) for six 660 MW reactors (four for the CEGB in Sizewell B and two for SSEB in Torness) (Helm, 2003, p 92). This plan was opposed to the CEGB's idea to convert to PWR. The government justified this plan on the grounds that it would provide reliability of power and could be ordered quickly (Helm, 2003 p 92). However, by 1976, the plan was postponed due to cuts in public spending and the increased costs of the SGHWR. Hence, in 1978, the government decided to cancel the project and hold back financial support to the SGHWR contract (Parliament. House of Commons, 1978).

The main issue created by the cancellation of the Varley Plan was the need for an alternative type of reactor for the third nuclear power programme. The issue of the choice of reactor dominated political debate, as the oil crisis created by the OPEC countries and the threats of the National Union Mineworkers (NUM) renewed concerns about energy supply. This period was characterised by the attempt to construct long-term fuel technologies to deal with the energy challenge (Winskel, 2002, p 444). Furthermore, by the late 1970s, the CEGB announced that a capacity of 2GW a year was needed to replace the existing plant as two boiler-makers and two turbine-manufacturers had started to collapse (Helm, 2003, p 93). Therefore, in 1978, the Secretary of State for Energy, Tony Benn, allowed the CEGB and the SSEB to order one AGR station each and adopt the PWR system by early 1980 (Ogbonna and Wilkinson, 1998, p 28). The two AGR stations would operate in Heysham and Torness, which were confirmed in 1980. Tony Benn also announced that the SGHWR would be abandoned (Ogbonna and Wilkinson, 1997, p 29).

Whilst the nuclear power programme in the UK favoured the AGR reactor design, the CEGB proposed a change in the design, calling for the US-designed PWR. This move was also supported by the new Conservative government under the premiership of Margaret Thatcher. In 1979, the Secretary of State for Energy, David Howell, announced a nuclear power programme under which ten power stations would operate to deliver a capacity of 15 GW over 10 years (Pearson and Watson, 2012, p 5). Howell justified the plan for the expansion of nuclear power as it was a cheaper form of electricity generation (Helm, 2003, p 99). Moreover, the extended nuclear power programme would bridge the gap

in energy supply and thereby substantially reduce the threat to electricity supply from the coal miners' strike (Helm, 2003, p 99).

The new plan was followed by a report produced by the Monopolies and Mergers Commission (MMC) that criticised the two AGR plants in Heysham and Torness. The report clarified that there was falling demand for electricity during the period (Pearson and Watson, 2012, p 5). It also criticised the CEGB's investment arguing that the two AGR plants would increase the costs of construction by 25% by April 1980 (Helm, 2003, p 100). Furthermore, following the announcement of Howell's nuclear plan, electricity demand fell by 7% within seven weeks (Helm, 2003, p 101).

The programme was put back on track by the Sizewell Inquiry between 1983-1985, with a report produced in 1986 (Pearson and Watson, 2012, p 5). The Inquiry addressed a range of issues such as the CEGB's need to ensure electricity supply, the safety of the reactor, arrangement of waste management, and the implications of construction and operation (Helm, 2003, p 102). These issues, however, were subject to criticism, with questions around the projected nuclear power costs and the energy price fluctuation. On the one hand, Sir Alistair Frame, who was involved in the UK AEA's programme was sceptical of whether the CEGB would manage to deliver the PWR on time, given that it had claimed it would build the PWR in seven years compared to nine years by the Americans. On the other hand, there were predictions that oil prices would fall by the end of the century (Helm, 2003, p 103). However, although there were qualms about the construction of new nuclear power plants, the government approved the single PWR reactor at Sizewell B in 1987, which would start-up in 1994 (Davies, 1987, p 102).

The government was supportive of nuclear power expansion despite the Chernobyl disaster in Ukraine in 1986[23]. This support resulted in an announcement of further PWRs in Sizewell C, Hinkley Point C, and Wylfa B (Helm, 2003, p 103). Further, within the privatised electricity industry, Non-Fossil Fuels Obligation (NFFO) was introduced in the Electricity Act 1989. to support non-fossil fuels technologies such as nuclear power and renewables. NFFO had taken effect between 1990 and 1998 and was introduced to comply with the European Commission Directive, Large Combustion Plants Directive (LCPD), to control emissions from large combustion plants whose input is equal to or greater than 50MW (Mitchell, 2000, p 294). It should be noted that the NFFO mechanisms were applied in England and Wales, whereas Scotland and Northern Ireland applied the Scottish Renewable Obligation and the NI-NFFO respectively (Ofgem, 2020a). The mechanisms required public electricity suppliers (PES) to buy electricity from non-fossil fuels generated power. Thus, between 1989 and 1996, electricity was purchased from nuclear power and a small number of renewable energy sources, which I discuss further

[23] In 1986, a nuclear accident occurred at the Chernobyl nuclear power station in Ukraine. It was caused by the reactors' design, which lacked safety measures. It resulted in steam explosion and a significant radiation release. More than 2.000 were either dead or suffering from radiation sickness leading authorities to evacuate people from an area of 500 square miles around Chernobyl site (Fairhall and Walker, 2011).

below. Under the NFFO, the nuclear industry would receive an annual subsidy based on over 9 GW of nuclear generation of eight years until 1998 (Mitchell, 2000, p 294).

However, in 1995 the government announced that nuclear power would not receive public support. This decision meant that nuclear power would be privatised. This led to the division of the CEGB into two utilities: National Power, which was placed in a new company called Nuclear Electric, and Power-Gen, and the transmission system operator, National Grid (Young, 2003). By late 1995, the CEGB's successor, Nuclear Electric, abandoned plans for constructing new nuclear power plants. The nuclear expansion stopped in the 1990s because of large-scale interest in natural gas from the North Sea, and the transition of the nuclear plans towards cost-effective technology, notably the combined-cycle gas turbines (CCGTs) (Thurner, Muller and Schulze, 2017, p 352). Today, the UK has seven power stations of AGR capacity, one power plant of PWR reactor, and a nuclear reprocessing plant at Sellafield (see Table 2.2).

Table 2.2: Nuclear power plants in the UK (1956-2035)

Power Station	Opening Date	Closure Date	Installed Capacity (MW)	Current Status	Reactor Type
Calder Hall	1956	2003	220	Closed	Magnox
Chapelcross	1959	2004	196	Closed	Magnox
Berkeley	1962	1989	276	Closed	Magnox
Bradwell	1962	2002	242	Closed	Magnox
Hunterston A	1964	1989	180	Closed	Magnox
Dungeness A	1965	2006	450	Closed	Magnox
Trawsfynydd	1965	1991	470	Closed	Magnox
Hinkley Point A	1965	2000	500	Closed	Magnox
Sizewell A	1966	2006	420	Closed	Magnox
Oldbury	1967	2012	434	Closed	Magnox
Wylfa	1971	2015	980	Closed	Magnox
Hinkley Point B	1976	2023	1061	Operational	AGR
Hunterston B	1976	2023	1074	Operational	AGR
Hartlepool	1983	2024	1207	Operational	AGR
Heysham I	1983	2024	1179	Operational	AGR
Dungeness B	1983	2028	1120	Operational	AGR
Heysham II	1988	2030	1254	Operational	AGR
Torness	1988	2030	1250	Operational	AGR
Sizewell B	1995	2035[2]	1216	Operational	PWR
Hinkley Point C 1	2025	2086	1630	In construction	EPR
Hinkley Point C 2	2026	2087	1630	In construction	EPR
Sizewell C	*2030 - 2035*	*2090 - 2095*	*3340*	Proposed	Hualong One
Bradwell B	*2030 - 2035*	*2090 - 2095*	*2300*	Proposed	Hualong One

Table 2.2: The Table shows the nuclear power plants in the UK, generating 18.7% in 2018. Of those, eight have closed and no new nuclear plants have opened. Hinkley Point C is the only nuclear power plant approved with a proposed opening in 2025 (BEIS, 2019c, p 64, table 1).

The expansion of nuclear programmes under both the Labour and the Conservative governments created worries about safety matters. The issue of radioactive waste led to campaigns against nuclear waste and calls for the expansion of renewable energy. These campaigns were mainly led by the Friends of the Earth, Greenpeace, and the Campaign for Nuclear Disarmament (CND), and dealt with issues such as nuclear waste, mined uranium, and atomic production. Friends of the Earth, for instance, criticised the Nirex Inquiry at Sellafield. In 1995, Nirex[24] published a report to include Sellafield among 500 suitable sites for waste burial in an underground repository. Friends of the Earth issued a statement explaining the risks of building a repository in Sellafield, such as the likelihood of earthquakes and contaminated water (Gore, 1996). Moreover, Greenpeace disputed the British Nuclear Fuels' (BNFL) establishment of the Thorp nuclear re-processing plant at Sellafield (Byrne, 1997, p 142). Although Greenpeace presented scientific evidence to question BNFL in courts, its efforts were not enough to cancel the Thorp re-processing decision.

To conclude, nuclear power was considered as a solution to the energy problems during the 1970s and the 1980s. The government supported the technology to bridge the gap between the demand and the security of supply that arose following the OPEC oil crisis. The choice of reactors appeared to be of significance in the political discussions on nuclear energy, with a shift from the traditional AGRs to the US-designed PWRs. Although the government's intention was to build more nuclear power plants with PWR reactors between the 1980s and 1990s, these decisions were abandoned. This was mainly due to the government's decision to transfer nuclear construction to the private sector. Hence, only one PWR at Sizewell B was constructed.

2.3.2. The renewable energy option (1970- end 1990s)

The events that informed the energy agenda during the 1970s and the 1980s triggered interest in alternative sources of energy. This interest was pushed by a wave of environmentalism, which started advocating for a new approach to the energy issue. This wave favoured a carbon-free energy system and was driven by the climate change issue that is connected to the issue of energy. Initially, in the late-1960s and early-1970s, a movement called "Alternative Technology" (AT) had emerged in the UK and the USA to promote the use of solar and wind power (Elliott, 2019, p 8). This movement promoted technologies and technical practices to create an alternative society. In the UK, the movement was led by intellectuals who had technical backgrounds, typically in engineering or architecture, radical scientists, environmentalists, anti-nuclear campaigners, trade unionists, students, and community activists (Smith, 2005, p 112). The movement emerged due to the energy crisis, economic decline and unemployment during this period, which created an opportunity to spread the ideas of the movement

[24]The Conservatives established the Nuclear Industry Radioactive Waste Management Executive which had become Nirex in 1982. Nirex's role was to develop and implement long-term solutions in order to manage low-level radioactive waste (LLW) and intermediate and high-level wastes (ILW) (Gore, 1996, p 5).

(Smith, 2005, p 112). At that point of time, climate change was not a key influence on the energy processes and policies; however, it gained significance by the mid-1990s, a point which I shall discuss later. Further, the AT ideas were communicated through networks of the participants of the movement. People were meeting and discussing the projects and plans at locations such as the Centre for Alternative Technology (CAT) in Wales, and the Urban Centre for Alternative Technology (UCAT) in Bristol (Smith, 2005, p 114).

The AT movement promoted ideas that tackled power generation from resources used in the past, such as wind, water, and solar energy. The main focus of the movement was to develop alternative energy for power generation using existing technologies. These environmental campaigners offered policy recommendations based on the existing technological options (Elliott, 2019, p 15). Although grass-roots anti-nuclear campaigns were successful elsewhere, notably in Denmark and Germany, in promoting renewable energy, the green movement in the UK was not strong enough to promote such change in the energy system. The UK government started to take interest in renewable energy in the 1980s due to the oil shock and the AT movement, which had gradually gained some influence (Elliott, 2019, p 16).

In tracking the story of renewable energy in the UK, it is apparent that the interest in renewables emanated from the oil crisis of the 1970s. As discussed earlier, in 1974, the Conservative government set up the Department of Energy (DoEn) to deal with oil price instability following the 1973 price shock. The Department was set up during the Heath government and continued to operate during the Labour government, notably between 1974-1979. The Labour government introduced an energy conservation programme to encourage people to save household energy. The programme was launched with a campaign called "Save-it" (Owen, 1999, p 93). The programme was the responsibility of the Energy Conservation Division (ECD), which was established within the Department of Energy in 1975 (Owen, 1999, p 93). The government also introduced two agencies, namely the Energy Technology Support Unit (ETSU) and the Building Research Energy Conservation Support Unit (BRECSU). The former dealt with the technical work of energy conservation, in terms of the industrial and commercial sectors (Owen, 1999, p 93). The latter was responsible for buildings (Owen, 1999, p 93).

ETSU was set up to manage alternative energy resources. It formed the monitoring unit of the energy programme in the UK. It was involved in specific tasks such as identifying suitable renewable R&D, implementing and managing specific programmes, and advising the Secretary of State at DoEn (Wilson, 2012, p 81). ETSU created the Wave Energy Steering Committee (WESC) in 1975 and the Wind Energy Steering Committee in 1978 (Wilson, 2012, p 83). It also formed an important platform for the nuclear energy business. The reports published by the ETSU had to pass through a review led by the Advisory Council on Research and Development in Fuel and Power (ACORD). ACORD was also responsible for

reviewing the industries' R&D proposals on energy technologies, including coal, gas and nuclear power, through meetings and site visits (Wilson, 2012, p 79).

Initially, the exploration of renewable energy began following the government's quest for potential alternative energy sources. The government asked Lord Rothschild, the chair of the government's think tank, the Central Policy Review Staff (CPRS), to produce recommendations on energy policy (Wilson 2012, p 98). The think tank document presented an extensive analysis of energy options such as nuclear fusion, wave power, tidal energy, hydroelectric sources, wind energy, solar energy, and geothermal energy. Of all the energy options stated in the report, wave power was seen as a suitable option for electricity generation. The report confirmed that "about half the total requirement in electricity in the UK could be met in a stretch of the ocean as short as 600 miles" (Kenward, 1976, p 45). It also recommended that "The first stage of a full technical and economic appraisal of harnessing wave power for electricity generation should be put in hand at once" (Kenward, 1976, p 45). The inclusion of this statement led the government to announce in 1974 that it was spending £65000 on a wave power R&D programme (Kenward, 1976, p 45). Then, in 1975, the government established the UK Wave Energy Programme to invest around £400.000, rising to £2 million in four years (Wilson, 2012, p 107).

Wave power gained support from the ETUS, DoEn, and ACORD. The efforts of Department of Energy's Chief Scientists, Walter Marshall, Sir Herman Bondi and of the Head of ETUS, Don Gore, were instrumental in pushing for wave energy (Wilson, 2012, p 99). However, during the late-1970s, support for wave energy weakened as there were concerns about wave energy at the ACORD. Support for the technology changed following the ACORD's review of the ETSU report. This led the government to close the wave power programme in 1982 as it proved to be economically less viable. The government's view was reinforced by the ACORD report in 1986, which believed that wave power was unlikely to produce power for less than 9p/KWh as the programme target was 5p/KWh (Connor, 2003, p 68). Interestingly, an analysis in Norway concluded that wave power was possible at sufficiently low prices, notably a price of 3p/KWh (Connor, 2003, p 68). The ACORD analysis was re-assessed and has been rebuked for miscalculating wave energy prices (Connor, 2003, p 68).

Meanwhile, in 1977, some external experts started to promote ideas about other renewable sources renewable energy. The UK national section of the International Solar Energy Society (ISES) saw that solar energy would contribute to 10% of energy sources by 2020 (Elliott, 2019, p 27). Moreover, Dr Peter Musgrove, a leading researcher on wind energy, estimated that offshore wind turbines could generate 50% of electricity by 2025 (Elliott, 2019, p 27). The reviews provided by external experts encouraged the House Select Committee on Science and Technology to explore the role of other renewable technologies in electricity generation. Its report was optimistic about the use of renewable energy in electricity generation. The Committee believed that the costs of renewable research were

modest compared to the costs of the nuclear power programme, coal mining, oil and gas industries (Elliott, 2019, p 28).

In 1978, the government published a *White Paper on Alternative Energy Sources* to respond to the Committee's recommendation. The White Paper agreed that renewable energy research should be considered and expanded. However, its role in electricity generation remained under assessment. The Paper saw that the capital costs of solar and wind power were generally high (Elliott, 2019, p 29). Moreover, in the same year, the government published a Green Paper[25] on energy policy. The Paper reflected the government's support for the nuclear power programme and emphasised that renewable energy should be carefully reviewed (Elliott, 2019, p 30).

At the same time, ETSU assessed each source of energy and published several papers. The papers covered studies on wind energy, wave power, tidal, and solar power. ETSU published Energy Paper 16 *Solar Energy: its potential contribution within the UK* (1976), Energy Paper 21 *The Prospects for the Generation of Electricity from Wind in the UK* (1977), Energy Paper 23 *Tidal Barrages in the Severn Estuary* (1977), and Energy Paper 42 on Wave energy (in 1979) (Elliott, 2019, p 30). These papers emphasised the importance of alternative sources of energy. Consequently, the CEGB pointed out that wind turbines and wave power could offer enough power to meet the demand for electricity (Elliot, 2004, p 195).

Environmental groups such as Friends of the Earth and Social Environment and Resources Association (SERA) pushed for renewable energy supply (Elliott, 2019, p 131). Their support came after the Centre for Alternative Industrial and Technological Systems published a report introduced by Professor Elliott in 1979, which claimed that "Serious commitment to renewables and conservation could create perhaps twice as many direct and indirect jobs" (Elliott, 2019, p 31).

Despite the support for renewable energy at public and professional levels, the energy policies did not address renewable energy sources. During the 1980s, the expenditure on R&D for renewable energy remained low. In 1982, R&D expenditure was around £32 million, which would have required even more funding (Elliott, 2019, p 35). It seems that what mattered for the government was the cost of energy resources rather than the scale of the renewable energy programme.

As we have seen, the Conservative government's response to the 1970s oil crisis was through privatising the energy sector and supporting nuclear power. The government's support for renewable energy was weak during the Thatcher Premiership (Aklin and Urpelainen, 2018, p 120). Thatcher and her policy-makers gave nuclear power high priority, as a part of their plan to resolve the energy

[25] Green Papers introduce proposals for discussions which are at a formative stage. Whereas White Papers are statements of policy that stet out proposals for legislative changes before the Bill is introduced (Parliament. House of Commons, 2010).

challenges of the 1970s. Thatcher's support to nuclear power made her government less likely to follow the path of the Conservative government led by Heath, which was brought down by the coal miners (Aklin and Urpelainen, 2018, p 120). Thus, renewable energy did not gain attention until the 1990s. It was linked to the government's intention to avoid the application of the nuclear permit at the European Commission. Therefore, the government applied for non-fossil fuel support. Consequently, the Non-Fossil Fuel Obligation (NFFO) was launched in 1992, which accidentally gave birth to renewable energy subsidies (Alkin and Urpelainen, 2018, p 120). The NFFO required energy investors to buy power from non-carbon emitting sources. In 2002, the NFFO was replaced by the Renewable Obligation, thus creating a new system to restructure electricity from renewables (see below).

In the 1990s, renewable energy was put on the energy agenda under the electricity generation programme from renewable energy sources (RES-E). This programme included the Non-Fossil Fuels Obligation (NFFO). As also mentioned above, NFFO had taken effect between 1990 and 1998. A Non-Fossil Purchasing Agency (NEPA) was set up by the public electricity suppliers (PES) to form contracts with renewable generators. The NFFO initiated five obligations for renewables in 1990, 1991, 1994, 1997, and 1998, with the NFFO 5 expiring in 2019.

Along with the NFFO mechanism, the government passed the Climate Change Levy (CCL) to provide subsidies to nuclear power stations and renewable energy sources. The CCL was placed on electricity generated from fossil fuels. This provided approximately £1175M between 1990 and 1991, and £1204M between 1994-1995 (Connor, 2003, p 69). Renewable energy received only 0.5% of the total amount of money between 1990-1991, and 8% between 1994-95; most of the money went to subsidise nuclear power (Connor, 2003, p 69).

In this context, renewable energy was funded through a bidding process under the NFFO. Energy companies had to bid to apply for each technology. Through this process, the government would not directly offer subsidies to renewable energy projects, instead, it would award contracts based on the cost of the bid (Mitchell and Connor, 2004, p 1936). There were five rounds of this process between 1990 and 1998. However, this created conflict at the European Union level, because of the tariff that might be imposed on consumers and the short period of construction (8 years) (Mitchell and Connor, 2004, p 1936). The EC, therefore, called on the UK to separate renewable energy from nuclear power projects in the NFFO. Consequently, the period of renewable subsidies was extended to 15 years, thus removing the need for companies to rush through construction (Mitchell and Connor, 2004, p 1936).

To conclude, during the 1970s, energy politics was dominated by the oil crisis of 1973-1974 and the miners' strike. Nuclear power gained a significant role in the diversity of energy supply, which was dominated by oil and gas. However, the UK did not invest in renewable energy despite the pressure of environmental movements and the exploration of renewable options at the ETSU. Its emergence was accidental following the establishment of Non-Fossil Fuels Obligation, which was later replaced by the

Renewable Obligation. Renewable energy in the 1990s was slow, but the trend was reversed by the incoming Labour governments, and later by the Coalition government and successive Conservative governments led by David Cameron, Theresa May and Boris Johnson. Let us now move on to a more recent period of climate change and energy policy in the UK.

2.4. Climate change and energy agenda under the Labour governments (2000-2010)

Following the ratification of the Kyoto Protocol 1997, the Labour government led the way with significant measures to fight climate change. The UK government introduced policies to achieve the Kyoto commitment on the one hand and followed the EU climate laws on the other hand. The energy sector was a cause for concern because it has been reliant on fossil fuels which had clear implications for climate change. This dependency on fossil fuels was expected to increase as nuclear power plants, which were reaching the end of their licensed lives (Richardson and Chanwai, 2003, p 39). Key tools to decarbonise the energy sector were achieved under the Climate Change Programme 2000 and the Climate Change Act 2008. Here, the government was looking at both issues, addressing climate change and providing security of supply. Let us consider each one of these in the next two sections.

2.4.1 Climate change policies between 2000 and 2008

By the 2000s, the UK began the task of tackling climate change, through a combination of measures based on national and supranational climate commitments. These measures included innovative policies at the national level and compliance with policies introduced by the EU. In 2000, the Labour government, under the Premiership of Tony Blair (1997-2005), introduced the Climate Change Programme (CCP). The Programme set a national target of reducing carbon emissions by 20% below the 1990s level by 2010 (Select Committee on Environment, Food and Rural Affairs, 2005). The Programme also set longer term goals of reducing 60% of CO2 emissions by 2050 (Select Committee on Environment, Food and Rural Affairs, 2005). This would be achieved by designing policies to meet the target defined under the CCP.

These policies have fundamentally informed the government's approach towards fossil fuels, renewables and nuclear power, thus emphasising the crucial connection between climate change and energy. This link between climate change and energy was crystallised by the formation of the Department of Climate Change and Energy (DECC) in 2008, by the then Prime Minister Gordon Brown. The Department would be responsible for issues of energy and climate change. As such, its priorities would be energy security, low-carbon future, ambitious actions on climate change, promoting growth and supporting vulnerable consumers (DECC, 2014a). Crucially, the priorities for climate change and energy, energy security and targets for greenhouse emissions were high on the political agenda of the Labour government. Hence, it is imperative to explore the relationship between climate change and energy through looking at the policies of the Climate Change Levy, the Renewable Obligations, the new nuclear power programme and the implementation of the EU climate policies.

Under the Climate Change Programme, the government introduced the Climate Change Levy (CCL), which was implemented in the Finance Act 2000 (Richardson and Chanwai, 2003, p 46). It is a method which imposes carbon taxes on the industrial use of energy by private and public sectors, and exempts the use of energy by households, transportation and registered charities from tax. Renewable energy was exempted from the fuel tax, to encourage businesses to use renewable sources of energy (Richardson and Chanwai, 2003, p 46), whereas nuclear power was subjected to the Levy although it has low carbon emissions (Richardson and Chanwai, 2003, p 46). The CCL imposed a fuel tax on coal, gas, electricity, and non-transport Liquefied Petroleum Gas (LPG). The Levy aimed to regulate on large-scale carbon emissions and to reduce the consumption of fossil fuels. For example, energy taxes amounted to 6.1% for coal, and to 6.5% for natural gas (Martin, de Preux and Wagner, 2009, p 4). These taxes added approximately 15% to the energy bills of businesses (Martin, de Preux and Wagner, 2009, p 4).

Under the CCL, the government set up a scheme called the Climate Change Levy Agreement (CCA), to mitigate the adverse effects of the CCL on business competitiveness and industrial performance. Under this scheme, the government could reduce 80% of the tax rate for businesses if they adopted strict measures to reduce their emissions or committed to binding targets set by their relevant trade associations (Richardson and Chanwai, 2003, p 47). The agreement process included an umbrella agreement and an application for a reduced-rate certificate. The umbrella agreement was a negotiation between the firms and the government represented by DEFRA (Department of Environment, Food and Rural Affairs) about the carbon emissions target associated with the type of the sector (Martin, de Preux and Wagner, 2009, p 5). During this period, the businesses would have to provide a report on their carbon emissions and progress with energy efficiency every two years (2002, 2004, 2006, and 2008). Moreover, in terms of the reduced-rate certificate, the firms would have to apply to get a discount rate on the levy paid in each period; this process is called the underlying agreement with DEFRA (Martin, de Preux and Wagner, 2009, p 5).

Following the implementation of the CCL, the CO2 emissions rose by 1.5% in 2001 (Richardson and Chanwai, 2003, p 48). It appeared that the rise in carbon emissions was linked to higher gas prices, which subsequently caused an increase in the usage of coal in power stations (Richardson and Chanwai, 2003, p 48). The Engineering Employers' Federation (EEF)[26] published a report in 2001, claiming that the engineering sector was paying 17% of the revenue raised by the Levy, which was above its 8% share of the economy (Verma, 2003, p 58).

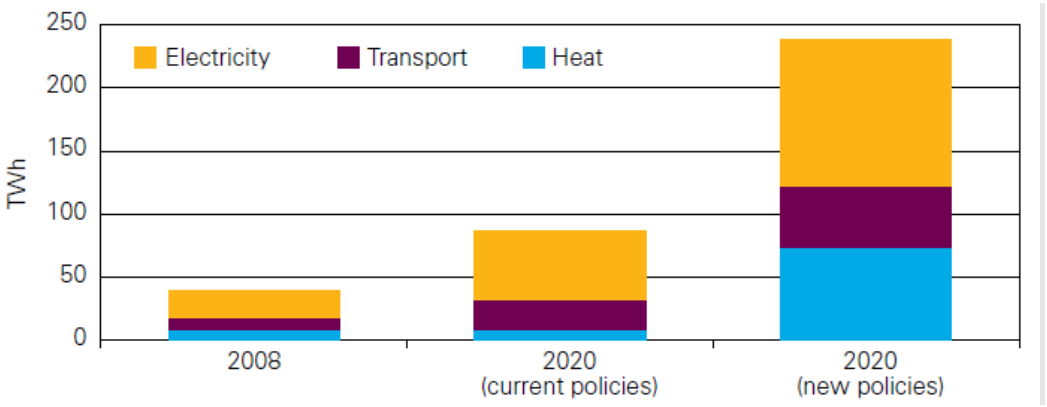
[26] EEF is a trade association. It is currently known as 'Make UK'. It represents UK businesses in manufacturing and engineering sectors. The trade association provides advice for businesses and attempts to create a healthy and supportive environment for businesses and workers. This is achieved by lobbying the government (Make UK, 2021).

In addition to that, the EEF and the business lobby group, the Confederation of British Industry (CBI), launched a survey in 2002, to assess the impact of the Levy on manufacturers. The CBI/EEF argued that around half of all companies claimed that their competitiveness was damaged at home and abroad (Gow, 2002). A report by Business Strategies and sponsored by the steel, chemical and engineering industrial associations revealed that the CCL would lead to 156,000 job losses over ten years and reduce productivity to 0.8% (Richardson and Chanwai, 2003, p 48).

In 2006, the government announced that the CCL rates would be increased each year in line with inflation, starting from 1 April 2007 (Seely, 2009, p 18). Since then, the duty rates have increased twice, between 1 April 2008 and 1 April 2009 (Seely, 2009, p 19). The Environment Audit Committee responded with a report in 2008, which acknowledged the role of the CCL in reducing CO2 emissions. The report argued that the CCL was projected to save 12 MtCO2 in 2010 (Seely, 2009, p 20).

Although the CCL seemed an important tool to reduce emissions from fossil fuels, in 2002, the government extended its plans to reduce greenhouse emissions by implementing the Renewable Obligation (RO), which was already included in the Utilities Act 2000. The RO was introduced to further encourage energy generation from renewables. The RO replaced the NFFO and slightly increased the supply of electricity from renewables to 3% between 2002-2003, compared to 2% under the NFFO in 1990 (Smith and Watson, 2002, p 2). The RO target was set to achieve 10.4% of electricity generation from renewables by 2010 (Smith and Watson, 2002, p 2). This policy places an obligation on the suppliers to provide an increasing proportion of electricity from renewables. Suppliers are required to present a green certificate known as the Renewable Obligation Certificate (ROC), an evidence that they have purchased or generated electricity from renewable sources for every MWh. They can also meet their legal obligation by buying ROCs from other suppliers with surplus. In case the electricity suppliers failed to comply with the RO, they would be subjected to financial penalties known as the buy-out price. Although the RO was the main scheme to support renewable energy during that period, in 2008, it appeared that the RO could not produce the amount of electricity needed to meet the EU target of generating 20% of electricity from renewables by 2020 (see Figure 2.4 below). The EU target was proposed in 2007 and came into effect in 2009 (Smith, 2008, p 8).

Figure 2.4: The size of the challenge: A potential scenario to reach 15% of renewable energy by 2020



The figure shows that the UK needs to radically increase the share of renewables in electricity generation. Thus, about 240 TWh of electricity should be produced from renewables by 2020 This was expected to increase with the policies implemented during the period. (DECC, 2009b, p 10, chart 1).

Further, a government paper, the Renewable Energy Strategy (RES), was launched in 2008, which argued that the RO should be replaced by another mechanism called the Feed-in-Tariffs (FiT) (Smith 2008, p 8). The FiT would provide incentives for small scale renewable electricity installations. Meanwhile, Friends of the Earth and the Renewable Energy Association (REA) formed a coalition of engineers, trade unions and farmers, which was represented by the Institution of Mechanical Engineers, the House Builders Federation, Trades Union Congress (TUC), and the National Farmers' Union (Seager, 2008). The coalition supported the FoE campaign that called on Parliament to include the FiT in the Energy Bill 2008. The government under the Premiership of Gordon Brown legislated the FiT mechanism in the Energy Act 2008, which would take effect in 2010 (see chapter 9).

Furthermore, nuclear power was one of the measures to decarbonise the energy sector. This started when the Blair government revealed its intention to revive the technology. In 2005, the British Prime Minister Tony Blair suggested expanding the nuclear programme to reduce emissions responsible for increasing global warming. This proposal was confirmed in the 2006 energy review, which planned to cut emissions by 60% by 2050 (Department of Trade and Industry, 2006, p 10). Other reasons to expand nuclear technology were related to the security of supply. This began in 2003, when the National Grid failed to supply South London leading to an electricity cut[27]. Moreover, the dispute between Russia and Ukraine[28] over gas supply between 2006 and 2009 led to the resurgence of Russia as a global power with influence over gas supply. This required major energy policy reforms.

[27] In 2003, the National Grid, a private company that transmits electricity power connecting power stations in the UK, failed to supply South London leading to a power cut for an hour and a half. Hence, 60% of rail services, including 250 sets of traffic lights, were affected by the blackout. It was discovered that there was a fault in the system due to an oil leak (Ofgem, 2003, p 3).

[28] The crisis between Russia and Ukraine erupted when Ukraine rejected the request of Russia to pay $250 per 1000 cubic metres of gas in 2009. Russia, as a result, cut off the gas supply to Ukraine leading to a gas crisis and

The dispute between Russia and Ukraine created worries about gas supply in Europe, with an estimated rise in gas imports of 84% by 2030, as Europe's own gas production fell, and demand rose (Parliament. House of Common, 2009). In the UK, the CBI estimated that less than 2% of gas imports originated from Russia (Parliament. House of Commons, 2009). Yet, the UK is dependent on imports to meet its energy demand. The UK imports gas from Norway and continental Europe. Thus, as much as 80% of gas was expected to be imported by 2015, as gas supply from the North Sea declines (Parliament. House of Commons, 2009). The disruption in gas supply also caused a rise in gas prices for a few days during the dispute. This forced the government to set an energy agenda with goals to maintain the security of supply and to seek more reliable sources of low-carbon electricity. In an earlier speech to the Confederation of British Industry (CBI), Blair (2006) claimed, "If the current policy is unchanged, there will be a dramatic gap in our targets to reduce CO2 emissions". Blair (2006) added, "We will become heavily dependent on gas and at the same time move from being 80% to 90% self-reliant in gas to 80% to 90% dependent on foreign imports, mostly from the Middle East, Africa, and Russia". These claims confirmed the need for reviving nuclear power in the energy policy reforms (see chapter 8).

However, the decision was opposed by campaign groups, notably Greenpeace, as they considered nuclear power to be expensive and dangerous. Following the government's consultation on nuclear power, launched in February 2007, the environmental group called for a proper consultation with detailed information about the future of the nuclear programme. Greenpeace believed that the government failed to present clear information about financial issues and radioactive waste in its consultation ('Greenpeace Limited v. The Secretary of State for Energy and Climate Change', 2011, p 5). During the same year, the group launched a judicial review at the high court against the government's support for nuclear power, claiming that the new nuclear construction decision was flawed and procedurally unfair. Greenpeace's application was successful, as Mr Justice Sullivan accused the government of not tackling the issue of waste and cancelled the government's proposal ('Greenpeace Limited v. The Secretary of State for Energy and Climate Change', 2011, p 5). In May 2007, the government commenced another consultation on the Future of Nuclear Power. Greenpeace and other high profile campaign groups such as Friends of the Earth, World Wildlife Fund (WWF), Green Alliance[29] and others withdrew from the consultation because it was thought that the Paper was again misleading and biased ('Greenpeace Limited v. The Secretary of State for Energy and Climate Change', 2011, p 5).

shortage in some European countries had to shut industrial plants and schools. In 2009, both countries reached an agreement, Ukraine had to pay the bills at $268.5 per 1000 cubic metres and the EU acted as a guarantor (Parliament. House of Commons, 2009).

[29] Green Alliance was found in 1979. It is an independent think tank and charity focusing on the environment, low-carbon energy, and resource stewardship. The interest in improving the environment is supported by the group's partners, who are a coalition of NGOs, businesses and experts (Green Alliance, 2020).

Additionally, the new government under the Premiership of Gordon Brown called for the acceleration of electricity generation from nuclear power and clarified that new nuclear power generation would potentially have a role in tackling climate change and improving energy security. In 2008, he announced a deal between Britain and France to benefit from the French expertise in nuclear building. This plan was confirmed by the Business Secretary, John Hutton's speech to Parliament, where he called Gordon Brown's nuclear programme as the "renaissance of nuclear power" (White, 2008). The government launched a new nuclear generation programme with a capacity of 12.5GW, notably Hinkley Point C, Oldbury, Sellafield, Sizewell and Wylfa, as well as, Bradwell, Braystones, Hartlepool, Heysham, and Kirksanton (Gray, 2010). However, the new nuclear programme would be later ruled out by the Secretary of State for Energy, Chris Huhne, under the Coalition government (see chapter 8 below).

The Labour government under the premiership of Gordon Brown accelerated the nuclear power programme by initiating the Planning Act and the Energy Act in 2008. The Planning Act emphasised the need for new nuclear power infrastructure, which would be addressed through the National Nuclear Policy Statement (EN6)[30]. The Energy Act clarified that prospective operators of nuclear power stations should have a Funded Decommissioning Programme (FDP). FDP stipulates that the costs of decommissioning, management and disposal of wastes would be funded by the generators (*Energy Act 2008*, pp 42-45). This initiative was debated in the House of Commons, and it was decided that process of waste disposal would have a fixed price, the costs of which the operator would transfer to the taxpayer (Greenhalgh and Azapagic, 2009, p 1054). These proposed measures will be further discussed in chapter 7.

Whilst the Labour government introduced creative policies to reduce greenhouse emissions, the UK had also been responsive to the EU's climate policies. Most notably, the EU Emissions Trading Scheme (EU ETS)[31]was set up in 2005, as a response to the Kyoto Protocol 1997, and was adopted in the UK under the UK ETS. This mechanism includes over1000 power stations in the UK, including oil refineries, steel, and iron industries (BEIS, 2020a). To date, the EU ETS has operated in three phases, phase I lasted from 2005 until 2007, phase II from 2008 to 2012, phase III from 2013 to 2020, and the upcoming phase IV will operate in 2021 and run until 2030 (BEIS, 2020a). According to the 2006 Energy White Paper, "the EU ETS will be the central plank of our future emissions strategy" (Department of Food and Rural Affairs, 2007, p 11).

[30] NPS is a document passed by the government to set a framework of nuclear decisions and planning or infrastructure of the new nuclear power projects (Environment Audit Committee, 2010).

[31] The EU ETS was launched in 2005 to reduce global greenhouse emissions. It encompasses 11.500 installations across 30 countries in Europe, covering around 40% of total EU emissions. It is based on a cap on trade scheme, which sets a cap on permitted greenhouse emissions from factories. In case the emissions by a factory exceed the permitted cap, the emitter would buy allowances from others (Laing *et al.*, 2013).

The EU ETS was supported by the CARE (Climate Action and Renewable Energy) package through which the 20-20-20 targets operates. The CARE was included in the Lisbon Treaty in 2009, to deal with the EU's energy policy, which aims to ensure the functioning of the energy market, through integrating EU gas and electricity market, energy security supply, and promoting energy efficiency from renewables (Delbeke, Klaassen, and Vergote, 2015, p 62). The package includes a 20% reduction of EU emissions from the 1990 level, a share of energy consumption from renewables of 20%, and a 20% improvement in energy efficiency. According to the CARE, renewable energy would include wind energy, solar energy, hydropower, tidal and wave power, geothermal energy and biomass energy (Delbeke, Klaassen, and Vergote, 2015, p 65). The UK is projected to limit its CO2 emissions from non-ETS sectors by 16% by 2020 from the 2005 level (Haigh, 2016, p 117). Additionally, it significantly increased its renewable energy, which accounted for around 1.4% in 2005, and 5.1% in 2013, to achieve 15% of energy from renewables in 2020 (Delbeke, Klaassen, and Vergote, 2015, p 67).

Overall, between 2000 and 2008 the policies related to energy and climate change were framed to expand renewable energy, impose climate change levies on businesses and revive the nuclear option for electricity generation. These policies were the result of concerns over climate change, energy security and affordability. However, the commitment over decarbonisation of the energy sector was still debated as the Climate Change Programme Review demonstrated gaps in achieving the UK's commitment. This has resulted in a major climate change policy implementation, namely the Climate Change Act.

2.4.2 The Climate Change Act (CCA) (2008-2010)

As discussed above, the Labour government introduced the Climate Change Programme (CCP) in 2002, to reduce greenhouse emissions at the domestic level. As also mentioned above, the CCP required a 20% reduction of CO2 emissions by 2010. However, the Department of Energy and Industry (DTI) reviewed the commitment and argued that the UK was not on track to achieve its target. The DTI concluded that CO2 emissions' reduction of only 14% would be achieved by 2010 compared to the 1990 level (Select Committee on Environment, Food and Rural Affairs, 2005). The DTI called for increasing the target to a 60% greenhouse emissions' cut by 2050. This commitment was mentioned during the General Election of 2005, as the Labour and the Conservative parties pledged to cut 60% of greenhouse emissions by 2050 in their manifestos (Nulman, 2015, p 62). However, their manifestos did not include legislation to mandate the target (Nulman, 2015, p 62).

Whilst the commitment required a policy consideration, Friends of the Earth called for legislation to reduce carbon emissions by 3% every year (Nulman, 2015, p 62). This proposal was highlighted under the climate change bill pushed by a campaign called the "Big Ask". The campaign comprised over 100 environmental groups, which formed the Stop Climate Chaos coalition of NGOs, and it demanded a 2°C limit to the rise in the Earth's temperature (Carter, 2014, p 426). The Big Ask campaign got more than 200,000 people to speak to their local MPs in person, by email, letters, or videos (Friends

of the Earth 2018). The campaign drew the support of the new leader of the opposition, David Cameron, and it attracted 412 MPs to sign an Early Day Motion (EDM)[32] (Carter, 2014, p 426). The EDM demonstrated the political support of backbench and opposition MPs for the campaign (Nulman, 2015 p 62). The EDM was signed by 200 MPs, 44 Conservatives, 45 Liberal Democrat, and 108 Labour MPs (Nulman, 2015, p 63). The campaign was also supported by David Cameron under the slogan "Vote Blue, Go Green", which sought to change the Party's manifesto to have a more sustainable rhetoric to attract green voters (Carter, 2014, p 427). The Big Ask was also gaining cross-party support from both the Conservatives and the Liberal Democrats. The Labour government responded by introducing the climate change bill to reduce 60% of emissions by 2050, and 80% of CO2 emissions at the 1990 level by 2050 (*Climate Change Act 2008*).

The introduction of the bill to the UK Parliament was announced in the Queen's Speech in 2006 (Muinzer, 2018, P 13). In 2007, the government passed a consultation on the draft, in which around 17,000 individuals and organisations participated (Muinzer, 2018, p 10). By late 2008, the bill became an Act, requiring an overall target of 80% emissions' reduction by 2050. Notably, under the CCA, the Committee on Climate Change (CCC) was established. In a formal recommendation letter, the CCC confirmed the need to reduce 80% of emissions at the level of 1990 by 2050 (Muizner, 2018, p 15). The CCA also created five- yearly budgetary periods to reduce emissions annually, to help achieve the Act's target.

The Act specified the amount of greenhouse emissions that should be reduced annually during the budgetary periods to achieve the 2020 and 2050 targets respectively. For the budgetary period for the year 2020, the annual equivalent for the carbon budget[33] should be at least 26% lower than the 1990 level (*Climate Change Act 2008*, p 3). Moreover, for the budgetary period up to the year 2050, the annual equivalent for the carbon budget rate should be the same specified for the year 2020 (*Climate Change Act 2008*, p 3). In addition to the five-year carbon budget, the Act described continual adaptation planning. It required a five–year approach to adaptation plans, starting with a Climate Change Risk Assessment (CCRA) and followed by a National Adaptation Programme (NAP) (Fankhauser, Avrenchenkova, and Finnegan, 2018, p 11). The plans would assess the risks of the current and the predicted impacts of climate change in the UK, and would be updated every five years, to start a new risk assessment and a new NAP. In May 2009, the government set up three carbon budgets in the periods 2008-12; 2013-17; 2018-22 (Priestley, 2019a, p 3). The Fourth Carbon Budget was set up in 2011 for the period 2023-27 and the Fifth Carbon Budget in 2015 for the period 2028-32 (see chapter 6).

[32] EDMs are used to attract the signature of the MPs to draw attention to a specific event or campaign. They are used to demonstrate the level of parliamentary support for a particular case (Parliament. House of Commons, 2020).

[33] The annual equivalent for the carbon budget means that the required 26% should be divided by the number of the years in the carbon budget period (*Climate Change Act 2008*, p 3).

The first three budgets were set up to reduce 25%, 31%, and 37% of the total greenhouse emissions compared to the 1990 level respectively (Priestley, 2019a, p 6). The first three carbon budgets were recommended by the Climate Change Committee and were approved in 2009 (Fankhauser and Averchenkova, 2018, p 10). Official statistics indicated that the First Carbon Budget was outperformed by 1% and the Second Carbon Budget was outperformed by 14% (Priestley, 2019a, p 6). It is also estimated that the Third Carbon Budget would be outperformed by 3% (Priestley, 2019a, p 6). However, the Committee on Climate Change did not support the logic of outperformance to help meet the later budgets (Priestley, 2019a, p 6). This issue created complications in the Fourth and the Fifth Carbon Budgets that included a cap of 51% and 57% of total greenhouse emissions' reduction respectively (see chapter 6).

The Committee on Climate Change that was introduced by the Climate Change Act is an important pillar in shaping climate change policies in the UK. However, its role and strength will depend on how to survive governmental changes and how much influence the Committee will have in the future (Giddens, 2009, p 84). Additionally, the government proposed several plans that could prevent the CCA from achieving its objectives (Giddens, 2009, p 84). In 2008, the government proposed building a third runway at Heathrow Airport. Although environmental groups opposed the decision, believing that it could go ahead only if it meets air quality commitments, the government's economic subcommittee chaired by Theresa May approved the plan.

According to the Committee on Climate Change, carbon emissions from aviation will increase from 37 million tonnes to 43 million tonnes. This means that CO2 emissions from aviation will rise from 6.5% to 12.5%, which is likely to prevent the UK from achieving its climate change targets (Russel-Jones 2018). The third runway at Heathrow Airport was justified on the grounds of economic growth through increasing employment rates and economic benefits. According to Chris Grayling (2017), the Secretary of State for Transport, "The runway would deliver benefits of up to £74 billion to passengers and the wider economy over 60 years".

Moreover, in 2008, the German energy company, E.ON, proposed to build two new coal units in the coal-fired station in Kingsnorth, Kent. The proposal meant that CO2 emissions would increase sharply per year because Kingsnorth station could produce more CO2 emissions than a country the size of Ghana (Giddens, 2009, p 87). Kingsnorth station would rely heavily on coal since gas is used as a secondary fuel to generate electricity in the region. The proposal was not supported by environmentalists, leading to protests, notably the Camp for Climate Action, which included hundreds of environmental campaigners (Aldred, 2008). E.ON abandoned its proposal and in 2009 the company ceased its plan to build a new coal-fired station on the Hoo Peninsula; this decision was due to the falling demand for electricity following the 2008 economic recession (*BBC*, 2010).

2.5. Conclusion

In Britain, the evolution of climate change mitigation has been linked to energy policies. In the 1970s and 1980s, the government faced the challenge of imports and energy dependency. This was translated into the need for new energy policies to ensure adequate energy supplies. As a result of the new energy policies, the energy sector made a transition from a monopoly operation to competition in the sector, along with an important role for nuclear power. The climate change challenge was not recognised before the 1980s, but after the Conservative election victory of 1983, climate change began to be a matter of concern. Thus, it emerged alongside the energy sector and became a serious issue with Thatcher's attempts to tackle the issue of global warming.

Blending climate change with energy policies has always been a matter of difficulty for the British government. The government started to introduce climate change policies through merging climate change policies with the energy sector. It, therefore, put the EU ETS into practice, it introduced eco-taxes and other policies, notably the Renewable Obligations and Climate Change Act to reduce CO2 emissions. Overall, attention to climate change in the UK increased, particularly after its ratification of the Kyoto Protocol, leading to the Labour government's commitment to achieving 20% reduction of CO2 emissions at 1990 level by 2010, which became a reduction of 80% in greenhouse emissions by 2050 under the CCA.

3. **Chapter 3**: Reviewing the Literature on climate change policies in the UK since 2010

While Chapter 2 told the story of climate change and energy policies in the UK between 1970 and 2010, this chapter provides a literature review for the period between 2010 and 2020. To some extent, this chapter continues the story of the climate policies from chapter 2. Since 2010, the academic literature has examined the political actions towards achieving a low-carbon energy sector in the post-2010 period. However, most of the literature focuses on one area and is often limited by the extent to which the analysis is theoretically informed. Therefore, this chapter highlights these gaps in the academic literature and emphasises the uniqueness and the main contribution of this thesis.

The chapter addresses key policy areas of interest to this thesis: climate change, fossil fuels, nuclear power and renewables. The literature on the energy policies since 2010 has focused on Cameron's green credential, the support for shale gas, the revival of nuclear power and the changes in subsidises for specific technologies in renewables. The literature has examined the strengths and weaknesses of the energy policies and their effectiveness in greenhouse emissions' reduction, energy supply, and affordability. Whilst reviewing the literature, I searched for studies that compared the different energy sectors. In this regard, the academic literature generally lacked theoretically informed analysis, and with the odd exception (e.g., Johnson *et al.*, 2017), comparative analysis across the energy areas was also lacking, with most of the studies focusing on one area.

Given these identified gaps in the existing literature, this thesis differs in two ways. First, the thesis applies two theories, multiple-elitism and neo-pluralism, to explore the policies on climate change and energy in the UK; second, under the background of continuity and change in climate policy, it compares climate change, fossil fuels, nuclear power and renewables to tell the full story of the climate policies since 2010. However, it goes beyond the literature provided in these areas, by describing and explaining the government's reforms and regulations through the theoretical framework of neo-pluralism and multiple-elitism. Both theories guide the research by informing the interview questions and data analysis (see chapter 5). In this regard, the thesis focuses on studying the continuity and change of climate change and energy policies of each sector. It further explores the policy outcomes through understanding the presence of different actors and their competing interests in each policy area. The thesis then moves on to compare the cases to explore their policies in terms of their similarities and differences, and it seeks to understand the impact of policies in one technology over another. A comparative study is crucial to gain a complete picture of the energy sector rather than a glimpse of a single policy area. Finally, the study aims to investigate which theory helps best to understand the policy process. The originality of this thesis lies in this examination of the cases. It thus contributes to an understanding of climate change and energy policies in the UK since 2010 from a different angle. A theoretically driven in-depth inquiry and a comparative analysis are central to this thesis.

Overall, the chapter examines several studies that generally dealt with climate change and specifically analysed the energy sector. It looks at the research on climate change policies in the UK since 2010 that explored the four focal areas of this thesis: climate change, fossil fuels, nuclear power and renewables. First, it begins with the literature on climate policies under the coalition and the successive Conservative governments. Then it moves on to cover the literature of shale gas and nuclear power, and finally addressing the literature on renewables.

3.1. The literature on climate change policies

Following the implementation of the Climate Change Act in 2008, a growing body of literature has examined the policies that aimed for a low-carbon energy sector (for example Carter, 2014; Carter, 2015; Lockwood, 2013). The then Prime Minister, David Cameron, attempted to be more pro-active in his policies to fight climate change. This strategy was reflected in the energy agenda, with a newly established framework to increase investment and reduce the use of fossil fuels for electricity. Nevertheless, the energy agenda designed to address climate change was met with doubts and opposition from the backbench MPs. This opposition also contributed to support for specific technologies in the energy mix.

Following the 2010 elections Cameron, introduced measures to tackle climate change. These measures also aimed to improve the green agenda of the Conservative Party. The commitment to tackle climate change by Cameron was a strategy to modernise the Conservative Party. The strategy, "Vote Blue, Go Green", proved useful during the elections, as public concern over the environment was high. In this sense, the Party wanted to change its image of "nasty party" into a new image centred on environmental protection and provision of good quality of life (Carter and Clements 2015, p 4). It revealed a tactical objective of what Carter and Clements (2015, p 4) terms "detoxification" and "brand decontamination". Focusing on a similar point, Evans' (2010, p 339) study identified that Cameron's objective was to end the economic "obsession" of Thatcherism. Although Cameron was a big fan of Thatcher, he insisted that the Conservative Party should take a different path. For Evans (2010), Thatcher had a considerable influence upon Cameron in fact, an acknowledgement of the environment and climate change issues feature in the rhetoric of both. Moreover, both admitted that climate change was a global issue, and they favoured the nuclear option to meet energy needs (Evans, 2010, p 339).

Other studies have identified that the environmental policies were an area of tension and disagreement between the parties in the coalition (for example Carter and Clements, 2015; Jordan and Rayner, 2010; Hess and Renner, 2019). This tension contributed to undermining the green credentials of the Conservative Party. Jordan and Rayner (2010, p 7) observed that the climate change consensus of the Con-Lib coalition was not as strong as it seemed during the election. The weakening of the consensus can be attributed to decisions by the secretary of state for environment, Caroline Spelman, to privatise forestry; the change from the Department of Energy and Climate Change (DECC) to the Business Energy and Industrial

Strategy (BEIS); and the withdrawal from the EU. The Party's green credential was also weakened following the announcement of its support for fracking and for reducing investment in renewable energy. This included tax breaks to encourage investment in shale gas (see chapter 6 below). For Carter and Clements (2015), there were pragmatic and ideological motivations for opposing environmental policies, specifically climate change policies. The pragmatic motivation was connected to the government's economic priority, and was supported most notably by the then Chancellor of the Exchequer, George Osborne. Meanwhile, the ideological motivation was linked to climate scepticism in the Party, which led to it opposing the expansion of wind energy in 2012 (Carter and Clements, 2015, p 18).

On this subject, Lockwood (2013) analysed the implementation of the Climate Change Act during the Coalition government. He found that the Act influenced policies on investment and provided guidance to the business community. However, political conflicts within the Party put the Climate Change Act at risk (Lockwood, 2013, p 1344). In the aftermath of its implementation, Chancellor Osborne, in the Energy Bill 2012, allowed gas-fired stations to operate until 2045. A topic to be examined in chapter 6. This created doubts about the effectiveness of the CCA. The Act failed to establish new low carbon physical and financial mechanisms for stimulating investments in electricity generation. Lockwood (2013, p 1345) found that the Act did not address the public's concerns about high energy costs. It was mainly business groups who were anxious about the effects of climate policies on their costs and competitiveness. In this context, we examine the role of shale gas following the implementation of the CCA in chapter 6. For Lockwood (2013), the hostility of these groups was based on scepticism about the scientific evidence and the effects of climate change, taxation, state intervention, and the powers of the European Union, all of which have threatened the Climate Change Act (Lockwood, 2013, p 1346).

Another aspect to the climate change issue between 2006 and 2010 was the role of environmental groups, business groups, the public and the media. This has had a considerable effect on the status of climate change in the political agenda, an outcome of which was the climate change bill (Carter, 2014, p 428). However, the political consensus started to break down post-2010, with growing discontent from backbench MPs, who questioned the reality of climate change and its link to human activities (Carter, 2014, p 429). The Conservative policies also included initiatives that were inconsistent with a low-carbon energy commitment. Examples of these initiatives would be the Chancellor Osborne providing subsidies for offshore oil and gas exploration, offering tax breaks to shale gas, and blocking the 2030 decarbonisation target in the Energy Bill 2012 (Carter, 2014, p 429). Briefly, Carter (2014) concludes that climate politics since 2010 has increasingly become elite-driven, with political leaders influencing policies instead of public opinion. Moreover, Gillard *et al.* (2017, p 180) saw that long-term policy development could be hampered by multiple factors such as political and economic cycles as well as by power relations within the central government structure. The case of the UK's climate change policies has demonstrated that economic downturns, uncertainty, and changes in political priorities can

slow down progress on climate change policies (Gillard *et al*., 2017, p 180). These issues will be discussed further in chapter 6.

Overall, the existing literature on climate change has dealt with the issue of the Conservatives' response to climate change. The reviewed literature dealt with studies that discussed the policies that attempted to address climate change. However, the aim of this chapter is to discuss in detail the literature that is specifically aligned with the topic of this thesis. Therefore, I move now to review the literature on specific areas, separating them into three sections: the literature on fossil fuels, nuclear power and renewables.

3.2. The literature on fossil fuels

As discussed in chapter 2, the use of fossil fuels has increased the volume of greenhouse emissions in the atmosphere. Consequently, there have been concerns over the sources of energy, leading the government to examine alternative technologies to deal with the issue of climate change. The literature on fossil fuels has focused on studying hydraulic fracturing (also known as fracking) for shale gas, because gas is one of the low carbon options that seemed attractive to the Coalition government. Fracking is a technique to extract gas from shale rock, and it is estimated to play an important role in providing greater energy security and economic growth (see further details in chapter 7). The Coalition government began a strategy of "all for shale gas", with specific policy mechanisms to stimulate the development of the industry through tax breaks, trespass laws, the provision of profit-sharing measures with local communities and the promise of local employment (Cotton, 2016, p 189). The academic literature on this topic has examined the role of the technology in the energy mix and has considered its advantages and disadvantages (see Cotton, 2016; Hays *et al.*, 2015; Williams and Sovacool 2019; Selley ,2012).

In applying an integrated approach to understand frames and storylines[34], Williams and Sovacool (2019, p 15), for example, found that shale gas was framed under the assumption that the technology will have a minor temporary impact on the British countryside. This frame also points out that the industry will have a few surface footprints, as it will use few well pads in designated areas. The authors suggest that energy security and manageable risks were factors influencing the government's support to fracking. This is identified as a pro-shale development frame, which was challenged by those who raised questions about the government's style of governance. Opponents are identified as an anti-shale development coalition, who highlight the health risks, bad gas governance, and the destruction of

[34] Frame provides the topic of conversation, whereas the storyline is linked to the use of language (metaphors, analogies, slogans etc.) to create a particular impression about shale gas development (Williams and Sovacool, 2019, p 4).

land and the local environment. Williams and Sovacool (2019, p 15) believe that governmental regulations for shale gas are weak. For them, even the industry's political support is rather thin because it is dependent on the fate and the governance of the Conservative Party. This led the authors to note that the pursuit of shale gas reveals discursive dominances and raises the question of legitimacy.

Furthermore, Johnstone, Stirling and Sovacool (2017) studied incumbency in the UK's energy policies and noted that the enthusiasm towards shale gas started when Cuadrilla's drilling test revealed that the UK had vast quantities of recoverable shale gas. This led to strong support for the technology within the Conservative government, despite the unknown nature of the benefits of shale gas. Johnston, Stirling and Sovacool (2017, p 152) explained that the support for the technology was not only rhetoric but also included key policies to facilitate the implementation of shale gas. The study also noted that the shale project enjoyed a privileged position in the government, which I shall further discuss in chapter 6. Johnston, Stirling and Sovacool (2017, p 152) revealed that between 2010 and 2014, companies with active fracking interest had around 100 meetings with civil servants, most of them being 'one-to-one meetings'.

The study by Hammond and Grady (2017) was more concerned about the benefits and the disadvantages of shale gas. It is accepted that the technology could reduce greenhouse emissions, however, it required robust and appropriate regulations (Hammond and Grady, 2017, p 1907). The study concluded that to balance the benefits and the risks of shale gas, the government should engage with a wide range of national and local stakeholders, to provide a critical account of the adoption of the technology and to be willing to change the course of the shale gas policies in response to evidence and public opinion (Hammond and Grady, 2017, p 1907). This task needs to include analysis rather than advocacy (Hammond and Grady, 2017, p 1916). The study found that an extensive investigative programme on drilling is needed to address doubts over the scale of shale gas resources and to provide reliable estimates. It is further noted that the successful exploitation of shale gas could lead to job creation and reduce the need for low-carbon energy options (Hammond and Grady, 2017, p 1916). Despite these possible advantages, this technology has several disadvantages. As such, hydraulic fracturing could damage the environment, reduce the availability of water supply and cause health risks to local communities (Hammond and Grady, 2017, p 1916).

Cotton, Rattle and Alstine (2014) examined shale gas policies in light of the Coalition government's support to the technology and the public's opposition. They observed that shale gas had become a matter of public debate, with grassroot movements opposing the government's decision to allow the technology to generate electricity. It is clarified that the interests of government and the industry contrasted with those of environmental NGOs, national and local activist organisations (Rattle and Alstine, 2014, p 436). Those who supported the technology did so on the grounds of affordability, energy security and as an alternative to the climate change inducing carbon pollutants such as coal

(Rattle and Alstine, 2014, p 436). The environmental NGOs and activists, who were termed by the authors as the competing coalition, focused on the ethical considerations of the technology. Environmental NGOs believed that a full understanding of the risks of the technology was lacking and that local communities were not involved in decisions (Rattle and Alstine, 2014, p 436).

More specifically, Bradshaw and Waite (2017) revealed that the local communities and the energy company had opposing views about fracking. The energy company, Cuadrilla, claimed that it would mitigate the risks associated with the operation of the technology. The company argued that exploration of fracking was in the national interest (Bradshaw and Waite, 2017, p 34). However, the study by Bradshaw and Waite (2017, p 34) uncovered that local communities had little faith in the regulatory system of the government and they doubted economic benefit of shale gas. This issue led to protests and blockades that challenged the government's continuing support to the technology (Bradshaw and Waite, 2017, p 34). In chapter 7, I take a close look at the social movement against fracking.

In addition, Nyberg, Wright and Kirk (2018) found that the proponents of fracking adopted a hegemonic approach. They noticed that the supporters of the technology tried to appeal to local, national and global interests, thus allowing a hegemonic project to emerge. This hegemony in support of the development of fossil fuels was possible through claims that it could provide a solution to local employment and address global climate change concerns (Nyberg, Wright and Kirk, 2018, p 247). Legal and financial resources were also drawn upon to build hegemony on fracking. The study explained that the opponents of shale gas represented their interests through local demands to halt the expansion of fracking. This countervailing movement emphasised the risks of fracking for the environment. It contended that the fugitive methane would negate the government's green promise (Nyberg, Wright and Kirk, 2018, p 245). However, Nyberg, Wright and Kirk (2018, p 246) point out that the opponents of shale gas often struggled to connect their arguments to concerns for climate change and national emission targets, and only highlight the future effects of the technology, such as water contamination and water supply. Thus, the privileged actors tend to dominate to maintain the status quo of continuous use of fossil fuels (Nyberg, Wright and Kirk, 2018, p 246).

Chapter 6 highlights the conflicting views of the energy companies, the government and environmental NGOs, and contributes to understanding the reasons for the rise of these movements. Chapter 7 also explores how countervailing power articulates its opposition to shale gas. The chapter presents a detailed account of the policies that allowed the expansion of shale gas and the interests that supported the technology. Hence, multiple-elitism and neo-pluralism will be discussed to explore the privileged position of the industry and the countervailing power of the activists' movement. Now, I move on to the literature on nuclear power.

3.3. The literature on nuclear power

Nuclear power is one of the low-carbon technologies that could provide security of supply and help meet the emission reduction target by 2050 under the CCA. As the Coalition government supported nuclear power technology, several policies have been implemented to revive the nuclear power programme. However, environmental NGOs and local activists' perception of the role of the technology differed from that of the government. This has sufficiently succeeded in blocking the operation of nuclear power.

The academic literature since 2010 on this topic has explored public opinion about nuclear power, the policy response to nuclear power, the costs and the environmental impact of nuclear power (for example, Goodfellow, Williams and Azapagic, 2011; Jones, Elgueta and Eiser, 2016; Poortinga, Aoyagi and Pidgeon, 2013; Wittneben, 2012). Jones, Elgueta and Eiser (2016, p 251) revealed that the trend in public acceptance of nuclear power did not shift drastically following the Fukushima disaster. It is found that there was a dip in public support compared to the pre-Fukushima period; however, this was short-lived. Their findings indicated that there were no significant differences in people's views before and after the Fukushima accident. People remained in favour of renewable energy with moderate reliance on nuclear power. The acceptance of nuclear power was driven by climate change concerns, in particular, by the need to tackle greenhouse emissions and security of supply (Jones, Elgueta and Eiser, 2016, p 251). The supporters of nuclear power also had great confidence in the safety procedures proposed by the Coalition government.

The findings by Poortinga, Aoyagi and Pidgeon (2013) were similar. In their comparative analysis of the public perception of nuclear power in Japan and the UK, before and after the Fukushima accident, the study found that the Japanese were less supportive of nuclear power before the Fukushima disaster and completely lost trust following the accident (Poortinga, Aoyagi and Pidgeon, 2013, p 1204). The study suggested that the opposition to nuclear power was more pronounced in Japan, as their survey found that the Japanese rejected new nuclear infrastructure even if it would tackle climate change. Meanwhile, the British attitudes remained unchanged, as they were supportive of nuclear power before the accident (Poortinga, Aoyagi and Pidgeon, 2013, p 1208). Their support was based on the issue of climate change. The survey showed that there was considerable trust amongst the British for the government's planning process and safety procedures. The study concluded that the Fukushima disaster did not affect public opinion in Britain (Poortinga, Aoyagi and Pidgeon, 2013, p 1209). As the above literature explored public perception of nuclear power following the Fukushima disaster, my thesis seeks to highlight the nuclear revival and the opposition to the technology from local communities and environmental NGOs. Chapter 8 includes details of the Fukushima disaster. It reveals how the campaigners drew on the event to launch their opposition. During the revival of nuclear power, new policies were introduced to encourage low-carbon energy. This includes the Contracts for Difference (CfD) via the Electricity Market Reform (EMR) introduced by the Coalition government, to facilitate

investment in low-carbon technologies, including nuclear power (see further details about CfD in chapter 6 below). In this context, the academic literature has provided an account of the costs of nuclear expansion. For example, a study by Harris *et al.*, (2013, p 439) suggests that the provision of strike price (see strike price in chapter 6 below) for each project in nuclear power could raise electricity costs for consumers, with an increase of between £164/MWh and £175/MWh. For these authors, the increased costs of electricity are linked to the escalating costs of the pre-construction and construction phases of the new build programme (Harris *et al.*, 2013, p 441).

The findings of the study are compatible with the research by Putti and Toth (2017), who conducted an economic analysis of Hinkley Point C (see details on Hinkley Point C power plant in chapter 8). They found that electricity costs would increase in the future due to high capital expenditure on the nuclear project because of the duration of construction. The study illustrated with the case of the Flamanville and Olkiluoto plants in France and Finland, where the construction time was twice as long as planned (Putti and Toth, 2017). Thus, the study noted that if the duration of construction increases, the electricity price will rise. Further, the authors identified that the costs of Operation and Maintenance (O&M) for Hinkley Point C is likely to be higher because it contains an advanced system that is more expensive than older designs. Hinkley Point C operates with the EPR design, in which a 50% change in O&M would change the price of electricity between 20% and 23% (Putti and Toth, 2017).

Another kind of risk found by Shin and Choi (2015) is the loss of natural diversity. They insisted that while nuclear power provided energy security and addressed climate change, it posed another environmental challenge, that of damaging natural diversity. The study analysed public and expert risk perception linked to environmental policies. It has been noted that nuclear power was a double-edged tool; the technology was a solution to the climate change crisis as well as a source of the radioactive waste problem (Shin and Choi, 2015, p 96). The study argued that specific risks were highlighted and were given importance in environmental policies. This emphasis on certain risks could be linked to the fact that the government wished to lead the environmental policies in a particular direction. At the same time, different actors had different risk perceptions; as a result, conflicts, negotiations, power relations and manipulated risk perception influenced the environment policies (Shin and Choi, 2015, p 98).

Thomas' (2016, p 431) study further highlighted that the intention to revive nuclear power was a failure of the policy process. Thomas (2016) observed that the policy to re-launch nuclear power failed to deliver the promises of the government. The study found that the British government forced nuclear power to proceed despite the high costs of the programme and the poor performance of construction time and cost control (Thomas, 2016, p 431). Given these issues, Thomas (2016, p 430) suggested that there is a strong nuclear lobby that allowed policies of nuclear revival from the Labour government to survive under the Coalition and the successive Conservative governments. The presence of influential organisations like the Confederation of the British Industry (CBI), which has continuously supported

the technology cannot be overlooked (Thomas, 2016, p 430). The nuclear lobby will be further explored in chapter 7, which examines the main actors, including the CBI, involved in lobbying for the survival of nuclear power. The chapter also takes into account how they engaged in discussions on nuclear policies and their influence in the process.

The study by McKie (2020) noted that the expansion of nuclear power was encouraged to reduce fossil fuels, achieve energy independence and security, and increase sustainability. In applying green criminology theory[35], the analysis indicated that the nuclear power expansion would cause social and environmental harm. The study suggested that the expansion in the nuclear industry would encourage market capitalism, which is incompatible with environmental concern (McKie, 2020, p 562). McKie (2020, p 562) saw that this kind of market mechanism would increase social injustice.

Focusing on energy and environmental justice, Jenkins, McCauley and Warren (2017) studied the issue of energy justice in the case of the Hinkley Point C project. As energy justice deals with the principle of equity to provide all individuals with safe, affordable and efficient energy, it also expects NGOs, government and businesses to fulfil this responsibility (Jenkins, McCauley and Warren, 2017, p 836). This responsibility was apparent in the transparent decision-making process (Jenkins, McCauley and Warren, 2017, p 836). The case of Hinkley Point C demonstrates that environmental NGOs, non-NGOs, the government, regulators and industry had greater responsibility for providing energy justice than other actors in the nuclear power system (Jenkins, McCauley and Warren, 2017, p 840). NGOs and policy elites were all involved ensuring energy justice, although certain industry and governmental actors had more influence in the process (Jenkins, McCauley and Warren 2017, p 840). In terms of transparency, the study revealed that lack of knowledge of the system resulted in the NGOs' discontent with the other actors. At the same time, government, businesses, and the regulators felt empowered with knowing how the system worked (Jenkins, McCauley and Warren, 2017, p 841).

In addition, Peoples (2014) identified that the government's support for nuclear power reduced the possibility of public involvement in the decision-making process. The study noted that the issues of costs, safety concerns, nuclear wastes, proliferation and terrorism risks raised in the consultations are framed under energy security imperatives. Peoples (2014, p 169) observed that consultation processes are intended to reassert governmental political authority. Thus, public engagement in consultations is only symbolic (Peoples, 2014, p 169).

Overall, the academic literature since 2010 has offered several explanations for the revival of the nuclear programme. The literature provided details on costs, public opinion, safety and health risks, and the dominance of energy companies and the government in the decision-making process. Chapter 8

[35] Green criminology describes the study of crime, harm and injustice related to the environment and to species other than humans. It highlights the harms and violation of rules against non-human species who are perceived as inferior to human and exploitable (South, 2014, pp 8- 9).

covers the issue of nuclear power continuity in more detail, examining policies that were continued and changed since the Labour government. Furthermore, the chapter critically analyses the risks associated with nuclear power from the perspective of environmental NGOs. This perspective opposes the technology through launching campaigns and providing evidence on radioactive wastes and health risks. In this context, the chapter delves into the power relations in the negotiations and the conflicting views of the actors on nuclear power. In this sense, the concepts of neo-pluralism and multiple-elitism will be drawn on to understand how privileged actors can influence the nuclear power policy process to achieve outcomes in their favour. Since we have reviewed the literature on the most contemporary period of nuclear power policies in the UK, it is worth looking at the literature on renewable energy.

3.4. The literature on renewable energy

Renewable energy policies are designed to achieve specific priorities such as addressing climate change, providing energy security and keeping energy bills down (Pollitt, 2010, p 253). Supported by the Labour government through the implementation of the Renewable Obligation scheme in 2002, renewable energy has become an important contributor in the decarbonisation of the energy process. Renewable technologies have been strengthened by the introduction of the Feed-in-Tariffs scheme for small scale renewable energy projects in 2008. As seen in chapter 1, the RO and FiT schemes are aligned with the government's aim to provide clean energy supply and achieve the targets set under the Climate Change Act 2008 and the EU energy package 2009. Elliott (2019, p 127) noted that "renewable energy remains the only long-term sustainable option for energy supply".

Looking at the literature on renewable energy since 2010, studies have highlighted a policy change in renewables, support from advocacy groups and grassroots movements, and local community opposition (for example, Burnett, Barbour and Harrison, 2014; Cherrington *et al*. 2013; Elliott, 2019; Esseltzbichler, 2011; Kern *et al* 2014; Mirzania *et al*. 2019; Raybould *et al*. 2019; Toke, 2011; Wood and Dow, 2011). Elliott (2019, p 146) clarified that the implementation of the renewable energy programme marked a shift in priorities of the new government under the Conservative-Liberal coalition. This included the framework of the technology and the wider policy focus. Elliott (2019) perceived that renewable energy did not receive similar treatment to nuclear power under the system. His study identified that the decisions of the government towards the renewables industry began to look uncertain as Hinkley was given privileged status under the CfD system (Elliott, 2019, p 150). The strike price offered to the French company EDF was 92.5/MWh, linked to inflation with guaranteed support for 35 years, whereas the CfD for renewables was for 15 years only. Elliott (2019, p 150) concluded that the CfD level of support for Hinkley Point C was higher than onshore wind and solar PV and seemed to be higher than offshore wind, given that the government offered a guaranteed loan of £10 billion for the project under the UK's infrastructure support system.

Further, the development of policies on renewable energy indicated a struggle in terms of a policy shift. Leete, Xu and Wheeler (2013, p 874), for example, mentioned that the changes of policies under the Electricity Market Reform (EMR) and the changes in the FiT regime had discouraged investors from investing in the early stages of wave and tidal power. For them, the government needed to have a clear strategy and a predictable, stable and long-term policy vision for the industry (Leete, Xu and Wheeler, 2013, p 874). This would reduce uncertainty among investors and thereby gain their support for the government's strategic investment. In terms of the solar photovoltaic, Cherrington *et al.* (2013, p 426) pointed out that the reduction proposed by the Coalition government under the FiT scheme would extend the need for financial support for solar PV installations. The industry would face a reduction in the number of installations under 4 KW, and would thereby shift to larger-scale projects under the RO (Cherrington *et al*., 2013, p 426).

In this context, Mirzania *et al*. (2019) studied the effect of the renewable energy policies, especially the solar PV policies, on community energy groups' projects. It is explained that these projects encountered major challenges as the government changed its policy by cutting subsidies to solar PV. The study identified that the number of groups had significantly grown between 2011 and 2016 but declined rapidly in 2016 due to these policy changes (Mirzania *et al*., 2019, p 1284). It is found that cutting FiT for small-scale energy projects had negatively affected the energy community groups. Thus, the small-community grassroots-led innovation failed to develop renewable energy projects due to the lack of financial and institutional support (Mirzania *et al*., 2019, p 1287).

In this vein, Johnson *et al.* (2017, p 151) noted that the government justified cutting support for onshore wind and solar energy because it would cost jobs and lead to rising energy bills. However, the changes in the renewable energy policy have led to a sharp decrease in jobs and investment, with around 12,000 jobs being lost in just one year (Johnson *et al*., 2017, p 154). Studies estimated that the investment in the technology would decrease by 95% (Johnson *et al.* 2017, p 154). Johnson *et al*. (2017, p 154) compared the renewable energy policies to policies on fracking and nuclear power and argued that it is difficult to understand why there is such an intensity of policy support in the UK for fracking and nuclear power but not for renewables. Johnson *et al.* (2017, p 154) concluded that some of the renewable schemes were victims of destructive policies. Meanwhile, the incumbent technologies such as nuclear power and fracking had constructive policies.

The power system and the role of environment movements have been notable in bringing onboard the renewable energy option in the energy sector. Environmental movements defended the renewable option as the solution to climate change. As such, Friends of the Earth, Greenpeace, World Wildlife Fund (WWF), and the Royal Society for the Protection of Birds (RSPB) were notable in supporting renewables. Toke (2011) reviewed the policies of renewable energy and argued that the UK's policies strengthened onshore wind energy through a planning regime, subsidies, and the

introduction of the FiT scheme. Further, the role of the grassroots movement in offshore wind energy has also been important. Toke (2011, p 428) noted that offshore wind is largely favoured by many environmental NGOs, which enthusiastically support the technology. According to him, it is difficult to find major environmental groups opposed to the renewable energy programme.

Kern *et al*. (2014) also agree that there are advocacy actors who have contributed to increasing the profile of offshore wind in the energy agenda. In an analysis of the activities of network actors and narratives supporting offshore wind in the UK, Kern *et al*. (2014, p 639) described how grassroots movements, networks such as the trade association, Renewables UK, and public-private networks, notably the Offshore Wind Developer Forum, have been instrumental in promoting renewables in the energy mix. The networks have also included the incumbent energy actors such as the Offshore Wind Developers and Offshore Wind Cost Reduction Taskforce that aim to channel resources and promote renewable energy (Kern *et al*., 2014, p 639). Significantly, the network actors mobilised pre-existing support for the technology (such as EU funds, tax credits generic research council funding), and created financial support to improve technological and economic performance (Kern *et al*., 2014, p 643). During the economic recession, network actors actively raised concerns about the costs and the economic difficulties. They clarified that subsidies for offshore wind were needed as these would result in benefits from offshore wind. Thus, offshore wind technology has benefited from the network actors' support, but, as the study pointed out, the technology was also promoted because of the government's aim to fight climate change and achieve the EU renewables targets. This progress in offshore wind has shaped the policies that reformed the Renewable Obligation scheme, the creation of the Electricity Market Reform in 2012 and the establishment of planning institutions.

However, a conflict of interests in the wind policy area has led to opposition and controversies. Although offshore wind enjoyed enthusiastic support from industrial interests and environmental NGOs, Toke (2011, p 533) noted that the anti-wind farm interest groups were opposed to onshore windfarms for the protection of the landscape. This opposition dates back to the 1990s and has intensified in the last two decades. In 2005, onshore wind opposition resulted in only 40% of successful applications (Toke, 2011, p 533). Also, in terms of offshore wind, opposition led by the National Fisherman's Federation Organisation (NFFO) has been mainly related to protecting fishermen's income (Toke, 2011, p 533). Another concerning factor in wind farm construction is the birds and wildlife issue, as feeding farms for birds would be destroyed. Moreover, a study conducted by Hooper, Hattam and Austen (2017, p 55) concluded, based on 199 survey responses, that offshore wind farm expansion is likely to cause conflicts with other marine users as different sectors compete for space.

Burnett *et al.* (2012) presented another study exploring public engagement in renewable energy policies. The study noted that public involvement is central to policies to reduce the democratic deficit (Barnett *et al*., 2012, p 36). This involvement would increase the legitimacy of institutions and ensure

public satisfaction of policies (Burnett *et al.*, 2012, p 36). The study identified that public engagement was a reasonable expectation of normal business conduct to achieve accountability and responsibility (Barnett *et al.*, 2012, p 46). The engagement of the public is also necessary regardless of their opposing views. Public engagement can significantly be achieved through providing information and addressing concerns (Barnett *et al.*, 2012, p 46). This will allow citizens to keep checks on their elected representatives. Timing, in this regard, is very important. The study noted that there is a likelihood that information accuracy could change as plans develop (Barnett *et al.*, 2012, p. 47). This could create a negative reaction of the public if the timing was wrong (Barnett *et al.*, 2012, p 47).

Other studies have discussed social acceptability and public engagement in terms of the "Not In My Back Yard" or NIMBY hypothesis in renewable energy (For example, Burningham, Barnett and Walker, 2015; Devine-Wright, 2013; Wiersma and Devine-Wright, 2014). The studies examined NIMBYism, which portrays individuals as selfish, for they might support the technology in general, but they oppose its deployment in their local areas (Wiersma and Devine-Wright, 2014, p 493). NIMBYism is a pejorative description of local protests to certain types of land use (Devine-Wright, 2011, p 21). Devine-Wright (2011, p 22) believes that NIMBYism helps to explain how people relate to the environment. It suggests a territorially bound view of local environment despite the local community's connection with the globalised world. The literature on the NIMBY hypothesis focuses on several technologies, most notably onshore and offshore wind. The studies identified that the issues of visual impact, natural landscape, anti-wind sentiment have shaped public response towards renewable technologies. Devine-Wright (2011, p 24) concluded that the decision-makers allow public engagement in renewable energy policies only for small scale technologies, as the public is perceived to pose a threat through NIMBY attitudes.

Clearly, the above literature has addressed several aspects of renewable energy, by fundamentally contributed to our understanding of the policies, public response and perception of the industry. Thus, chapter 8 will highlight these elements in further detail. The chapter will consider the policies that were implemented by the Conservative government for renewable energy since 2010. The chapter will consider the changes and the continuity of the policies, specifically the RO and FiT. It will go further to tackle the issue of conflict of interests. Here, the chapter will attempt to provide details on opposing interests between the government, environmental NGOs and the renewable energy industry. Besides, chapter 9 will link the policy shift with the local communities in advocating for cutting subsidies for onshore wind and solar PV. All these issues will be informed by the theories of multiple-elitism and neo-pluralism.

3.5. Conclusion

The current academic literature deals with the policies implemented to address climate change since 2010. The literature focused on Cameron's green credential, the emerging interests towards

encouraging fossil fuels in the energy mix, government support for nuclear power and shale gas, and policy shifts for renewable energy. My research will provide a theoretical empirical analysis of four policy areas (fossil fuels, nuclear power and renewables). The analysis will be informed by elite interviews and policy documents. The study will also compare these areas to explore similarities and differences in the policy areas. Before moving on to research design and empirical analysis, we must first consider the theoretical perspectives that inform my research.

4. **Chapter 4**: Theories of the policy process: neo-pluralism and multiple-elitism

This chapter provides a detailed account of the theories of power chosen to analyse climate change and energy politics in the UK. These theories, neo-pluralism and multiple-elitism, form the theoretical framework of this thesis. Although other theories, such as elitism, institutionalism, punctuated equilibrium theory, and rational choice theory, attempt to understand the policy process, the theories of multiple-elitism and neo-pluralism emerged as the most appropriate for this study. These theoretical models offer an approach to investigating political agency, in particular, the role of interest groups in policy areas, notably climate change, fossil fuels, nuclear power and renewables. They also indicate the themes and concepts necessary for data collection and analysis (see chapter 5).

Both approaches stem from a criticism of the theory of pluralism, which has dominated the study of public policy. Specifically, this theory attempts to understand how groups influence policy to their advantage at the policy formulation stage. The main interpretation is that if a group has interest, then it would be able to have access to the political system to attempt to achieve its objective (Garner, 2000, p 185). Studies that applied pluralism to understand public policy began with the group theory introduced by Bentley (1908) and Truman (1951) that emphasised the importance of interest groups. Following Bentley and Truman's research, Robert A. Dahl (1961) shed light on political institutions through applying the pluralist approach in his book, "Who Governs?". Dahl's study focused on government agencies, elections and political parties, which were indicators of fragmentation of power and democracy. It investigated influence in terms of individuals' behaviour, emphasising the actual and real conflict among different actors (see below). Following Dahl, other research started to investigate power and influence. These studies found that groups of elites were able to sway policies on certain issues to serve their interests. These elites can be grouped under a mechanism called "sub-government", whereby they exchange mutual benefits, thus leading to the theory of multiple-elitism. However, by the 1980s studies started to expand on Truman's and Dahl's views to investigate power and influence in policy areas. These studies gave rise to the concept of neo-pluralism, which is evident through issue networks, advocacy coalitions, social movements and autonomous government agencies, all of which have made their presence felt in the policy arena. However, these interest groups do not have equal representation as they have unequal access to the policy arena.

As this chapter focuses on the pluralist framework of studying public policy, I present a detailed description of pluralism. First, I justify my choice of the theories of multiple-elitism and neo-pluralism. Then I explain the basic ideas of pluralism, which takes into account Dahl's criticism of C. Wright Mills' study of elites and the main pluralist ideas presented in 'Who governs?'. Later, I explain how pluralism defines power and the critiques that prompted different views of power to emerge. In the rest of the chapter, I focus on the studies that explored power and influence beyond pluralism, which led me in the direction of multiple-elitism and neo-pluralism. Here I discuss both approaches by explaining the themes

that emerged in their analysis of the political system. Finally, I conclude by distinguishing between both approaches by summarising the main themes of multiple-elitism and neo-pluralism.

4.1. Understanding the policy process

The policy process refers to the interaction between public policy[36], surrounding actors[37], context[38], events[39] and outcomes[40] (Weible, 2018, p 2). The policy process involves several stages that describe policy formation and the strategies used in lobbying and influencing policies. The policy process can be divided into five distinct stages, notably, agenda-setting, policy formulation, policy legitimation (or decision-making), policy implementation, and evaluation and feedback (Godwin, Ainsworth and Godwin, 2013, 49). These stages can guide political scientists and sociologists to understand the lobbying process and decision making in the political arena.

Agenda setting is the first stage in the policy process. It deals with the issues as they are perceived by the public and policy-makers and how they are addressed by officials (Godwin, Ainsworth and Godwin ,2013, p 49). It draws the attention of media, public and policy-makers to specific issues. This includes issues that rise or fall in the agenda or compete with one another for attention (Dearing and Rogers, 1996, p 3). The issues that acquire attention are usually advocated by groups or individuals such as NGOs, policy entrepreneurs (see below) or social movement organisations. For example, economic crises, nuclear disasters, environmental regulations, energy prices and other issues can reach the political agenda and lead to changes in policies.

The second stage in the policy process is policy formulation. This stage addresses issues and problems and put them into discussion and brainstorm (Weible, 2018, p 2). It considers alternative policies and changes in policy proposals to solve the issues that made it to the political agenda (Godwin, Ainsworth and Godwin, 2013, p 49). Some of these policy proposals and alternatives gain strength and importance over others through the mobilisation of support and the necessary agreements and legislation, at the stage of policy legitimation or decision-making (Godwin, Ainsworth and Godwin, 2013, p 50).

The decision-making process moves towards policy implementation, a stage that requires procedures, bureaucracy, rules, and regulations. It is the phase between decision and operation, which transforms the law into policy action (Sapru, 2004, p 149). Thus, the policy objectives are achieved by

[36] Public policy is defined as the deliberate decisions of the government such as laws, bills, regulations, executive decisions, government programmes (Weible, 2018, p 2).
[37] Public policy is surrounded by individual or collective actors such as organisations, coalitions, or networks (Weible ,2018, p 2).
[38] Context involves the socioeconomic conditions, culture, infrastructure, biophysical conditions, and institutions that form the setting in which public policy happen (Wieble, 2018, p 3).
[39] Events form part of the context such as elections, scientific discoveries, crisis etc. Sometimes, events are created by actors to affect policy processes such as social movements (Weible, 2018, p 3).
[40] Outcomes of the policy process are the impact of public policy on society. They are important to assess the effect of policy processes on society (Weible, 2018, p 3).

governmental activities. In this stage, governmental activities are determined by the delivery of mechanisms and action programmes to reach the goals of the public policies. More specifically, it is the interaction between setting goals and the actions to achieve them (Sapru, 2004, p 150). Hence, an agency is required to give notice through making of a rule, publishing a version of the rule, allowing comments and feedback from those affected by the rule, publishing its response to the comments, issuing the final version of the rule, and ensure that policy is delivered (Godwin, Ainsworth and Godwin, 2013, p 50).

The last stage in the policy process includes evaluation and feedback. It assesses whether a policy is successful and effective. In this stage, the outcome of a policy is evaluated by the public and the policy-makers. It is an important stage in the policy process because it provides feedback to decision makers to reformulate policy, change policy proposals and get the policy back on the agenda. This stage measures the impact of a policy and provides information about its performance (Sapru, 2004, p 172). This can result in efforts to restructure policy and assess policy alternatives, leading to new objectives and solutions (Sapru, 2004, p 172).

Overall, the policy process involves a complex political system that begins with agenda-setting and policy formulation, moving on to decision-making and implementation, and ending with evaluation and feedback. The complexity of this process necessitates an examination of power inside a political system, through analysing policy outcomes and measuring the influence of interest groups. Therefore, this thesis focuses on certain stages of the policy process. First, it explores policy outcomes by looking at agenda-setting, policy formation and implementation. It devotes attention to how policy outcomes are achieved, through regulations and reforms of the issues that are put on the agenda initially and are translated into actual policies. These are explored by applying multiple-elitism and neo-pluralism as models to understand policy outcomes and groups' mobilisation on fossil fuels, nuclear power and renewables. Both theories are concerned with understanding groups' mobilisation in policy areas, but they offer different interpretations of power and interest groups' influence. Multiple-elitism explains the role of elite coalitions in influencing policies to serve their private interests through the mechanism of sub-government, whereas neo-pluralism focuses on the competition of interests that pushes for reforms and policy regulations, and the ability of media and citizen groups to get societal issues onto the political agenda. I discuss both theories in detail below.

However, there are other models that can help us to understand public policy, such as elitism[41], institutionalism[42], punctuated equilibrium theory[43], rational choice theory[44], multiple streams framework[45], policy feedback theory[46] and narrative policy framework[47] (See, Weible and Sabatier, 2018). These theories are not considered in this study as they do not serve the aims of the thesis, which is to study the influence of interest groups, specifically the role of environmental and business groups in the decision-making process and the way they interact to achieve their objectives. These theories highlight important phenomena in the political system (Garner, 2000, p 182). These theories do not focus on the role of environmental groups, energy companies and trade associations in seeking to influence public policy. Multiple-elitism and neo-pluralism seemed appropriate as they incorporate a range of possibilities where groups either collude or compete in achieving their objectives in policy

[41] The elite theory stipulates that the process of governing is controlled by a small group of elites who possess resources and expertise, and use their power to preserve their status. Mosca (1939), Pareto (1935), Michels (1958) and Mills (1956) clarified that only few individuals who possess skills, wealth, cunning and intelligence have the power to rule the masses (Bellamy, 2004, p 25).

[42] government institutions, perceived to be the main agents in formulating public policy. The approach requires a study of rules, procedures and organisations, including political parties and the electoral system that govern political institutions. It generally identifies how institutions function and how they influence individual behaviour. There are three types of institutionalism, namely historical, political and sociological institutionalisms (Peters, 2019, p 24).

[43] This theory originates from 'incrementalism' advanced by Lindblom (1959) and 'nonincrementalism' contended by Schulman (1975) to explain the government's action. Incrementalism stipulates that the government's decisions are slow and incremental due to a lack of brains. Nonincrementalism explains significant actions and decisions of the government as incrementalism is not a universal theory to explain government's decisions. As a result, punctuated equilibrium emerged to explain that the government's decisions during the period of stability are periods of 'equilibria' and periods of instability are called punctuations where dramatic change occur to solve issues in the policy-making process (Baumgartner, Jones and Mortensen, 2018).

[44] This theory determines the available options and then chooses the most preferred one. It perceives individuals as motivated by wants and goals that reflect their preferences. To achieve those goals, individuals need to make choices and think about the means to achieve them. Here, rational individuals will calculate which alternative will be best to achieve the outcomes that satisfy them (Scott, 1999, p 128).

[45] The theory explains the messy nature of the policy process and how policy does not follow an orderly fashion. The policy occurs in streams: First is the problem stream, which includes all the problems and issues that captivate the attention of policy actors. Second is the policy stream, which is the solutions and ideas that win the acceptance of policy-makers in response to a particular problem. Third, is the politics stream deals with the national mood, interest groups campaign and legislatures. Here, policy-makers might sense changes in the national mood and act to promote changes on the agenda. Also, powerful interest groups campaigns are likely to affect policy agenda by blocking ideas. Further, the political stream depends on whether legislatures and elected officials are open to new ideas and proposals. These streams come together, resulting in a policy window to implement policy (Herweg, Zahariadis, Zohlnhofer, 2018, p 24-25)..

[46] Policy feedback studies the ability of policy, through its design, resources, and implementation, to affect policy institutions, interest groups and the behaviour of policy elites and mass publics (Mettler and SoRelle, 2018, p 104). It stipulates that policy outcomes can influence and transform politics. Here, policy outcomes can reposition political actors and change their interests, identity, understanding and preferences. They can also affect citizens by mobilising interest groups and policy entrepreneurs to evaluate the representative-democratic political system. In other words, the analysis of the policy process will assess the ability of alternative policies to solve matters of economic efficiency and social wellbeing.

[47] Narrative policy theory studies policy narratives as a means of communication and as a method of cognitive organisation. At the micro-level, the narrative policy theory focuses on the impact of policy narratives on public opinion. This theory focuses on the persuasiveness of narratives on individuals, such as changes in public attitude towards policy issues. At the meso level, the theory focuses on how policy narratives impact policy outcomes. Here, policy narratives are strategically used by elites and interest groups through framing issues in the policy process to expand their influence and power (Jones and McBeth, 2010).

areas. These theories emerged as a reaction to the classical ideas of pluralism, which indicated several interpretations of policy outcomes. Given this situation, it is worth returning to the ideas of pluralism to help us understand the interpretation of power and influence, which has contributed to the emerging ideas of multiple-elitism and neo-pluralism.

4.2. Pluralism: post-war ideas

Pluralism is linked to the work of Bentley, Truman, Dahl, and also Polsby, Wildasky and the early work of Lindblom (McFarland 2004, p 15). According to pluralism, the basis for a democratic political system is the competition of groups and the mobilisation of interests, with individuals having preferences that are represented through different groups. These groups have varying amounts of influence depending on the nature and type of the issue (Scott, 2001, p 54). Further, no single group controls the political system, as all groups have power and accessibility to the government. This tension in mobilising interests leads to the assumption that the continuity of ideas, beliefs, rules and laws are always in tension with a demand for change (Wenman 2015, p 66). For Truman (1951, p xxxvii), "[these are] not continually at issue in regular political conflicts" (my italics). The pluralists believe that the political system should always be in a situation of institutional reform to encourage democracy. Dahl (1961, p 325) has also argued that:

> Neither the prevailing consensus, the creed, nor even the political system itself are immutable products of democratic ideas, beliefs and institutions inherited from the past. For better or worse, they are always open, in some measure, to alteration through those complex processes of symbiosis and change that constitute the relations between leaders and citizens in a pluralistic democracy.

The pluralists' early ideas suggested that the scope of a democratic society is based on the presence of pressure groups who represent interests in every sector of policy-making (Jordan and O'Riordan, 2014, p 75). They saw that a group is a collection of individuals who share common objectives and political interests (Skillen and McCarthy, 1991, p 4). Thus, the political system is characterised by the competition of groups, which results in policy outcomes (McFarland, 2004, p 15). Here, the pluralists believe that powerful interest groups are unlikely to have total domination of policy as they are challenged by opposing interests. Truman (1951) illustrates this point by stressing the countervailing role of some groups. In other words, organisations that attack civil rights are countervailed by other organisations that protect civil rights (McFarland 2004, p 15).

Pluralism sees interest groups as playing a key role in representing individuals and influencing policy, because they have access to different governmental departments and can be involved in the discussions of forming policy (McAnulla, 2006, 24). Interest groups are important because they gain legitimacy through representing their members, and they have expertise and resources, such as skills

and knowledge (McAnulla, 2006, p 24). The role of the government is that of a referee among the competing groups, to establish an equilibrium between them (Skillen and McCarthy, 1991, p 5). Generally, the government seeks to compromise between the different interests to create a policy that will be viewed as reasonable. In this sense, the government does not favour one particular group over another (McAnulla, 2006, p 25).

The centrality of interest groups was later rejected in the work of Dahl (1961) in "Who governs?" (McFarland, 2004, p 16). He studied power and decision-making in the City of New Haven, Connecticut, in the 1950s. He wanted to explore the American political system at the local level by examining the decision-making process in education, primary elections and the urban system. Dahl posed the question "who governs?" to discover whether the political system was controlled by a single elite, interest groups, political parties, or unattached masses (McFarland, 2004, p 16). His study was a pluralist response to elite theory (Godwin, Ainsworth and Godwin, 2012, p 51). Elite theory is linked to the work of Floyd Hunter (1953) and C. Wright Mills (1956) who demonstrated the power of elites in determining decisions in the American political system. Hunter (1953) studied elite power in Atlanta, Georgia. Hunter (1953, pp 246-249) concluded that the decision-making process is settled at the directive of policy-makers, who use patterns of manipulation to maintain the stability of the system through warnings, threats, violence, and isolation of resources, such as income and job. Similarly, C. Wright Mills (1956, p 7) perceived that elites were able to rise over ordinary people because they held important positions such as chief executives at the top of the economy, political directorate at the top of the political order, and the elites of soldier-statesman at the top of military establishment.

The theorists of elitism reached their conclusions by asking people "who rules?" or "who are the most influential? [in your hometown] (Godwin, Ainsworth and Godwin, 2012, p 51). This method was criticised by Dahl on the grounds that it encouraged people to indicate the most important individuals with whom they socialised (Godwin, Ainsworth and Godwin, 2012, p 51). Elaborating on this view, Dahl suggested that one should determine who has influence in policy outcomes by examining the policy issues that received great attention, then finding out who participated in deciding those issues (Godwin, Ainsworth and Godwin, 2012, p 52). In applying this approach, Dahl discovered that groups were influential regarding their own issues, for instance, an organisation that represents teachers is influential in educational policy (Godwin, Ainsworth and Godwin, 2012, p 53). Thus, every group can represent its own interests as leadership is accessible to all groups through the use of resources such as skills, knowledge and time. Even disadvantaged groups can employ resources to fight injustice and oppression (Burtenshaw, 1968, p 584). Here, Dahl (1956, p 145) explained that "There is a high probability that an active and legitimate group in the population can make itself heard effectively at some crucial stages in the process of decision". However, his analysis showed that interest groups did not reach the centre of the political system (McFarland, 2004, p 16).

In studying the historical development of dispersion of power, Dahl also studied other institutions to answer his question of who rules in New Haven (Robertson, 1993, p 12). Interest groups were not the only influential institutions in the political system (Godwin, Ainsworth and Godwin, 2012, p 53). Other institutions played an important role in the political system. These institutions contributed significantly to the development of the city. In the implementation of the Urban renewal programme, Dahl (1961, p 124) found that the New Haven Mayor, Richard Lee, relied on executives and staff of three institutions, namely the Redevelopment Agency, City Plan Commission and City Planners to develop the proposal. Polsby (1980) too observed that urban redevelopment was achieved by Mayor Lee through his ability to include professional development staff who were working behind the scenes to improve programmes in the City Hall. The institutions included technicians and experts, and all the important decisions were made by bureaucrats (Dahl, 1961, p 124).

Elections and political parties are also important institutions in a political system. Political parties emerge as important actors competing to organise and represent the interests of individuals who vote for the party that would implement their desired policy, in particular, the interests of those individuals not represented by interest groups. These individuals contribute to votes which would be converted into an office and various other resources (Dahl, 1961, p 97). Dahl (1961, p 104) identified them as "active party followings". As Dahl (1961, p 104) explained, "Anyone legally entitled to vote may enrol in the party of his choice". Dahl (1961, p 114) added, "In a competitive political system within a changing society, a party that neglects any important potential source of support decreases its chances of survival".

In this context, interest groups are not the only actors operating in the political system, political parties and political institutions are also involved in the decision-making process. This significantly rejects the classical pluralist ideas of domination of interest groups in the policy process (McFarland, 2004, p 16). Studies in pluralism following Dahl's "Who governs?" have continued to give less importance to interest groups, and focus more on political institutions and elections (McFarland, 2004, p 16). For example, Polsby (1968, p 144) believed that institutions were important in stabilising the political system and protecting the interests of the constituents by creating organisations to represent any substantial size of population. They offer an opportunity for individual representatives to specialise and thereby increase their influence upon a narrow range of policy outcomes in the political system at large (Polsby, 1968, p 166). For Polsby (1971, p vii), institutions "create, spend, and redirect resources, and affect people's lives. They should not be ignored".

To summarise the pluralist view of the political system, the theory believes that all groups can have access to the government using the available resources. Moreover, political leaders would fulfil the wishes of the constituents as they want to be re-elected. Administrative units in a political system are important institutions that represent popular interests and aim to achieve development. Finally, power is dispersed and not concentrated in the hands of particular groups. In other words, no group dominates

the political system. Now I move on to explain a significant concept that has emerged in Dahl's findings. This concept explains power and the policy-making process in a pluralist political system.

4.3. The pluralist conception of power

A key concept, complex causation, guided Dahl's analysis of power and influence in the policy process (McFarland, 2004, p 17). The concept of complex causation first appeared in Herbert Simon's (1957, p 4) definition of power; he explained:

> [If] C has power over R, we can substitute the assertion, C's behaviour causes R's behaviour; if we can define the causal relation, we can define influence, power, or authority, and vice versa (my italics).

Power as complex causation was further explored by Dahl to inform the pluralist policy process. Dahl wanted to explore the distribution of influence in key areas such as education, urban systems and political nomination. He investigated how influence is exerted to understand empirically who prevails in a decision-making process. He found that there was no dominant group in the political system; every group was influential in its own topic area. Baldwin (2015, p 211) saw that Dahl's influential book "Who governs?", however, did not tackle the definition of power. Power was defined in his article "The Concept of Power" published in 1957. Dahl (1957, p 203) described power as "A has power over B to the extent that he can get B to do something that B would not otherwise do". To illustrate, the President appeals for tax increases, hence, the Senate would vote to increase taxes (Dahl, 1957, p 203). If the President did not issue an appeal, the Senate would not otherwise vote to increase taxes (Dahl, 1957, p 203). Dahl (1957, p 203) believed that power is a relationship among individuals, groups, nation-states, governments, offices, other human aggregates. Power and control for Dahl are based on the connection between A's exercise of power and control and B's response. Dahl (1957, p 204) explained, "A can hardly be said to have power over 'a' unless A's attempts at power precede 'a's response". Further, this would be an attempt to make 'a' respond and do something he would not do otherwise, and could include the use of force, threats, promises or wealth to change the behaviour of 'a' and get him/her to comply with what A wants. Here 'a' would change his/her behaviour to avoid A's exercise of sanction (McFarland, 2004, p 18).

According to Pluralism, power refers to the idea of causing change, and is more generally related to influence (McFarland, 2004, p 17). Overall, the pluralist conception of power postulates that the causal agent (A) cannot be powerful compared to the respondent (B), unless he/she does something to the respondent (B) (Ball, 1975, p 196). This is possible only by exerting observable action, which would be followed by the observable effect (Ball, 1975, p 196).

The definition of power in terms of causal relations among actors is shared by McFarland (1969), who emphasised that causal relationships between actors are important to identify power. McFarland, (1969, p 9) explained:

> A necessary condition for the causality (power) relation is that there exists a time lag. However small from the first event (action of the first actor), which is said to be the cause (who is said to exert power), to the event said to be the effect (the response to the respondent). This requirement merely accords with one's intuitive belief that an event can hardly be said to have caused another event unless the cause precedes the effect (original italics).

Dahl's definition of power notifies us that a situation of power cannot be generalised. McFarland (2004, p 18) illustrates this point well by stating that a pharmaceutical lobbyist may have power over legislators in regulations for generic drugs but may have no power in an area of civil rights or gun control. The evidence for this explanation is drawn from case studies of public policy-making (McFarland 2004, p 18). Analysing the behaviour of the actors in a political system is helpful to arrive at these conclusions about policy-making. According to Polsby (1963, p 121), "the researcher should study actual behaviour, either at first hand or by reconstructing behaviour from documents, informants, newspapers, and other appropriate resources". Further, Dahl's analysis entailed a careful study of policy documents, a review of political and historical events, and observation of the behaviour and activities of political groups (McFarland, 2004, p 33). Moreover, his model of analysis is based on empirical observation of the agents, that is, of groups representing certain interests in the political system (McFarland, 2004, p 33). These groups interact to affect one another's behaviour, and the study of their behaviour requires a continuous empirical observation over a period to understand power fluctuation, interest groups and policy-making activities (McFarland, 2004, p 33). I discuss the pluralist account of data analysis and collection further in chapter 5, as it will guide my research study.

Overall, McFarland (2004) summarised the pluralist understanding of power and influence into four assumptions. First, the policy-making process is based on the interaction of interest groups, political parties, government agencies and politicians affecting one another (McFarland, 2004, p 22). Second, power is social causation, whereby an individual changes the behaviour of another. Third, policy-making occurs in hundreds of areas of concern at the national level and in ten or twelve important areas at the local level, leading us to understand that the causation of power differs from one issue to another (McFarland, 2004, p 22). The third assumption is linked to our discussion above, that each actor is influential in his/her particular domain leading to fragmentation of power. Endorsing this view, Polsby (1960, p 476) argues:

> If anything, there seems to be an unspoken notion among pluralist researchers that at bottom nobody dominates in a town so that their first question to a local informant is not likely to be who runs this community? but rather, does anyone at all run this community?

Fourth, subjective interest is an important aspect of the theoretical procedure. It is defined as the wants and the preferences of actors, which they wish to be implemented to obtain a political output; these are then converted into issues (Balbus, 1971 p 162). Causal conception of power and Dahl's methodology help to determine the participants in each decision, through focusing on observable and concrete behaviour (Lukes, 2005, p 17). The theorists Bachrach and Baratz (1962) and Lukes (1974) criticised Dahl's approach in "Who governs?" of focusing only on observable conflicts. They believed that the examination of concrete events from documents, informants or newspapers cannot tell the full story of the decision-making process (Lukes, 2005, p 17).

Dahl's pluralist research methodology was examined further by Bachrach and Baratz. They realised that political power can also be expressed more covertly. They accepted Dahl's concept of power as one of many means to control the agenda, however, they believed that the book highlighted the ability to initiate and veto proposals and ignored the fact that proposals may not even reach the agenda of the decision-makers (Baldwin, 2015, p 211). Bachrach and Baratz (1962) suggested that certain concerns and interests may not be considered and can be prevented from entering the formal decision-making process. They contended that Dahl's concept of power would refer to the first face of power. However, there is a second face of power that includes beliefs, rituals, values, and institutional procedures that operate in favour of particular groups (Bachrach and Baratz, 1962, p 950). They saw that these procedural 'rules of the game' include an institutional framework that regulates political actions, which operate systematically to the benefit of the vested interests of certain groups or persons at the expense of others. (Bachrach and Baratz,1962).

Hence, both views were explored by Steven Lukes (1974) who described Dahl's study of power as the "One-Dimensional View", and the work of Bachrach and Baratz (1962) as "The Two-Dimensional View". He then proposed a "The Three-Dimensional View", a deeper concept of power which goes beyond Dahl's, and Bachrach and Baratz's conception. Lukes identified that the causal relation between A and B can be detected even in latent conflict, that is, in the absence of empirical conflict. Here, power hegemony plays an important role in manipulating individuals. As per this view, the dominant ideologies, beliefs, values and norms favour the vested interests and are adopted by less powerful groups in a way that they are unconscious and unaware of their rights. With unawareness, they begin to perceive the powerful groups' domination as natural, unchangeable and unquestioned. They are socialised into the idea of supporting the status quo as it has been legitimated by the power of hegemony. As pluralists oppose any suggestion that interest can be unarticulated and unobservable, or that people might be unaware of their interest (Lukes, 2005, p 19), this thesis focuses on observable power of direct influence of interest groups which will be explored by the theories of multiple-elitism and neo-pluralism.

4.4. Beyond pluralism: Multiple-elitism and neo-pluralism

As can be seen, pluralism studied several issues to understand power and influence in the policy process. It focused on observable phenomena that usually challenge the political agenda seeking change and solutions. The theory explored on the one hand interest groups' mobilisation who have a fair representation of power; on the other hand, the theory highlighted the importance of elections and political institutions in the policy process, which was introduced in the work of Dahl (1961). Following the criticisms by Bachrach and Baratz (1962) and Lukes (1974), who added the second and the third face of power respectively to the definition of power in pluralism, other studies continued to explore the mobilisation of groups in the policy process, to reveal new concepts and ideas. These studies are theorised as multiple-elitism (or pluralism-elitism) and neo-pluralism (or post-pluralism). Multiple-elitism emerged to modify elite theory; it proffered the idea that policy areas can be controlled by multiple separate elites. In this regard, elitism is better referred to as multiple-elitism (McFarland, 2004, p 47). Following multiple-elitism, neo-pluralism emerged as a variation of pluralism (Bochel and Bochel, 2004, p 54). It draws on the legacy of classical pluralism that attempted to reflect the most contemporary political situation (Hicks and Lechner, 2005).

Having provided a detailed view of the pluralist understanding of power and influence, now I move on to explain the main theoretical framework used in this thesis. Multiple-elitism and neo-pluralism guide the empirical analysis of climate change and energy policy in the UK since 2010. I begin with multiple-elitism and then move on to neo-pluralism, clarifying the differences between both perspectives and also highlighting how they differ from Dahl's pluralism.

4.4.1. Multiple-elitism

Multiple-elitism is the theory that followed pluralism. It offers a similar perspective to that of the 1960s pluralists and accepts pluralist research procedures, such as case studies, document analysis, interviews with participants, and observations of meetings (McFarland, 2004, p 39). These theorists also focused on the pluralist concept of causation of power in the policy process. They agree with the pluralists' view of interest group mobilisation in the political system. However, multiple-elitism highlights the failure of pluralists to focus on oligarchic control, and it attempts to fill this gap. Notwithstanding this claim, multiple-elitism rejects the idea of a single power elite documented by C. Wright Mills (McFarland, 2004, p 32).

As seen, the theory of elitism emphasises that a small body of individuals or the "better people" control society either by coercion, lies, concession or violence (Gray, 1994, p104). These few key individuals with shared values and interests use their position to control all major decisions within society (Gray, 1994, p 104). This original version was replaced by multiple-elitism that observed that a number of separate interest groups share common interests and values. These groups can get unified

through the mechanism of sub-government, which is often known as an iron triangle (see below) representing oligarchical control in a policy area.

Unlike Dahl who found fragmentation of power on issues of concern, multiple-elitists discovered a coalition of producer groups and interest groups capturing government bodies on particular issues. For example, a study by Sayre and Kaufman (1960) on governance in New York City, demonstrated the existence of special interests that dominated several policy issues and had great power. In the case of the fire department, Sayre and Kaufman (1960, p 267) illustrated:

> The Fire Commissioner heads a line agency of size and importance. (…) the central barriers to the Commissioner's opportunities for initiatives and innovation are three: first, operational control of the Department's fire-fighting and fire-prevention forces is vested in the Fire Chief, a career official; second, the personnel system of the Department deprives the Commissioner of any important chance to recruit or promote personnel system who might share or support his ideas; third the Uniformed Firemen's Association, and allied officer groups, have the power, if not to make the Commissioner do what they want, to prevent his doing what they strongly disapprove (…) Civilian Commissioner chafe under the restraint, but do not often succeed with proposals for change in policy, organisation, or method (my italics).

Whilst Dahl depicted how the policy-making process was concentrated in the hands of the Mayor in New Haven, Sayre and Kaufman (1960, p 271) found that the Commissioner in the Department of Buildings faced difficulties to perform his functions and establish his leadership. Sayre and Kaufman (1960, p 271) elaborated:

> The Commissioner difficulties arise in considerable part out of the nature of his interest groups constituency. (…) To the builders (for example, the Building Congress, the Building Trade Employers Association, the Metropolitan Builders Association), the permits and certificates of the Building Department are restraints which they prefer to minimise while acknowledging their necessity. The owners and the managers of real estate (organised, for example, in the Real Estate Board of New York, the Commerce and Industrial Association, and others) share these attitudes, as do the organisations of architects and engineers. To the interested labour unions (for example the carpenters, bricklayers, electricians, plumbers, building employees), the Department of Buildings are the guardian of the gains which they have

won in labour laws and building code; they do not expect initiative and leadership from its leaders and staff (my italics).

Theodore Lowi (1964), another theorist, believed that pluralism could be effective in describing a policy area concerning government regulation, such as when the government regulates working conditions by presenting a policy outcome in favour of business groups and countervailed by the labour unions. However, other areas could be controlled by a narrow coalition seeking to control the distribution of discrete benefits by the government. In other words, multiple-elitism focused more on describing policy areas that reveal the elimination of competition, lack of benefits and regulations, economic inefficiencies, market failure, the capture of regulatory agencies, distribution of subsidies among producers and business groups, etc. (McFarland, 2004, p 34).

In this context, Lowi saw that in the American political system, the interrelationship between congressional committees, executive agencies, and interest groups helps the producers' interests and harms the public (Godwin, Ainsworth and Godwin, 2012, p 59). Lowi (1969) saw that several government policies such as government-guaranteed prices for corn and subsidies for ethanol made from corn keep the prices artificially high. These interests affect many other interests. Livestock producers depend on corn to feed their cattle, pigs, chicken; producers of candy and many other processed foods use large quantities of high fructose corn syrup; households consume significant amounts of corn and products that use corn syrup; and the import tax on ethanol produced from sugar cane raises energy costs for everyone.

Lowi (1969) insisted that the policies in support of the special interests are proposed in sub-government with the exchange of mutual benefits among the members, and which excludes the opponents of such policies. This sub-government, which is often called an iron triangle, consists of few congressional committees (few legislators), executive agencies (few bureaucrats), and interest organisations representing producers. This study demonstrated that an iron triangle for corn policy could include a) congressional sub-committees that produce policies affecting corn production, b) the U.S Department of Agriculture (USDA) which provides scientific research, loans and subsidies to corn producers, c) the corn producers' trade association that provides votes, finance for campaigns, and other resources. (Godwin, Ainsworth and Godwin 2012, p 60).

Multiple-elitists see that public policy is fragmented into hundreds of policy areas controlled by coalitions of elites under the mechanism of sub-government (McFarland, 2004, p 36). It replaces the view of a single elite controlling a policy area, as portrayed in the elite theory, with the idea of several separate groups sharing similar interests and aims of mutual benefit. These groups control the direction of policy, limit the access of new groups and exclude potential troublemakers who do not accept the rules of the game (Gray, 1994, p 105). The sub-governments can control the agencies that represent the interest of the general public and prevent the implementation of policies that would serve the benefit of

general constituencies (McFarland, 2004, p 36). Bauerly (2016, p 169) cites the example of sub-governments in agriculture that opposed the McNary-Haugen proposal, thus limiting the government's control over commodity prices. The proposal was advanced by agricultural economists as a solution to farm problems. It was perceived as a threat to the farm industry's goal because it was expected to raise farm prices relative to agricultural prices. The proposal sought to impose tariffs on agricultural goods and to pay the difference between domestic and international prices to farmers who agreed to sell their farms (Bauerly, 2016, p 169).

Multiple-elitists believe that sub-governments would create economic decay due to the implementation of inefficient policies (McFarland, 2004, p 37). Mancur Olson (1965)'s research study "The Logic of Collective Action" exemplifies this belief. The study identified that the groups who organise with special economic interest would defeat many groups representing the general public. Special interest groups would organise to coordinate their lobbying efforts for a specific benefit that would serve their goals collectively and their private interests as well (Godwin, Ainsworth and Godwin, 2012, p 56). For example, in lobbying on the legislation that would regulate the financial instrument for banking investment, JPMorgan Chase spent $7.4 million, with the Bank of America spending at least $3.86 million, and City Bank spent $24.7 million. Together they provided 130 lobbyists, and they collaborated as each bank had access to specific public officials, and the legislation was important for the banks (Godwin, Ainsworth and Godwin, 2012, p 57).

Further, the cooperation would mean each bank would have to pay only a small price for lobbying, and the marginal benefits would be far greater than the amount spent on lobbying activities. This would lead to the conclusion that some narrow interest groups are likely to be influential through the logic of collective action in defeating groups who represent wider constituencies. In the latter groups, some members may choose to free-ride (refuse to coordinate). This could create a problem of coordination for large groups because some groups of people may prefer not to coordinate because they rely on the efforts of others, or they assume they will get marginal benefits compared to the costs of lobbying, or they do not have a cooperative lobbying relationship with other individuals, or they believe that their efforts would make a small difference to the success of the lobbying efforts (Godwin, Ainsworth and Godwin, 2012, p 57).

The effects of powerful lobbying groups on the economic and political systems were explained in detail by Stigler (1971, 1975). In his 1971 study, Stigler (p 4) described how producer groups use their resources to demand regulations that increase their profits, for example, the provision of subsidies. Stigler (1971, p 6) further explained, "The public policies sought by industry is directed to price-fixing. Even the industry that has achieved entry control will often want price controls administered by a body with coercive power. In a similar fashion, Godwin, Ainsworth and Godwin (2012, p 59) demonstrated that:

> Sugar farmers in the United States have organised and lobbied Congress to regulate sugar production and set the wholesale price for sugar. The regulation limits how much sugar the United States can import and how much sugar American farmers can grow. These regulations increased sugar growers' profit and kept sugar prices in the United States substantially higher than sugar prices on the world market.

McFarland (2004, p 38) summarises multiple-elitism with the phrase "interest groups stasis" as the economy would weaken by the control of a massive system with various elites spread across policy areas. Some elites would offer support to one another to gain concessions in the form of tax codes, subsidies, regulations for prices, etc. This would harm the economy in the long run as the coalition between interest groups, legislators and government's agencies would increase budget and spending in several policy areas due to the trading of mutual benefits. As a result, citizens would be victimised due to the pressure of interest groups who also block regulations that serve the general constituencies. As the empirical studies showed the presence of multiple elites in several policy areas in the 1960s and 1970s, now I turn to the other studies that emerged in the 1980s, which describe the presence of issue networks rather than sub-government and anti-interest groups stasis informed by countervailing power.

4.4.2.Neo-pluralism

Neo-pluralism is a theoretical framework that came about as a result of research studies conducted by classical pluralism and multiple-elitism. It revived the pluralist study of Robert A. Dahl (1961) and was a reaction to the sub-governmental coalition of the multiple elitist theory. Neo-pluralism expands the pluralist description of the participation of interest groups in policy areas into a range of actors, including interest groups, political parties, social movements, governmental agencies and public opinion (Hicks and Lechner, 2005, p 54). Neo-pluralists analyse policy outcomes by studying the policy process stages to understand how such outcomes are achieved. They believe that to understand the final legislation, the study must move from the headwaters of agenda setting all the way to the bill drafting (Hicks and Lechner, 2005, p 57).

Neo-pluralism differs from pluralism in several ways. Arora and Awasthy (2007, p 112) summarised them as follows: a) neo-pluralism is an extension of pluralism, but one in which the role of business groups is relatively crucial; b) in a pluralist democracy, groups are powerful, more or less equally; in neo-pluralism however, groups are complex and do not imply a fair or effective policy-making process; c) power is an observable phenomenon in pluralism, whereas in neo-pluralism power can also be investigated from unobservable issues (the second/third face of power), e.g. by studying groups with little power such as the homeless or academics with unusual policy suggestions or economic-levelling enactments whose ideas get ignored, repressed or blocked (McFarland, 2004, p 128); d) democracy exists through conflictual groups; in neo-pluralism, democracy exists but very little (Arora and Awasthy

2007, p 108). In other words, neo-pluralism believes that when the state supports influential business groups in society, it becomes more bureaucratic. Here, the economically powerful groups exert influence on the state. The state, in turn, can form interests or be biased towards particular interests and therefore hardly remains neutral (Arora and Awasthy, 2007, p 112).

The position of business groups in neo-pluralism originates from the ideas of Lindblom (1977). His study clarified that these groups enjoy a privileged position. Lindblom (1977) investigated power of business groups in U.S, China and Russia and identified that these groups dominated the economic and political life. However, this did not indicate the absence of governmental authority. Both businesses and the government share a common goal of sustaining economic growth. On the one hand, the government is dependent on votes; on the other hand, voters are dependent on employment from those companies. Importantly, whether business groups lobby for their private interests or not, they remain privileged in achieving the desired policy outcomes because they provide employment and investment, which leads the government to take the business interest into account. Lindblom (1977, p 175) declared:

> Any government official who understands the requirements of this position and the responsibilities that market-oriented systems throw on businessmen will therefore grant them a privileged position. He does not have to be bribed, duped, or pressured to do so. Nor does he have to be an uncritical admirer of businessmen to do so. He simply understands, as is plain to see, that public affairs in the market-oriented system are in the hand of two groups of leaders, government and business, who must collaborate, and that to make the system work government leadership must often defer to business leadership.

Such an argument would lead to the assumption that the system is favouring a particular group. Indeed, the business groups' position could provide them with conventional lobbying benefits. But what neo-pluralists also found in the political system is the increased regulations in the environment, civil rights, health sector, the emergence of social movements, and the entry of new participants in the political system (e.g. Petracca, 2018; Wilson, 1995). Further, neo-pluralist theorists observed a complex welter of different types of interest groups participating in policy areas (e.g. Brace *et al*., 1989; Gray *et al*., 2004). McFarland (2004, p 42) writes:

> We see that citizens groups, a welter of different types of business groups, charitable organisations, state and local government, and national associations of state and local governments are frequently involved in air pollution policy-making. Because, public health is involved, medical doctors and public health officials have some

> appreciable role, as do various professional groups of public policy-making.

Extending this point, Wilson (1980, pp 374- 382) believes that the political arena becomes more informed by regulatory behaviour where motivated regulatory officials influence the course of policies. He puts bureaucrats into categories: politicians ambitious for elective office, careerists motivated with bureaucratic concerns, and professionals responding to the interest of the wider community outside their agency. The political arena also includes special interest lobbyists motivated by competitive advantage or special benefits, public interest advocates for reforms, and journalists aiming at a front-page story.

For McFarland (2004, p 43), the complex participation of several types of groups is characterised by opposing views about an issue and autonomous participation of units of the state. As already seen in multiple-elitism, government agencies are dominated by business groups, which leads to economic decay. In neo-pluralism, theorists found that the producer groups are checked by countervailing power. This includes situations where producer groups are checked by citizen groups or producer groups checking other producer groups with different interests, or producer groups colluding with citizen groups to check other producer groups (McFarland, 2004, pp 48-49). Despite the imbalance of power between business groups, whose power might exceed that of citizen groups, the countervailing power would act as a watchdog to enhance government agencies' autonomy and the possibility of the sub-government formation. The countervailing power can take the form of a pressure group or exist in the issue network, social movement or advocacy coalition. Let us consider each of them.

As can be seen, through Olson's logic of collective action, multiple-elitism theorists saw that big corporations, trade associations, and local governments exchange mutual benefits which facilitate their political action. Meanwhile, it remains difficult for citizen groups to organise due to the free-rider problem. Neo-pluralists saw that the presence of political entrepreneurs provides organisation and sustainability to citizen groups. These political entrepreneurs can be wealthy individuals, policy-maker, bureaucrat, academic, journalist, representative of an interest group, or member of parliament against the resistance of regulations. They have innovative ideas, new programmes, new procedures and goals with solutions to problems in policy areas and find politicians who are respective to their ideas (Herweg, Zahariadis and Zohlnhofer, 2018, p 28). They attempt to mobilise support for their ideas to translate it into an actual policy and make them viable alternatives (Herweg, Zahariadis and Zohlnhofer 2018, p 28). They push their proposals through investing financially and dedicating time and energy to achieve their cause. They usually choose a strategic time to launch their proposals, which is termed as a "policy window". This would be a salient event that attracts public attention and creates an opportunity for reforms and regulations. This can be achieved by the formation of a countervailing power.

The countervailing power can come from social movements. A social movement is regarded as a type of social action process that challenges the basic social institutions (McFarland 2004, p 62). Social

movement is often perceived as a reaction to the elite model that controls the political system and excludes the interest of the wider public (Martin, 2015, p 40). McAdam (1982, p 20) believes that it is a "rational attempt by excluded groups to mobilise sufficient political leverage to advance collective interests through non-institutional means". A social movement can emerge from the efforts of pre-existing networks among the social movement organisations (SMOs). The networks provide communication and interaction between the groups to involve them in collective action. Individuals and groups engage in conversations and exchange emails and narratives to define their resources, to increase the cognitive understanding of the movement and to coordinate among themselves. The establishment of a network among the SMOs facilitates mobilisation of resources and encourages activists and the public to launch a protest (McFarland, 2004, p 64).

Multiple-elitism, however, stresses that social movements can be co-opted by political leaders. This could be through providing contracts and awards to the socialist campaigners who challenge the ruling order (McFarland, 2004, p 68). For example, labour union leaders with a salary exceeding $200,000 would be unlikely to organise a militant strike and thereby they become a part of the elites' coalition control to support the status quo (McFarland, 2004, p 68). Of course, neo-pluralism expects that even if a social movement can be co-opted, other groups with different interest from the ruling coalition or the producer groups will form a countervailing power. This could include producer groups, citizen groups, or professional groups with an interest contrary to the dominant group (McFarland, 2004, p 68).

Another source of countervailing power is issue networks. As multiple-elitists predicted the existence of sub-governments led by iron triangles across policy areas, studies of individual issues discovered that iron triangles were found in few areas and sub-governments were open to opponents of producer groups (Godwin, Ainsworth and Godwin, 2012, p 63). The pluralists concluded that Lowi exaggerated in describing sub-governments as being closed to the producer groups and bureaucrats, and they suggest that sub-governments may not be as biased to favour producer groups (Godwin, Ainsworth and Godwin, 2012, p 63). Heclo (1978, p 275) proposed "issue network" as a system that could better describe the political system; he argued,

> Iron triangles and sub-governments suggest a stable set of participants coalesced to control fairly narrow public programmes which are in the direct economic interest of each party to the alliance. Issue networks are almost the reverse image in each respect. Participants move in and out of the network constantly. Rather than groups united in dominance over a program, no one, as far as one can tell, is in control of the policies and issues. (…) Powerful interest groups can be found represented in networks but so too can individuals in or out of government who have reputation for being knowledgeable. Particular professions may be

> prominent, but the true experts in the networks are those who are issue-skilled (that is well informed about the ins and the out of particular debate) regardless of formal professional training (my italics).

The participants in the network share extensive knowledge and understanding of the policy area. For McFarland (2004, p 45), a network on the issue of air pollution could contain leaders of state agencies, university researchers, environmental groups, American Lung Association[48]staff, legislators specialising in environmental issues, journalists, and industry organisation personnel. Further, the issue network can be used to create a countervailing power, by circulating information among the actors (McFarland, 2004, p 50). This contradicts the strategy of the multiple-elitists, who restrict information about their patterns of control so that their opponents will have little incentives to challenge them (McFarland 2004, p 50). For McFarland (2004, p 128), issue networks can offer insights into the three faces of power. The researcher would have to investigate the frequently voiced suggestions and proposals and check whether they are repressed, ignored or defeated by elected politicians or by opposing business forces. In case the advocates of the proposals are actors with little power (homeless, disabled children) and the proposal is blocked by law, the research needs to ask why this happened in terms of the three faces of power (McFarland, 2004, p 128).

Crucially, issue networks can include several actors with enhanced communication among them. More importantly, social movements are not rejected from the issue networks. Issue networks are clusters of activists and social movement organisations, policy-makers, intergovernmental officials, media, and foundations pursuing common principal goals (Smith, Chatfield and Pagnucco, 1997, p 65). Actors in the network can also choose to create a formal organisation or a coalition to make efficient use of resources (Smith, Chatfield and Pagnucco, 1997, p 65). For example, social movement organisations in an issue network can coordinate campaigns with other organisations and actors to help frame the problem and propose a solution in a wider debate (Smith, Chatfield and Pagnucco, 1997, p 65). Here, McFarland (2004, p 50) believes that the existence of social movement organisations in the issue network can achieve a successful outcome of a public policy through the foundation of organisations and coalitions among the actors.

As can be seen, an issue network is a system of communication among the different actors on a policy issue. An agreement can be achieved by the participants, although there may be conflicts between them in the policy arena (Heclo, 1978, p 276). Another study on issue networks introduced the concept of "advocacy coalition", that is, a coalition among actors of the network. Based on Heclo's idea of issue networks, Jenkins, Smith and Sabatier (1993) proposed the concept of advocacy coalition that can be

[48] American Lung Association was founded over 115 years ago in the United States. It aims at preventing lung disease and other respiratory diseases. The Association improves lung health through donors, volunteers, programmes and events participants (American Lung Association, 2021).

found in policy networks. This entails regular communication among the actors about the same set of policy events (McFarland, 2004, p 54). The advocacy coalition is based on cooperation between the groups rather than the conflicting views of Heclo's issue networks (McFarland, 2004, p 53). These coalitions can exist for at least ten years, thus, the success or failure of public policy should be understood from a long-term perspective (Jenkins-Smith *et al*., 2018, p 142). They are formed based on material interests, beliefs, shared political values, cognitive understanding about an issue and collaborative activities over time (Cairney, 2014, p 485). The actors may be influential as they articulate important ideas and they translate their shared beliefs into goals, rules, incentives, taxes, subsidies, and other instruments to regulate issues (Jenkins-Smith *et al.*, 2018, p 142). These policy entrepreneurs seek to have their desired solution to a policy problem accepted (Botterill and Fenna, 2019, p 92). They focus on a period of a decade or more to achieve a policy change, as the information they provide cannot have an impact in the short term (Botterill and Fenna, 2019, p 92). They aim to foster learning about a policy to achieve policy change and thereby allow the various advocacy coalitions in a sub-system to respond to information and to restructure their approach, whilst protecting their beliefs and values to distinguish them from others (Botterill and Fenna, 2019, p 92).

The advocacy coalition could include legislators, interest group leaders, elected and agency officials, and researchers (Cairney, 2014, p 485). A political system may contain several advocacy coalitions that compete or check one another. Grant (2018, p 54) illustrates:

> [in the case of climate change] for some firms particularly in fossil fuels, tackling climate change can be seen to represent a major threat to their business. For other firms, for example, those operating in renewables, mitigating climate change represents a business opportunity. At one end of the spectrum are firms and sectors that produce fossil fuels or are highly dependent on them. They are likely to attract political support from energy-intensive industries that are sensitive to input prices, such as steel, glass, aluminium, paper and ceramics. At the other end of the spectrum are those firms that are actively involved in the green economy and are engaged in the development and the application of new technologies (my italics).

Overall, neo-pluralism maintains that the political system has a considerable degree of openness compared to multiple-elitism. Although interest groups may have different level of resources, they can influence the policy-making process through adequate representation. This can be achieved through lobbying activities and through political parties and elections. As seen in Dahl's study, institutions seem to play an important role in pluralism, in fact, elected officials such as the Mayor can be checked by the people through votes. In neo-pluralism, the elected officials are important advocates for policy. Political

parties on the one hand can be influenced by lobbyists, who seek to get government officials on their side to increase their chances to influence policy (Godwin, Ainsworth and Godwin, 2012, p197). They illustrate the point by citing the case of government officials who successfully opposed the policy that granted drug re-importation. They state, "The past and the present commissioners of the U.S. Food and Drug Administration (FDA) testified that they could not guarantee the safety of the re-imported drugs. This effectively killed re-importation because it prevented the secretary of Health and Human Services (HHS) from certifying that the re-imported drugs constituted no new threat to drug safety" (Godwin, Ainsworth and Godwin, 2012, p 197).

On the other hand, politicians attempt to respond to their constituents during elections to increase their likelihood of being elected or re-elected (Godwin, Ainsworth and Godwin, 2012, p 198). In this way, elections turn the policy process in a direction in favour of public opinion. For example, the greening of the major political parties in Britain during the 1980s was in response to external pressure applied by the environmental movement, the media, public opinion and supranational institutions (Garner 2000, p 190). Such a response is linked to economic and political competition, whereby political parties are "vote maximisers", that is, they shift their position to attract votes (Garner, 2000, p 190).

Neo-pluralism then, accepts that public opinion checks policy issues when it is salient. This is known as high politics. The influence of powerful business groups to dominate a policy weakens as an issue becomes highly visible to the public, media, political parties, government agencies, and citizen action groups. High politics involves to change the status quo and to achieve major policy changes, such as the implementation of new laws and legislation (Guthrie and Koppich, 1993). In this way, the policy process expands to draw media attention and spark debate between government officials, individuals or legislative leaders, who are not usually participants in the decision-making process (Guthrie and Koppich, 1993). In high politics, an issue is defined as a problem requiring solution from an identified set of alternative policies (Guthrie and Koppich, 1993). In addition, high politics can be sustained with the presence of a policy entrepreneur who strikes when the policy wind of political opportunity emerges and remains an advocate for policy reforms (Guthrie and Koppich, 1993). McFarland (2004, p 52) believes that once public opinion shifts on an issue, producer groups can remain active to push policy for its side leading to routine politics. Routine politics is characterised by an incremental change in policy and dominance of producer groups. McFarland (2004, p 52) argues that policies can move from high to routine and back to high politics.

To summarise, neo-pluralism informs the strand of research that emerged following multiple-elitism. The theory identified several examples that show the system to be relatively open to interests competing for policy change. This contradicts multiple-elitism, which views the political system as extremely controlled by a minority of groups that form sub-governments in a policy area. Neo-pluralism, however, discovered the emergence of a countervailing power that takes different forms and checks

policies and producer groups' operation in a political system. Herein lies the main difference between both theoretical frameworks.

4.5. Application of multiple-elitism and neo-pluralism and related concepts to study energy and environmental policy processes

As explained, multiple-elitism sees that the policy process includes a coalition of interest groups. These interest groups form sub-governments to achieve policy reforms that would serve their special interests. However, neo-pluralism stipulates that policy areas better describe an open system, incorporating several interest groups seeking policy reforms. The theory believes that the policy process can include several forms of countervailing power that check policies and raise issues to the policy agenda, most notably, through social movements, policy entrepreneurs, issue networks, and advocacy coalitions (see above). Having explained the main features of our theories, in this section, we will focus on how the theorists of multiple-elitism and neo-pluralism have applied their ideas to analyses of the policy process. In addition to the theoretical expositions above, this inquiry will further inform our analysis later in this thesis, not least chapter 5. In this section, I will review research into energy and environmental policy that applies concepts and ideas that are central to multiple-elitism and neo-pluralism. In doing so, I will demonstrate the applicability of these theories to those policy areas.

As we shall see below, in the multiple-elitist and neo-pluralist academic literature, theorists focused on exploring actors in the policy process, their interaction and their influence on policy outcomes to understand whether policy areas express features of multiple-elitism and neo-pluralism. In both theories public policy is seen as a product of complex interaction between actors from public and private sectors. Here, analysis focuses on the interaction of actors, exploring the intensity of communication between the actors and their resources. Therefore, theories distinguish policy networks based on resource, information exchange, strategies of actors and influence over policy outcomes. This application of concepts related to multiple-elitism and neo-pluralism have led to important insights in the study of energy and environmental policy.

Concerning concepts of the multiple-elitist system of sub-government and the neo-pluralist system of issue network and advocacy coalition, some studies explore neo-pluralism in environmental and climate change policy processes. Those policy processes identify a transition of the energy sector towards sustainability and therefore include several actors such as policymakers, academics, energy organisations and environmental NGOs. For example, Godwin, Ainsworth and Godwin (2012) applied the neo-pluralist concept, issue network to study the North Free Trade Agreement (NAFTA), an agreement signed in 1994 by Mexico, Canada and the U.S. to create a free-trade bloc in North America to improve employment, the environment and economic growth. The authors attempted to identify who participated in the NAFTA agreement to explore if NAFTA informs an open or a closed political system. The study suggests that the ability for environmental groups to participate in the NAFTA debate

illustrates Heclo's argument of an issue network (see above). The authors observed that environmental groups joined the business community and labour to exchange knowledge and expertise in a trade issue network. Godwin, Ainsworth and Godwin (2012) clarified that all participants agree on which issues are the most important and did not agree, however, on which policies are best for society (Godwin, Ainsworth and Godwin 2012, p 63). The participants informed economists, think tanks, local governments, and interest groups. They provided their clients with information and access to public officials.

Sabatier and Brasher (1993) agree with the formation of the neo-pluralist system in environmental policies. Their study significantly identified participants in the policy process to explore the concept of advocacy coalition in Tahoe Basin in California, the U.S. The study demonstrates that actors from various institutions collude to form advocacy coalitions. The authors found two coalitions, one advocacy coalition that supports economic development and property rights and an opposing environmental coalition. The former includes elected officials, staff from local governments, businessmen, leaders of property rights groups and several legislators. The latter consists of local and nationwide environmental groups, a few representatives of two local governments, officials from pollution control agencies, and several researchers (Sabatier and Brasher, 1993). The coalitions shared similar beliefs and lasted for over two decades.

Further, the idea of a plurality network, which includes the non-governmental actors involving in public policy, is also found in energy policies that address climate change. For example, in the UK, Fudge, Peters and Woodman (2016, p 7) found that sustainable energy policy processes are including local governments who provide active citizens opportunities to engage and challenge dominant discourses in energy. Also, public engagement has been important in implementing policies to address climate change. Fudge, Peters and Woodman (2016, p 14) saw that climate change policies have included practitioners, academics and policymakers concerned with the transition to a resilient, low carbon energy future in the UK. This policy process informs a neo-pluralist system.

In this vein, Elgin and Weible (2013) identified two coalitions in the climate change policies in Colorado, the U.S. Elgin and Weible (2013, p 121) found a pro-climate coalition, which supports climate change policies and agrees with the need for carbon tax, renewable energy and cap and trade mechanism. The other coalition is the anti-climate change coalition. This coalition disagrees with the promotion of renewable energy and carbon tax to solve climate change. Both include non-profit and private organisations, government agencies, and academic and research organisations. They engaged in appraising policy options, conducting climate and energy research, consulting with the public, evaluating policy processes and results, implementing policies and programmes informing officials and negotiating in consensus-based processes. This coalition network suggests a neo-pluralist system in the climate change policy process.

Although neo-pluralism is significant to explain some environmental and climate change policy processes, Hamm (1986) found the formation of the multiple-elitist system sub-government in environmental policies, specifically in agriculture and water among six committees in Colorado General Assembly in the U.S. To identify the formation of sub-government in agriculture and water policy areas, Hamm (1986, p 324) observed participants and then determined the amount of conflict and cooperation among the participants. Later, the study examined the Assembly's decision regarding its success to influence policy. The study focused on the number and variety of participants asking 'whether the committee tends to interact with the same interest groups and state agencies regularly or whether most involvement is infrequent, involving numerous groups and agencies' (Hamm, 1986, p 326). Then, the author explored conflict and cooperation among participants suggesting that a non-conflictual environment would reflect those participants agreeing in a sub-government. The author considered the tendency of which groups supported or opposed the proposed legislation. Here, interest groups or state agencies may share similar values with the committee members. These insiders may be contrasted with outsiders, interest groups who have different perspectives about policy issues (Hamm, 1986, p 329). For example, in water policy, sub-government was formed between three participants in House Agriculture Committee and four in its counterpart in the Senate. Those actors appeared frequently in the public hearings of the bills, and they discussed similar policy issues (Hamm ,1986, p 337).

Hayden (2002) agrees with the formation of multiple-elitist sub-government in environmental policy areas. Hayden (2002) studied licencing hazardous waste facilities in the U.S. following the world's first environmental policy to protect the environment, the National Environmental Policy Act (NEPA), in 1969. The decision that licenced hazardous waste facilities was an outcome of sub-government influence in the policy-making process. The study found that the sub-government dominated by powerful corporations could hire experts and economists. This sub-government controlled the economists, who failed to guide decision-makers and the court. The corporate elites control information and therefore possess the power to impose risk on the uninformed public. In this vein, information exchange seemed an important concept in exploring multiple-elitism in the policy area. Hayden (2002, p 479) suggests that in the case of hazardous waste, the corporate interest groups in sub-government dominate the decision process about the definition of the problem as they are the entity that controls data collection and analysis.

While multiple-elitism and neo-pluralism described climate change and environmental policy processes, in the academic literature exploring the actors, information exchange and cooperation in the policy areas, both theories seemed to characterise aspects of the energy sector. Baumgartner and Jones (1991) studied the rapid change in nuclear policies in the U.S. in the twentieth century. The study identified that policies go through a long period of stability and a short period of dramatic reversals. Neo-pluralism refers to these processes as routine politics and high politics respectively. Baumgartner and Jones (1991, p 1045) clarified that in a pluralist political system, the multiple-elitist system of sub-

government can be created, but at the same time, other political institutions can serve as a route towards destruction or alteration of policy sub-government. Both authors recognise that this change in public policy can lead to a transition from 'iron triangle' to 'issue network' to 'advocacy coalition' (see above). In the light of this account, the study identified the participants in the sub-government to understand how it was formed. Here, it is clarified that new committees and sub-committees were established by the government to facilitate the development of the nuclear industry. The sub-government of nuclear power included the private sector and small groups of executive and legislative branch officials. This analysis focused on the application of multiple-elitism highlighting the concept of sub-government in nuclear policies. After considering participants in the policy process, Baumgartner and Jones (1991, p 1059) explored policy change and reforms between 1955 and 1990 in nuclear power. The authors described the policy reforms to illustrate the policy amendments and regulations, which reached a peak between 1970 and 1980 (Baumgartner and Jones, 1991, p 1059, fig. 2). Both authors saw that policy reforms were slow at the beginning of the programme, but nuclear committees shifted towards considerable reforms and amendments. Reforms in this sense reflect alteration of the sub-government, which resulted in a dramatic reversal of the political system to an open system based on policy change and reforms contrasted to incremental and slow policy change controlled by sub-government.

Similarly, Cox, Johnstone and Stirling (2016) explored deep incumbency in the nuclear power policy area in the UK in 2003-2006. This theme demonstrates the government's constant support for the nuclear industry. The research aimed at investigating the interconnection between the UK military and civil nuclear sectors. The authors investigated the concept of incumbency to understand the UK government's commitment to nuclear power. This study attempted to find as many companies as possible involved in nuclear activities, including companies involved in the nuclear supply chain for UK nuclear submarines and nuclear power stations. Among the findings are that the decision on nuclear power new build in the UK was made 'behind closed doors' (Cox, Johnstone and Stirling, 2016, p 53). In framing this argument, the authors reviewed indicators of network interaction between elite individual actors. These indicators included, for instance, senior politicians, prominent individuals who were involved in Hinkley Point C Strike Price, the French nuclear utility EDF, and individuals who reportedly emphasized their importance in the policy turnaround between 2003-2006. Those elite actors were nuclear lobbyists involving powerful elite actors around civilian and nuclear power interests both in government and nuclear industry. This observation demonstrated the multiple-elitist feature related to the formation of a closed network of elite participants in the policy process associated with strong government support for the nuclear industry.

In contrast to nuclear energy policy, Pierce (2016), found a more open system in the fracking policy area. Specifically, this study explored the neo-pluralist concept of advocacy coalition in the hydraulic fracturing (fracking) for oil and gas policies. A significant question in this study is how people influence policy change in the fracking policy area in Colorado, the U.S. The study investigated the

actors of the policy area from public hearings, public meetings, advocate organisations, and protests across Colorado to identify members of the advocacy coalition. Two advocacy coalitions were found in this policy area, anti-fracking coalition and pro-fracking coalition. In the coalitions, environmental organisations and the oil and gas industry were competing coalitions, government and academics and consultants were members of both coalitions (Pierce, 2016, p 1161). Both coalitions used several strategies that generally included posting information about fracking, communicating with the news media, lobbying elected officials, organising public protests and taking legal actions.

Ingold, Fischer and Cairney (2017, p 5) also accept that neo-pluralism describes the fracking policy area. Their study explores advocacy coalitions in fracking in the UK and Swiss political systems. They suggest that advocacy coalitions between different actors such as legislatures, interest groups, and researchers tend to either exchange or block information to reduce the risks of policy change. The authors focused primarily on information exchange between the actors. The study found two coalitions in the fracking policy area, namely, the pro-exploration coalition and the anti-fracking coalition. The pro-exploration coalition includes government departments, companies, scientific institutions, and political parties. The anti-fracking coalition consists of the Green Party, environmental NGOs and scientific institutions that oppose fracking exploration. Here, the authors explored the exchange of information within and across the two coalitions. They found that information exchange between and across the coalitions was significant. The pro-exploration coalition integrated the anti-fracking coalition to find viable policy solutions and avoid protests (Ingold, Fischer and Cairney, 2017, p 12). For example, the pro-exploration fracking included DECC and the Office of Unconventional Gas and Oil (OUGOU) (see chapter 7), who provided reports that supported fracking in the UK. The fracking reports provided technical information that aimed at framing the issue in terms of energy security, decarbonisation, and economic growth. Those reports sought information from professional scientific bodies and businesses. Ingold, Fischer and Cairney (2017, p 11) claim that, "actors may only share information regarding political strategies with their allies, but may share technical information more widely to engage in debate with their competitors".

As nuclear power and fracking policy processes showed aspects of either neo-pluralism or multiple-elitism, renewables seemed to suggest similar features. For example, Toke (2010) studied the renewables policy process under the New Labour government in the UK. His study identified the members of the multiple-elitist system of policy network in renewables, their strategies, and resources to influence policies and the changing contexts that alter resources distribution. The study found a network between members of the government that includes the Department of Trade and Industry (DTI), who influenced policies on renewables. Later in 2007, the Department of Business, Enterprise and Regulatory Reform (BERR) influenced policies, and then from 2008 by the Department of Energy and Climate Change (DECC). The Treasury also had a significant role in influencing financial mechanisms such as feed-in-tariffs and the Renewable Obligation. The network includes governmental members

such as the UK Ministry of defence and non-governmental members, notably the British Wind Energy Association (BWEA) (now the Renewable UK) and the Renewable Energy Association (REA). Both BWEA and REA lobby the government and provide information to pursue the government's commitment. Those members operate in a closed network of the policy community, which includes privileged actors with financial and information resources. Toke (2010, p 766) found other members in the policy area, who operate in a neo-pluralist system of issue network. They are the Countryside Agency, the Council of the Protection of Rural England and anti-wind local groups who oppose wind expansion. Environmental NGOs such as Greenpeace and Friends of the Earth support renewables in the same issue network. This issue network includes a high level of conflict, no resources exchange and spread of influence across interest groups.

Hughes and Meckling (2017) further investigated neo-pluralism in solar photovoltaic policy process in the U.S. The study identified actors and their preferences in the policy area. Hughes and Meckling (2017) found two coalitions in the solar photovoltaic policy process. One advocacy coalition called the protectionist coalition, included key political representatives and a small group of manufacturers, opposed open trade with China and direct investment with the country. It pushed for actions against Chinese producers in green technology to protect local producers. The other advocacy coalition is the free trade coalition, which includes the majority of U.S. solar firms. This coalition failed to influence policies in solar energy as the U.S. trade law was significantly influenced by the protectionists' interests.

Similarly, in wind energy policy process, Szarka (2004, p 324) identified three coalitions in Britain, Denmark and France operating in a neo-pluralist system. The first is a pro-wind coalition, which includes industrialists such as the European Wind Association, which represent the voice of developers, owners and utilities. The wind industry is also represented by national associations such as the Danish Wind Industry Association, the British Wind Energy Association and the French Energy Eolienne that lobby policymakers about favourable operating conditions. The wind policy area includes NGOs and Green Parties who support the sector. The second is an intermediate grouping of conservationist organisations that neither support nor oppose the expansion of wind power. It is believed that a balance should be struck between the damage caused by wind farms and long-term sustainability issues. This interest is advocated by the National Trust, RSPB and BirdLife International. The third coalition comprises anti-wind movements that oppose planning applications, such as Country Guardian, an umbrella organisation for anti-wind protests in England and Wales, Neighbours Against Windmills in Denmark and Vent de Colère in France. This study examined the coalitions in the wind policy process by applying coalition discourse and the concept of an advocacy coalition to identify a range of actors who share a degree of coordination and pursuit common objectives in the policy area.

Breukers and Wolsink (2007, pp 2740-2741) also found several coalitions in the wind power policy process in the 1980s. They referred to those coalitions in the wind policy area as policy communities. The authors found networks in the wind policy area in Netherland and England that influenced policy choices. In the Netherlands, the economics ministry, related agencies and research institutes created the wind power policy network and influenced policy in the sector. However, local initiatives, self-builders, planners, environmental and nature protection organisations were neglected in the early policy choices in the 1980s. In England, a network was established between technical universities, engineering and construction companies, who established the British Wind Energy Association in 1979. They had to compete with the pro-nuclear and conventional energy interests. In Germany, the anti-nuclear movement and environmental movement formed the basis of the wind policy community and established the German Wind Energy Association in 1985. The wind policy community was successful in Germany as it gained supporters in the government, labour unions, hydropower lobbies and other renewables interests. England and Germany demonstrated neo-pluralist system, while, Netherland identified multiple-elitism.

Although the academic literature showed features of multiple-elitism and neo-pluralism in the environmental and energy policy processes. This literature also suggests the presence of movements to destroy elite coalitions in sub-government. Movements and activism have been essential themes in studying multiple-elitism and neo-pluralism. In the light of this account, Costain and Lester (1998) explored the evolution of environmentalism in the U.S. between the late 1890s and the 1990s to understand the change of policy process from the elitist style of participation to participatory democracy. To highlight this change in the policy process, Costain and Lester (1998, p 188) analysed the emergence of environmental groups in specific eras, media coverage of environmental topics and policy reforms during the period. The study saw growth in sub-governments controlling conservation programmes in 1920 (Costain and Lester, 1998, p 188). The sub-governments that captured the conservation programmes consisted of corporations and state agencies. Those sub-governments dissolved into a more open system following the emergence of environmental groups between 1890 and 1990, who no longer accepted the assurances of elite officials (Costain and Lester, 1998, p 192). Media coverage of environmental issues and environmental movements was also significant in raising concerns about the environment. Costain and Lester (1998, p 193) analysed New York Times Index between 1890 and 1990 to highlight topics about the environmental issues discussed by the media. They suggest that the 1960s was the period of new laws with media coverage of environmental issues (Costain and Lester, 1998, p 193). Their analysis also listed the new legislations and laws that were passed every decade from 1890 to 1990 (Costain and Lester 1998, p 194, table 11.3). They concluded that while media formed an external pressure on the government, environmental movements challenged elite leaders and were a constant reminder of environmental issues.

Similarly, Pellow (2001) saw that social movements often interrupt the influence of big corporations. Pellow (2001, p 64) studied big corporations in California, the U.S. in the 1970s and 1990s, such as the Union Oil Company of California, also known as Unocal 76 and Clark Oil who own petroleum refineries. The U.S. Congress was under the significant influence of those oil corporations as they violated state and federal laws and endangered citizens and workers due to chemical release and explosions in the plants. Social movement organisations and environmentalists thought that both companies were profiting from the pollution harming the environment leading both companies to confront social movements and campaigns. At the very least, social movement organisations persuaded Unocal 76 to sign an agreement that stipulates direct negotiation between environmental activists and the company with minimal state involvement, elevating the struggle beyond local borders as activists were against the company's operation in Myanmar and using lawsuits to challenge future government permits. This study significantly agrees with Costain and Lester (1998), who confirmed the possibility of social movements to dissolve sub-governments.

Dudley and Richardson (1996) also uncovered a similar phenomenon in studying environmental policies specifically, trunk roads policy in Britain in the 1970s, where the pro-road lobby dominated the Department of Transport (DTP) and controlled the Public Inquiry process of highways. Thus, environmental NGOs exposed the problem of trunk roads building and combined with local protest groups to influence transport policies by framing the trunk roads building as a problem that needs a solution. It became a public issue rather than the private management of roads policy in a closed multiple-elitist system of iron triangle and sub-government. Hence, the environmental lobby challenged the pro-road lobby, which is thought to be hegemonic in the transport policy area.

On a related note, Kirst, Meister and Rowley (1984, p 248) saw that social movements and public opinion allow issues to centre public debate and conflict and thereby help in the creation of new designs and programmes in the policy process. Here, we should consider that public perception of policy issues has also been a topic of investigation in multiple-elitism and neo-pluralism. For example, Wolfley (2014, p 14) studied advocacy coalition in shale gas policies in the U.S. and the UK political systems. He included public perception of shale gas using opinion polls in his analysis. Wolfley (2014, p 14) suggests that public opinion can influence regulatory bodies. Therefore, advocacy coalition can exploit public opinion against shale gas to enhance its role and implement successful policy change.

As we can see, multiple-elitism stipulates a closed network of elite participants called iron-triangle or sub-government, where they exchange knowledge and benefits and control policy reforms that serve the special interests. Neo-pluralism, however, describes a relatively open system that often includes a network between several participants such as government officials, interest groups, local governments, think tanks, and academia in an issue network. Neo-pluralism also identifies the presence of social movements and public opinion that often change the course of politics. The above academic literature

suggested significant concepts to apply the theories of multiple-elitism and neo-pluralism. In multiple-elitism, the academic literature focused on identifying participants in the policy process to explore the sub-government in the policy area. The application of this theory also included tracking information circulation, such as policy reports that are circulated among specialised and professional bodies to discuss policies rather than the general public to avoid policy change. The application of multiple-elitism required tracking policies during the period reflecting that the slow policy change would result in a multiple-elitist system. In terms of the academic literature of neo-pluralism, it described participants of the issue network exploring policy reports and information shared with the general public. The application of this theory examined the presence of social movement to push for circulating information and achieving policy reforms. The occurrence of several reforms during the period would indicate a neo-pluralist system. Generally speaking, both seem relevant when applying multiple-elitism and neo-pluralism to our study. Our analysis will explore concepts identified in the academic literature, such as formation of elite network, information exchange, social movements and activism, public opinion, and policy reforms. We need to apply both sets of theories to see which is the most relevant to areas of policy analysis.

4.6. Conclusion

Power and influence were studied in pluralism from two perspectives: Bentley and Truman's theorisation of the role of interest groups as advocates for policies and Dahl's ideas of the role of political institutions. Bentley and Truman's description of the pluralist political system identified the importance and existence of interest groups as institutions that represent certain interests to achieve democracy. However, Dahl shifted attention to the role of government agencies, political parties and elections in fulfilling public demands. A significant point is that in pluralism, groups are equal and power is distributed equally in the policy areas, which can be studied from actual and visible conflicts among the groups. This provoked Bachrach and Baratz, and Lukes to further identify invisible conflict and hidden power as a significant aspect to be examined in public policy. Still, other theorists extended the pluralist research procedures and views, and discovered a system that includes groups of elites colluding to form sub-governments. This research did not only contradict Dahl's finding but also Mills' description of a single elite power controlling a policy area. These theorists informed the school of multiple-elitism that describes the domination of business groups in the policy process, through mutual exchange of benefits among the actors of the sub-government, and their control over government agencies, which contribute to declining economic growth. These outcomes, however, did not prove useful in the research that was carried out in the 1980s. The neo-pluralists revised pluralism and discovered techniques that help interest groups organise and oppose elite groups. They showed instances where policy change occurred through competition between groups, the presence of countervailing power and the role of the political institutions in the policy process, including government agencies, political parties and elections. Table 4.1 below summarises the central presuppositions and analytical ideas in both frameworks. These ideas

will be taken forward in part 2 of the thesis to inform the empirical analysis of climate change and energy policy.

Although there are several theories that explain the policy process in Western democracies, the theories of multiple-elitism and neo-pluralism focused more on interest groups mobilisation in analysing policy outcomes. Thus, these theories can help achieve the aim of this thesis, which is to understand policy outcomes in climate change and energy in the UK through analysing competition among, and the influence and power of interest groups in these policy areas. In chapter 5, I discuss research design and methods, which are related to the theories of multiple-elitism and neo-pluralism.

Table 4.1: Notes summarising multiple-elitism vs neo-pluralism

Multiple-elitism	**Neo-pluralism**
a) The existence of a sub-government/iron triangle in issue areas. b) The coalition of elites contains interest groups and bureaucrats that exchange benefits amongst themselves. c) The coalition of elites controls the autonomy of government agencies. d) The coalition fights against reforms that would benefit the wider public as this threatens their special interests. e) The coalition of elites blocks information to the general public to avoid movements against them. f) The wider public are an unorganised and unrepresented group which enables the control of these minority groups through sub-governments.	a) Several organised groups are found in policy areas. b) Regulations and reforms are the results of a competition of interests and battles between different groups. c) Major reforms occur in high politics related to public and media awareness of the issue. d) Organised groups can present their interests through social movements, issue networks or advocacy coalitions often known as the countervailing power. e) Information circulation between groups is important to check elites. f) Political parties are not neutral and do respond to public opinion in the elections. g) Business groups are important and can influence policy due to their resources but often checked by the citizen groups. h) Reforms can sustain for a long time advocated by political entrepreneurs.

Source: Collected by the Author.

5. **Chapter 5**: Research design and methods

As discussed in chapter 4, a number of theoretical approaches help explain explicitly or implicitly the interaction of interest groups in the decision-making process. As such, these theories have applied procedures to understand interest groups' activities in the world of politics. Each theory in pluralism has attempted to redefine the scope of another study and emphasise its limitations in policy areas, for example Robert A. Dahl vs C. Wright Mill, and Theodore Lowi vs Robert A. Dahl. These research studies attempted to bring new paradigms to replace the old ones (McFarland, 2004, p 13). In this way, the debate over power has been pursued through methods to empirically study change in political events and the individuals involved in the process.

In studying power and influence in policy areas, case studies have been the preferred mode. For instance, research theorised by Dahl and Lindblom had applied the techniques of a case study to explain the political process. As discussed in chapter 4, Dahl defined the political process in terms of power as causation, whereby a unit of individuals causes change in the behaviour of others. This understanding of power dictated that the history of political events could be studied by conducting interviews, collecting documents issued by political participants, reading newspapers and official records, and directly observing political meetings if possible (McFarland, 2004, p 25).

Pluralists applied case study as their research strategy because they believed that power could not be generalised to other policy areas without empirical confirmation (McFarland, 2004, p 25). Scholars who continued to study groups in the political system applied similar research procedures. Their research is known as multiple elitism, as they found that coalitions of elites existed in policy areas. A case study approach in pluralist research has continued to be the main procedure to understand the political system. Recently, in applying the neo-pluralist approach to understand interest groups' influence, Godwin, Ainsworth and Godwin (2012, p 31) conducted case studies, relying largely on interviews with lobbyists, archival data and comment letters. They saw that case studies allowed them to understand lobbying strategies, changes in the policy process, and causal relationships.

Fundamentally, the research questions in these studies aimed at investigating power and influence by asking: Who rules? Who has power? Over whom? Do interest groups actually influence a policy? How do interest groups influence public policy? How do interest groups influence legislators? How is influence exerted in a policy? How do pressure groups influence public policy in elections? Why have interest groups achieved certain policy outcomes? (See Costain and Lester, 1998; McFarland, 2004; Schattschneider, 2017; Smith, 1997). As I discuss below, a case study-based approach, which allows for detailed investigation for a particular issue, was considered to be an appropriate method for conducting this research presented in this thesis. This choice was also informed by the conditions outlined by Yin (2003, p 5), such as the type of research questions, the extent of the investigators' control over the actual behavioural events and the degree of focus on contemporary events.

In this regard, this research examines climate change and energy policies in the UK since 2010, to understand continuity and change of the policies, by applying theories of policy process, notably neo-pluralism and multiple-elitism. As we shall see, the study explores four case studies: climate change, fossil fuels, nuclear power and renewables. The four case studies shed light on the most contemporary events of energy policies and climate change in the UK. They attempt to understand the climate change phenomenon in its real-life context to answer the research questions: what are the climate change and energy policies during the Conservative Party's rule? Do they mark continuity or change from the Labour governments' policies? What are the factors in policy continuity and change in the four sectors (climate change, fossil fuels, renewables and nuclear power)? And how can we explain this continuity and change in terms of interest groups' mobilisation? I further ask: a) how do interest groups influence policies? and b) how do they achieve policy outcomes? Finally, I ask: which policies pertaining to energy experience greater/lesser continuity and change? What are the similarities and differences between the policies on climate change, fossil fuels, nuclear power and renewables, in terms of interest groups' power and influence? And are the policy areas informed by a multiple-elitist or neo-pluralist policy perspective?

The main purpose of this chapter is to present the research strategy and methods applied in this research. Thus, I will first define a case study and discuss the different types. Then, I will highlight the data collection methods used in this research. I will later move on to explain the methods of data analysis. Here, I will attempt to clarify how data was organised and analysed. Finally, I will indicate how the research achieves validity and reliability.

5.1. Case study as a research method

As a research method, a case study allows the exploration and the understanding of an issue that requires a holistic in-depth investigation (Zainal, 2007, p 1). For Sturman (1997, p 61), "Case study is the exploration of an individual, group or phenomenon". In a more detailed way, Sagadin (1991, p 31) explains that

> case study is used when we analyse and describe, for example, each person individually (his or her activity, special needs, life situation, life history, etc.), a group of people (a school department, a group of students with special needs, teaching staff etc.), individual institutions or problem (or several problems), process, phenomenon, or event in a particular institution, etc. in detail.

Finally, Flyvbjerg (2011, p 302) saw that "the empirical world has been produced by case study research and many of the most treasured classics in each discipline are case studies".

Feagin, Orum, and Sjoberg (1991, p 9) further note that, "Case study permits researchers to discover complex sets of decisions and to recount the effect of decisions over time". Case studies facilitate the

exploration of complex phenomena, series of events as they evolve, or events that occurred at a particular time and place, including the context surrounding the case (Zainal, 2007, p 31). Simons (2009, p 3) adds that "the primary purpose of undertaking a case study is to explore the particularity, the uniqueness, of the single case. Reference may be made to other cases". Further, there are conditions for choosing case study research. Yin (1994, p 9) explains:

> When your main research questions are "how" or "why" questions, you have little or no control over the behavioural events and your focus of the study is contemporary (as opposed to entirely historical) phenomena (original italics).

Yin's conditions for choosing a case study are significantly associated with this study. This research focuses on the most contemporary climate change and energy policies in the UK. Broadly speaking and as discussed earlier, research questions highlight how and why climate change and energy policies have continued and changed in the UK since 2010, reflecting the mobilisation of interest groups and influence to achieve policy outcomes. Further, my thoughts on choosing a case study were drawn from other theories and concepts. As seen in chapter 4, the case study is a research procedure that has been applied by many pluralist scholars (for example, Baumgartner et *al.,* 2009; Dahl 1961; Godwin, Ainsworth and Godwin, 2012; Sayer and Kaufman, 1960; Schattschneider, 2017; Smith, 1997; Polsby,1963).

The case study is a part of qualitative research, although it may contain a quantitative approach or a combination of qualitative and quantitative approaches, or one approach could be the main one and the other, a supplement (Starman, 2013, p 30). A qualitative research approach has informed this research study. It can be seen in the use of semi-structured interviews and the analysis of policy documents, which I shall discuss further below. The use of a qualitative approach prompted the need to analyse the cases from environmental and real-life contexts. Based on this view, I had to consider the events that occurred during the period which marked the emergence of policies, the mobilisation of groups, and the interaction of different actors in the process. Although the analysis relied on a great deal on the qualitative research methods, the quantitative approach has also been considered. It helped gather secondary data from different sources. The quantitative approach supplemented the qualitative data by providing numerical information to inform the development of the case studies. The approach allowed the inclusion of graphs and figures to show the impacts of energy policies on carbon emissions, electricity prices and the level of electricity generation. This helped me enrich data analysis by illustrating graphs and charts.

Further, as the analysis of the energy sector deals with climate change, fossil fuels, nuclear power and renewables as four different policy areas and given that this study will attempt to compare between the four cases, I had to think of the type of case study I would use for my research. A case study can be single or multiple; a single case deals with studying a unique phenomenon, whereas, a multiple case

study, also known as a collective or plural case study, examines several cases simultaneously or sequentially to have a broader exploration of the issue. This latter type was a useful and effective procedure to conduct my research and analysis. It offers the ability to study multiple cases and draw "cross-case" conclusions (Yin, 2018, p 17). According to Yin (2018, p 61):

> Although all designs can lead to successful case studies when you have a choice (and resources), multiple-case designs may be preferred over single-case designs. If you can do even a "two-case" case study, your chances of doing a good case study will be better than using a single-case design. Single case-designs are vulnerable if only because you will have put "all your eggs in one basket". More important, the analytic benefits from having two (or more) cases may be substantial (original italics).

A multiple case study is also useful in comparing the cases, as it allows the researcher to compare and contrast the cases to investigate the similarities and the differences across them. Hence, a multiple case study will offer the advantage of a comparative study between fossil fuels, nuclear power and renewables. Here, I will identify the similarities and differences across the four cases in terms of policy continuity and change. I will also attempt to explore similarities and differences considering how interest groups represent their interests, achieve their goals and influence policy outcomes across the four sectors. In this vein, I attempt to compare and contrast the cases relying on the theoretical approach provided by multiple-elitism and neo-pluralism.

I should note that a multiple case study explores each case study in-depth as if it is a single case study. According to Stake (2013, p 1), "the field researcher or the data gatherer will concentrate on every single case almost as if it is the only one". Figure 5.1 below shows the different types of analysis in single and multiple case studies. Yin (2009, p 46) suggests that a case study can adopt a single holistic or a single embedded design. The holistic design requires one unit of analysis, whereas embedded designs require several units of analysis (Yazan, 2015, p 140). Single and multiple case study can be single or embedded. Single case design involves studying either one case with one unit of analysis (single holistic) or several cases each with one unit of analysis (single embedded). Multiple-case design includes either one case with several units of analysis (multiple holistic) or several cases each with several units of analysis (multiple embedded) (see Figure 5.1 below). Here, Yin (2002) believes that the researchers should select the design which provides them with the maximum instrumentality to answer their research questions.

While this thesis adopts a multiple case study approach, the embedded design seemed to be the appropriate design for this research study (see the fourth design in Figure 5.1 below). I treat climate change as the context of energy policies in the UK since 2010, which naturally leads me to focus on the

different energy areas. I focus on fossil fuels, nuclear power and renewables, which have been largely targeted by the government to decarbonise the electricity sector. Each case study has policy issues and specific political events that should be explored. This revealed that my choice of a multiple case study will enhance the embedded unit of analysis for each case. In other words, every case will have several sub-units of analysis to be explored, to allow a detailed level of inquiry. For example, climate change policy area contains several embedded units that deal with reducing carbon emissions and managing the consumption of coal and natural gas. This also includes events, such as the protests for amending the Climate Change Act in 2019, that are interrelated to each other. Nuclear power is another case that includes several decisions on the revival of nuclear power in the energy mix and the Fukushima disaster in 2011, which led to protests against the technology. Further, in the case of renewable energy, many technologies are used to generate electricity from renewable sources, among them solar and wind. The area consisted of policies to increase electricity from renewables and other policies that reduced subsidies for specific renewable technologies. All these policies and events will be treated as sub-units in each case study to explore the cases in a detailed manner. This would allow each case to serve a specific purpose within the overall scope of inquiry (Yin, 2003, p 47).

Figure 5.1: Types of case study designs

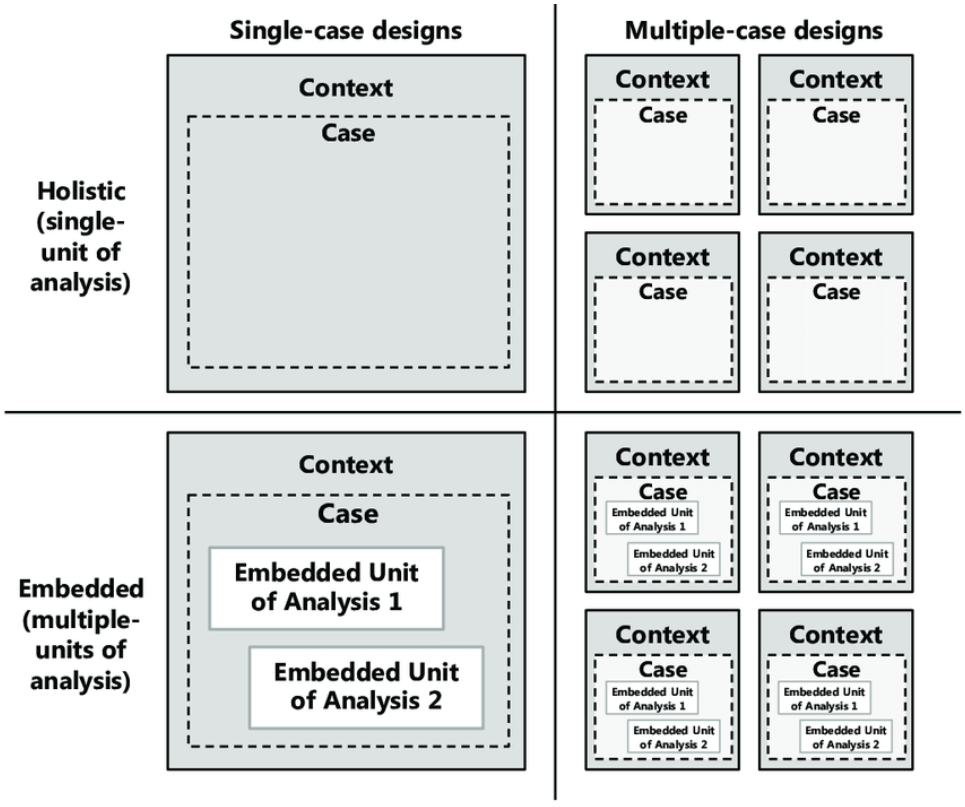


Figure 5.1 shows embedded and holistic units of analysis in both single and multiple-case studies. A holistic case study includes a single unit of analysis, whereas an embedded case study includes more units. For example, a multiple-case study can use an embedded unit of analysis and explain several units in each case. (Yin, 2009, p 46, fig 2.4).

5.2 Methods of collecting data

As we have seen, theorists from the school of pluralism construct their case studies mainly through interviews with key political actors and through analysing documents such as archival data, historical narratives, documents issued by political participants, newspapers, and official records. As will be seen below, I adopt a similar approach to formation of cases in this thesis.

5.2.1. Semi-structured interviews

The main method of data collection informing the development of case studies in this research is semi-structured interviews with elite actors in policy areas of interest (NGOs, politicians and businesses). They are an important source of data to learn more about climate change policy matters and to discover their personal views, experiences and thoughts. Semi-structured interviews are used by researchers to collect data from key informants and therefore gather new, exploratory data and validate findings through checking respondents' feedback about research results. They offer the opportunity to understand issues from several and different perspectives. This allowed me to further explore the relationship between climate change and the energy sector, as well as the UK experience in becoming the leader in climate policies, participants' experience in lobbying, government institutions' performance in facilitating the process of decarbonisation of the electricity sector, and tactics of influence.

Semi-structured interviews are often considered as the sole source of data in qualitative research (Bloom and Crabtree, 2006, p 315). Generally, they are organised around pre-determined open-ended questions (Bloom and Crabtree, 2006, p 315). In addressing the research questions of the case studies, the theoretical framework was the basis for developing the interview guide (see the interview guide in appendix A, pp 258-259 below). The interview guide included an outline of the general topics and questions I wanted to address during the interview, to maintain consistency and direction. In this respect, I structured the questions from the general, such as background questions (professional background, education and participants' role in their organisations) to more specific in-depth questions. Initially, I gave priority to the theoretical concepts provided by multiple-elitism and neo-pluralism to inform the questions, although participants could answer in their own way. This provided the space for other questions to emerge in the interaction with the participants.

The questions sought to explore details on energy policies in terms of influence, lobbying and representation of interests. This reflected the themes of the theories which I discussed in detail in chapter 4. As seen in chapter 4, neo-pluralism is concerned with exploring the competition of interests, the privileged position of business groups, and the countervailing power, whereas multiple-elitism focuses

more on the coalition of elites under the mechanism of sub-government. Both theories explore influence and power in the policy process. Hence the interview guide contained questions such as: what factors are most influential in shaping climate change and energy policies? The further questions were about the role of lobbying groups, institutions, the government, public opinion, social and political realities, and the EU policies in shaping energy and climate change policies. Other questions were more connected to the themes of influence and power. These themes informed questions such as what influence do interest groups have on policy? Do interest groups have equal access to government? Do some groups have more influence than others in shaping climate change and energy policies? Do recent energy regulations and climate change policies reflect the interests of powerful business and policy leaders? Can businesses create sub-government or networks? Are they lobbying for their private interests? Further, in terms of the representation of interests, the interview guide included questions to explore the presence of the countervailing power described in neo-pluralism, such as: how do interest groups influence climate change and energy policies in the UK? When are they most likely to influence decisions on climate change and energy policy? And why?

In terms of the design of the interview guide, similar questions were addressed to all four areas of climate change, fossil fuels, nuclear power and renewables. The repeated questions across the cases enabled me to check for common answers across the categories of the participants. Further, as I conducted interviews with businesses, politicians and environmental NGOs, these different types of participants meant that the data could be triangulated. Data triangulation could be achieved as different participants in the interviews provide different insight on what they perceive as outcomes. Hence, I considered the different point of views about an issue and then looked at outcomes that are agreed upon by all participants. The participants provided information from different angles which improved the richness of the cases and assisted in achieving validity and reliability.

The interviews were conducted either in participants' offices in London, via phone, FaceTime or Skype. All the interviewees were either MPs or participants holding important positions in their organisations (See list of interviews in Appendix B below). The recruitment of the interviewees was informed by purposive sampling, that is selecting participants based on their knowledge, and experience in the research topic. The nature of the research study necessitated that participant were selected from energy and environmental domains. A sufficient number of the websites of environmental NGOs, trade associations, and energy companies were visited to select participants. The interviewees were recruited based on their professional background, status, interest and knowledge in the energy area. Further, I applied the snowballing sample technique to identify suitable interviewees and hard to access ones from suggestions in each interview (see Babbie, 2008). More than 160 emails were sent as interview requests. I received 52 emails accepting my request, of which 22 later declined due to their busy schedule, and I conducted a total of 30 elite-level interviews. The interviews lasted between 40 and 60 minutes, depending on the participants' schedule, experience and knowledge about the issue. Further, six

participants noted in the consent form that they had to read the quotes included in the thesis before deciding whether to reveal their names or be mentioned as anonymous participants. I sent six emails with quotations from the interview transcripts; and, I decided that in case where I did not receive a confirmatory response, I would anonymise their responses. Three participants confirmed that they were happy to be mentioned by name.

All the interviews were recorded except one which was conducted in the Westminster food court, where MPs gather and discuss policy issues. The interviewees were asked to give their consent for the audio record, which was later transcribed and analysed. The transcript of the audio record provided the required depth and nuance, and a full record of the interview from which I could make notes, revisit later, and select quotes of participants. Other notes were recorded manually after each interview.

5.2.2. Data based on documents

The other major source of data collection informing the development of case studies in this thesis is documentary/archival data. The types of documentary data utilised in the thesis include policy documents, newsletters[49] provided by business groups and environmental NGOs, newspapers, and reports. Archival data has several advantages. Whitley and Kite (2013, p 521) believe that archival data is naturalistic and non-reactive. In other words, it is not associated with problem-solving linked to people knowing that they are participating in research (except for surveys) (Whitley and Kite, 2013, p 521). Much of the archival data includes records publicly available, such as data generated by government agencies (Vogt, Gardner and Haeffele, 2012, p 87).

On a related note, archival data provides the researcher with the possibility to include data on people who are not available to the researcher, such as those with high social roles and positions (Whitley and Kite, 2013). For example, the data gathered in this research has expanded to include participants that were not available for semi-structured interviews. Here, the archival data provided direct quotes and information from political figures such as Chris Huhne, David Cameron, Theresa May and others. It also contained significant life events and policy details.

In this way, policy documents were the main source of data after semi-structured interviews. They were used to learn more about policy details. They also provided a way to track continuity and change of policies in each energy technology. Policy documents helped me understand the programmes for promoting decarbonisation in the electricity sector. They also provided an official record of the government's arguments and claims justifying its decisions and policies. Policy documents were also used as a source of gathering numerical data in the form of different charts on trends in the energy sector. Newsletters and newspapers were also used as a secondary source to learn more about an event, trace

[49] Newsletters are printed or electronic documents produced by businesses and NGOs. They are found in the organisations' websites. They include weekly or monthly activities of the organisation.

its political development, examine the issue in the context of its time, and gain a quick view of a wide domain of knowledge (Wright, 2014, p 50).

5.3 Analysing the data

As seen, the data was collected from different sources to build the cases. These features are possible by a case study method, which enables the researcher to systematically organise and interpret data. In this vein, a case study's major strength lies in providing the opportunity for a researcher to use different sources of evidence and different techniques and methods in data analysis (Mills, Durepos and Wiebe, 2012, p 2). This will enhance interpretation of the data and add deep insight and in-depth investigation of climate change and energy policies since 2010.

In this regard, data analysis includes reduction and reconstruction (Mills, Durepos and Wiebe, 2012, p 2). As Miles and Huberman (1994) organised qualitative data analysis in three categories: data reduction and analysis, data display, and drawing conclusions and verifying theories. Data reduction occurred in two steps. The first step included coding, where the data was observed in a limited number of categories to simplify the data. This initially required the data analysis package NVivo, where the documents and interview transcripts to be classified, were uploaded. The data was organised in terms of pre-determined themes related to one another. The themes were informed by the theories of neo-pluralism and multiple-elitism, which guided the data in terms of ideas that could be included to develop the cases. For example, one parent node included texts and transcripts that focused attention on climate change, one parent node was for fossil fuels, one parent code for nuclear power and another parent node for renewables. I started to read and familiarise myself with the data to have ideas about the issues. This allowed me to move from unstructured data to the development of ideas about what is going on in the data (Nowell *et al*., 2017, p 6). This stage led to another step, which is the production of codes. For example, the codes under climate change and energy were sub-coded into 'policy continuity' and 'policy change'. Here, both sub-codes pertained to policies that were continued or were reformed since the successive Labour governments. At this stage, I needed to keep revisiting the data to refine my thinking about the codes. Here, researchers identify important sections of text and attach labels to index them as they relate to a theme or issue in the data (Nowell *et al*., 2017, p 5).

In this sense, the theories of multiple-elitism and neo-pluralism guided the data analysis. Initially, data analysis followed the concepts provided by the theories of the policy process. As seen in section 4.5, the theories provided several concepts and themes that reflect multiple-elitism vs neo-pluralism to analyse the policy process. The following themes were developed: a) sub-government vs competition of several interest groups ; b) policy reforms serve the special interest (of the sub-government) vs regulations and reforms that serve the general interest; c) the wider public is often unorganised vs the existence of organised groups led by countervailing power such as social movements, and issue networks; d) information is blocked by elites vs information circulation checked by the

countervailing power; e) government agencies are controlled by elites in the sub-government vs government agencies' autonomy and political parties' competition in responding to the public demand in the elections (See also Table 5.1). These themes helped identify the focus of the theories and thereby categorise the data.

Table 5. 1 : Summarised concepts of multiple-elitism and neo-pluralism.

Concepts	**Multiple-elitism**	**Neo-pluralism**
Dynamics of interest groups interaction	Sub-government	Competition within issue network
Benefits of policy reforms	Serving special interest	Serving general interest
Degree of public organisation	Unorganised	Organised (countervailing power)
Information circulation	Blocked	Circulated
Autonomy of government institutions	Controlled	Autonomous

Source: Author (see further in chapter 4).

Because the theories multiple-elitism and neo-pluralism provided concepts and themes to analyse the data, I raised theoretical driven questions to explore the findings. I ask: Were climate change and energy policies marked by continuity/change? Have interest groups influenced energy policies? How have interest groups influenced energy policies? How did they represent their interests? Why did they achieve certain policy outcomes? Did they form coalitions of sub-government or issue networks? Has information been circulated or blocked? Have public demands been fulfilled? When were they fulfilled? Did government agencies have autonomy? Here, I sought to understand whether the policy area reflected the multiple-elitists' perspective or that of the neo-pluralists. This naturally enriched a comparative analysis between the cases, not only in terms of interest groups' influence but also in terms of policy continuity and change.

The data was reduced into codes and sub-codes, which were more theoretically informed. For instance, a code entitled 'factors shaping climate change policies. This code was sub-coded to interests of 'government', 'business groups', 'environmental NGOs', 'public opinion' and 'EU pressure'. Another code entitled 'lobbying' was sub-coded into 'representation of interests'. Here, the data is aimed at investigating the existence of countervailing power. The analysis explored campaigns, protests, networks to understand groups' strategies and tactics, the time frame, and the opportunities. This thematic coding was applied in all the case studies (climate change, fossil fuels, nuclear power and renewables). The explanation and the interpretation of data were placed in a memo for each code. Memos helped me develop and record notes about my understanding of the data. I also used memos to record quotes from interviews and policy documents. To conclude the discussion of data analysis, I would mention that data display occurred as another stage of data analysis (Ekanayake, 2015, p 176).

At this stage, I needed to organise information to effectively summarise, describe and explain data. This relied on using data informed by charts and graphs to add weight to the information of the case studies.

It is worth noting that the theories explained the events and the issues described by the participants and the policy documents, which offered a theoretical interpretation of what was going on in the data. The theories assisted me in building the codes to determine the overarching themes. Those themes seemed important to understand policy outcomes and identify whether the political system was multiple-elitist or neo-pluralist. Hence, the conclusion was mainly driven by a comparison between the four policy areas. In concluding the case studies, I also intend to expand the theory and show inadequacies of the theoretical framework that occurred during the theory verification stage. I revisited the themes that dominated the theories. I include a section on how a theory may have failed to acknowledge specific issues and thus required another theoretical approach to achieve the intended outcome.

Finally, the theoretical framework helped me avoid a frequent criticism of case studies, that they take a long time to complete and result in massive unreadable documents (Ekanayake, 2015, p 177). The theories defined a clear basis of data collection and analysis guided by their concepts and themes, which improved objectivity. The interview guide also informed what should be relevant for data analysis. It was prepared based on the theoretical framework that was critically reviewed by the research supervisor. Case study notes were taken from interview transcripts and policy documents. On the one hand, I was looking to verify data presented in semi-structured interviews in line with policy documents. For example, I attempted to use policy documents in verifying the participants' answers about the policy details and the events that took place during the period. On the other hand, the selection of participants reflected different domains, which was important in achieving data triangulation and improving reliability.

5.4. Conclusion

The case study has been the most common research method used by pluralist scholars. It has gained popularity due to its ability to investigate an issue in its real-life environment. A case study is a method of qualitative study but also can contain quantitative methods, a combination of both research approaches, or one dominant and another supplement. As data analysis for this research took a qualitative research approach, a quantitative approach was also present in supplementing numerical data about the cases. This was naturally provoked by the nature of the study, as it explores the electricity sector and climate change policies, which required figures to clarify the cases.

As a qualitative research approach, a case study allows the interpretation of data from individual experience, perceptions, or beliefs. A case study method focuses on specific issues to be described and explained, in other words, it deals with the selection of what will be explored. Further, it can either be

an individual case or multiple cases. A multiple case study offers the advantage of studying the cases separately then comparing them. It served as a useful research method to explore climate change and energy policies since 2010. This allowed the investigation of climate change, fossil fuels, nuclear power, and renewables. As the cases were explored separately, this allowed for a detailed description and explanation of each sector in terms of embedded units of analysis. In this context, data collection and analysis were guided by the real context of the phenomenon explored in the thesis and the theoretical framework, which provided insights to objectively define what needs to be explored.

The use of theories to guide data collection and analysis is central to the research design of this thesis. The data was systematically analysed based on the themes provided by the theories of power: multiple-elitism and neo-pluralism, offering two different positions from which to analyse the data. Having now provided an account of the research design and methods of this thesis, we can now move on to Part 2 of this thesis which presents the empirical findings of this research.

Part 2

6. **Chapter 6**: Case study one: Analysing climate policies and the Climate Change Act.

So far, in Par 1 of this thesis, I have reviewed the history of climate change at the international and the UK levels, I have explored the literature on climate change in the UK since 2010 and I have examined the theoretical framework and research methods. Now, I move on to explore the empirical aspects defined in the theory and the method sections outlined above (see chapters 4 and 5). I look at climate change and fossil fuels policies in this chapter. The climate change policies will be reviewed in terms of whether they were marked by continuity or change, and how and why they continued or changed. I investigate further into how and why interest groups influenced climate policies in fossil fuels, and whether the policy process follows a multiple-elitist or neo-pluralist one.

As discussed in chapter 5, a multiple-case study provided the main approach to exploring climate change policies and answer the research questions. With climate change serving as a general context as a concern in the case studies, each case study will explore specific policy developments as they interrelate to one another to tell the full story of climate policies since 2010. More specifically, this chapter will attempt to explore continuity and change of climate policies since 2010. Specifically, it seeks to understand the growth of interest in unconventional energy in the climate policies of the Conservative-Liberal Democrat coalition, the David Cameron and Theresa May governments, following the implementation of the Climate Change Act (CCA). On that basis, the CCA served as a general framework to emphasise low-carbon energy policies through its five carbon budgets. However, despite the general focus of the government to implement climate policies to achieve clean, affordable and reliable energy, it considered exploring natural gas and hydraulic fracking technology. I will return to this point later in chapter 7 below. Consequently, the implementation of the Fourth and the Fifth Carbon Budgets triggered debates and protests against fossil fuels. Whilst this debate was taking place, it should be noted that concern for the climate increased significantly, notably with the amendment of the CCA in 2019.

Given this situation, this chapter explores these interrelated political events and policy developments relating to the involvement of interest groups. This chapter attempts to briefly review the policy of climate change and energy since the premiership of then Prime Minister Tony Blair (1997-2010), which I have already discussed in chapter 2, as a necessary prelude to considering continuity and change of climate policies since 2010. For the rest of this chapter, I analyse the political process through theories of neo-pluralism and multiple-elitism. I discuss these theories to explain the process and the outcomes of the Climate Change Act and fossil fuels policies in terms of interest groups' influence. I specifically ask, what has been continued and changed since the beginning of the Climate Change Act? What policy change has been achieved in that respect? Have fossil fuels been supported following the implementation

of the CCA? How business interest groups and environmental NGOs represented their interests? Why have they been influential?

6.1. Climate Change Act 2008 and climate policies under the Conservative governments (2010-2019)

The interrelationship between climate change and the energy sector is evident in the patterns of response to climate change. The response reflects the policies and the procedures related to the emission targets set under the Labour administration, which introduced a series of regulations, including the Climate Change Act 2008. Richard Hall (2020), the Chief Energy Economist at the Citizens Advice Bureau, commented in an interview:

> The origin of that [interrelationship between climate change and energy policies] would be the Climate Change Act 2008 which set outbidding targets of reducing emissions by 80% by 2050 and that's changed to net-zero by 2050. (…) a lot of focus by Ofgem is how to decarbonise our power system, so it is hard to debate an energy system that doesn't involve climate change (…) anything that relates to investment and assets, and type of generation; perhaps they are all climate change-focused (my italics)".

Therefore, the pattern of response to climate change is entirely linked to processes to reduce emissions. This prompted the establishment of the Department of Climate Change and Energy (DECC) in 2008 by the Labour government under the Premiership of Gordon Brown (see chapter 2). The establishment of the DECC was one of the measures introduced by the Labour government, which continued to take effect under the Coalition government and the successive Conservative governments. Here, I ask how did the climate change policies continue during the successive Conservative governments? And what continuities and changes can be identified? In an attempt to answer these questions, I analysed the relevant policy documents produced since 2010. These include the Environment Audit Committee report (2011), Committee on Climate Change (CCC) report 2010, 2012, 2013, 2015, and 2019, DECC (2012a); DECC (2013b), and BEIS (2017b) (see Appendix C, p 260 below). I also interviewed 12 key participants, who helped analyse the decisions enacted by the Coalition and successive Conservative governments since 2010 to understand the continuity and the change of policies in terms of interest groups' involvement.

Before we consider the issue of climate policy continuity and change since 2010, it is worth revisiting in detail some of the salient climate change policies under the Labour government in the period 1997-2009. As seen in chapter 2, climate change played a role in defining energy policies during this period, with energy security and efficiency being key issues. The Labour government under the Premiership of Tony Blair published a consultation paper in 1998. The consultation clarified that

reducing 20% of carbon emissions by 2010 would be achieved separately from the EU emissions burden-sharing agreement under the Kyoto Protocol 1997 (Environment Audit Committee, 1999). This meant that the government intended to hold a national debate on how to achieve the 12.5% under the EU joint agreement and move toward the UK's domestic goal of achieving a reduction of 20% CO2 emissions by 2010 (Environment Audit Committee, 1999). The consultation paper called for climate policies to be put into place to achieve the proposed target.

However, it was not until 2000 that the Labour government began the task of decarbonising the energy sector by introducing the Climate Change Levy (CCL) under the Climate Change Programme (see chapter 2). The steps towards fighting climate change through decarbonisation of the energy sector continued during the mid-2000s. In 2003, the Department of Trade and Industry (DTI) published a White Paper entitled *Our Energy Challenge: Creating a Low Carbon Economy* that stressed the need for more rigorous actions to reduce emissions. The Paper called for a 60% reduction in greenhouse emissions by 2050 (Department of Trade and Industry 2003, p 11). In the following year, however, Department for Environment, Food and Rural Affairs (Defra) published a Climate Change Programme Review (CCPR) on the impact of climate policies on emissions reduction. The CCPR concluded that the measures were estimated to only achieve a 10.6% of CO2 emissions reduction by 2010 (Environment Audit Committee, 2007, p 14). In other words, the Programme was not cutting carbon emissions as fast as it originally hoped (Wintour, 2004).

The Programme was criticised by Greenpeace, which claimed that the government was making compelling speeches on green issues but failing to take the required actions (Wintour, 2004). Moreover, the Secretary of State for the Environment, Margaret Beckett, wanted the government to place more burden on businesses (Wintour, 2004). However, the CBI director-general, John Cridland (2004, quoted in Wintour, 2004, para. 13), responded to the criticism claiming that "The government has done little to place any burden on consumers. So far it has been business that has taken the pain".

In 2005, environmental NGOs translated the CCP criticism into a call for climate actions. As seen in chapter 2, more than a hundred NGOs launched "The Big Ask Campaign". The campaign was led by Friends of the Earth and gathered environmental groups such as WWF, RSPB, Women's Institute, The National Trust and others in a coalition called the "Stop Climate Chaos Coalition" (Rutter, Marshall, and Sims, 2012, p 114). This campaign was launched to help support the Early Day Motion (EDM), which was raised in Parliament to force the government to reduce 3% annually to achieve 80% emissions' reduction by 2050 (see chapter 2).

The issue of implementing the climate change target was related to climate scepticism in the government and to designing a framework to reduce emissions, that is, the climate change bill. Under the new government led by Gordon Brown (2007-2010), the Treasury's Council of Economic Advisers, Shriti Vadera, noted that Britain was alone in pursuing policies to reduce emissions at the domestic level

(Rutter, Marshall, and Sims, 2012, p 119). According to this view, the actions towards achieving the climate change bill were pointless because other countries continued to emit greenhouse gases, and therefore no benefits would be achieved from the policy (Rutter, Marshall, and Sims, 2012, p 119).

Some members of the House of Commons, most notably Christopher Chope, Peter Lilley, and Andrew Tyrie, voted against the bill because they believed that climate change measures would be ineffective. The scepticism of these MPs was to do with the costs of the programme and the increased emissions globally. Christopher Chope (quoted in Parliament. House of Commons, 2008, para. 23) claimed, "The United Kingdom will produce only 1.2% of global emissions in 2050. Even if we eliminated that 1.2%, would it make any difference to the world? I do not think it would?". During an interview with Peter Lilley (2020); he commented,

> I wasn't interested in climate change issue until the Climate Change Act and I went on a debate in the House of Commons. The government has to produce a cost-benefit analysis of any new legislation called an impact statement. (…) It was an astonishing document because it is supposed to provide evidence that is worth doing something. I read that the potential costs [costs of decarbonisation] were near twice the maximum benefit. (…) so, I was against it (my italics).

The other issue was related to the design of an approach to deliver the bill. Initially, the Big Ask Campaign called on the government to reduce 3% of GHG emissions on an annual basis. However, the issue of monitoring the reduction path required carbon budgets to be delivered every five years (see chapter2). Carbon budgets are intended to track emissions and take into account the policies required in the future (Rutter, Marshall, and Sims, 2012, p 119). This led to the establishment of the Committee on Climate Change following the implementation of the CCA, to deliver the process. The Committee's role was to advise the government on setting and meeting carbon budgets, to monitor progress of the targets, and to engage with organisations and stakeholders to share evidence and analysis (Climate Change Committee, 2010).

Although there was uncertainty around the costs and the programme design, the climate change bill gained cross-party support in both Houses - the House of Lords and the House of Commons. Around 483 MPs voted for the bill, which became law in 2008. The implementation of the Climate Change Act in 2008 introduced a framework to achieve a national programme of legally binding duties to decarbonise the energy sector. This framework was interpreted in the Climate Change Act chapter 27. The Act introduced duties to reduce emissions by 34% by 2020 and 80% by 2050 based on 1990 level (*Climate Change Act 2008*, p 1-3). In an interview with the then Member of Parliament, Peter Lilley (2020), he claimed,

> The newspapers liked it [CCA] because it was assessing disasters, the left[wing] in politics liked it because it was an opportunity to control the economy and energy. If you control the energy, you control the economy. So, it was an excuse to intervene, and it was convenient at that time (my italics).

With this background in mind, let us now move on to consider developments from 2010. Under the Coalition government, climate policies were marked by continuity and change. Let us start with continuity. Continuity of climate policies is evident in the Coalition government and the Conservative government's acceptance of the Climate Change Act in general, and their willingness to implement the Climate Change Act's carbon budgets in particular, to ensure the CCA's commitment is met. As seen in chapter 2, the first three carbon budgets were approved in 2009. A debate emerged in the process of ratifying the Fourth Carbon Budget. In December 2010, the CCC published its report on the Fourth Carbon Budget. The CCC recommended that the government set a target equivalent to 50% emissions' reduction by 2025 at the 1990 level. The Committee made several recommendations about the budget. Primarily that the Fourth Carbon Budget should be met only by reducing domestic emissions without relying on international carbon offset credits[50] (Environment Audit Committee, 2011a). Another recommendation was for 60% of emissions reduction by 2030 relative to the 1990 level and 37% emissions cut on traded-sectors[51] in 2020, through adjusting the First and the Second Carbon Budgets (Environment Audit Committee, 2011a). The report also noted that the government should not commit to banking the over-performance of the budgets[52] to help meet the other budgets (Environment Audit Committee, 2011a). In May 2011, the then Secretary of State for Climate Change and Energy Change, Chris Huhne (2011a), made a speech accepting the CCC's recommendation on setting the Fourth Carbon Budget at 50% reduction in greenhouse emissions by 2025. This was later confirmed under the Carbon Budget Order 2011, published in June 2011. However, Huhne proposed to review the carbon budgets in 2014 (Environment Audit Committee, 2011a).

Under the continuity of the CCA commitment, Huhne (2011a) argued that "We will undertake the review progress in 2014 to ensure that our own carbon targets are in line with the EU's". The

[50] International carbon credit offset is a reduction in greenhouse emissions measured in tonnes of CO2 emissions equivalent. They are made through the EU Emissions Trading Scheme and the Clean Development Mechanism. In this context, the emitters can buy carbon offset from other entities or companies to comply with the cap set on the total amount of allowed carbon emissions per year (European Commission, 2016).

[51] Traded-sectors are the sectors that are covered under the EU ETS. Notably, CO2 emissions from oil refineries, steelworks and production of iron, aluminium, metal, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals. EUETS also cover nitrous oxide (N2O) from the production of nitric, adipic, glyoxylic acids and glyoxal. Also, the perfluorocarbons (PFCs) from aluminium production (European Commission, 2016).

[52] The first and the second carbon budgets were overachieved by 1% and 14% respectively. Hence, the CCC recommended that the government should not carry the surplus of the second budget to future budgets as this would push the government to not implement satisfactory policies to achieve the CCA's overall target. This consideration was important as the report showed that the economic recession of the 2008 and the EUETS helped reduce emissions in the second carbon budget period (Committee on Climate Change, 2019, p 9).

government also intended to keep the option of using the international carbon offset to reduce emissions (The Environment Audit Committee, 2011a). Further, it recommended tightening the budgets as a part of the EU collective actions. This meant that the government would not adjust the First and Second Carbon Budgets until the EU implemented tougher targets in the 2020s (Environment Audit Committee 2011a). As for the principle of over-performance of the budgets, the government did not specify whether it accepted it or not (Environment Audit Committee, 2011a).

Huhne's proposal was supported by the then Chancellor, George Osborne, who warned that the UK was far ahead of other countries in actions on global warming (Vaughan and Carrington, 2014). In October 2011, the Environmental Audit Committee published a report criticising Huhne's decision, claiming that:

> A review of carbon budgets threatens to undermine the benefit of the Climate Change Act, producing uncertainty about the trajectory for emissions' reductions upon which key Government policies will be formulated and technologies will be developed (Priestley, 2019a, p 6).

In December 2013, the Committee on Climate Change published a report where it compared the costs of reducing emissions by the 2020s and the costs of delaying emissions' reductions until the 2030s. The Committee confirmed that there would be significant savings from early actions. Over £100 billion could be saved providing gas prices remained at the current level. However, there would be significant savings even if gas prices were high (Committee on Climate Change, 2013a, p 25). In the same report, the Committee focused on three aspects: climate science, international circumstances and the European pathway (Committee on Climate Change, 2013a). On climate science, the Committee confirmed that the temperature is likely to rise by 4°C throughout the century if global emissions were to continue to rise (Committee on Climate Change, 2013a, p 8). In terms of the international circumstances, the report mentioned that many countries around the world are taking actions to reduce their emissions, including the largest emitters such as the U.S, China and the EU, which account for 57% of the global emissions (Committee on Climate Change, 2013a, p 8). On the EU development, the report emphasised that the Fourth Carbon Budget needed to match the EU ambitions of emissions' reduction by 2020 and 2030 (see EU package in chapter 2). This is because the Climate Change Act legally requires the government to change the budget only if there are significant changes in the scientific evidence of climate change, economic circumstances or significant development in European or international laws of decarbonisation of the energy sector (see *the Climate Change Act 2008*). As the Committee's evidence did not support the amendment, the then Secretary of State of Energy and Climate Change, Ed Davey (2014) claimed,

> The government will not be amending the fourth carbon budget. The budget, which covers the period 2023 to 2027 will, therefore, stay at its

> existing level of 1950 MtCO2 equivalent. The decision I have taken is consistent with the advice of the Committee on Climate Change. It also reflects the views of the vast majority of businesses, investors, and environmental groups.

At the time of the Fourth Carbon Budget recommendation debate and the continuity of CCA as the general policy to achieve decarbonisation of the energy sector, the Coalition government introduced changes to the climate policies. The government introduced reforms to Climate Change Levy (CCL) under the Finance Act 2010 and Finance Bill 2012. As discussed in chapter 2, CCL is a tax imposed on business energy use, gas, solid fuels and liquified petroleum. Holders of the Climate Change Agreement (CCA) (see chapter 2) would be charged at a reduced rate. Hence, the Finance Bill 2012 introduced a discount on the tax rate for all commodities that are liable to CCL. Discount on tax rate of CCL was amended from 65% to 80% between April 2011 and April 2013 (DECC, 2013b). Further, discounts on CCL rates for participants in the Climate Change Agreement continued to take effects. From April 2019, the CCL discount of electricity has been 92% and 83% for gas, coal and coke (See BEIS, 2020b).

Moreover, the government implemented a new provision called the Electricity Market Reform (EMR) package. As ageing coal and nuclear stations would be closing over the next decade, in 2012, the Coalition government introduced the EMR to encourage investment in low-carbon electricity projects. The EMR incentivised investment in the electricity sector to achieve security of supply, reliability, and affordability (Ofgem, 2020b). The EMR operated under the Contracts for Difference (CfD)[53] to provide long contracts to generators and stabilise revenues at a pre-agreed level for the duration of the contract (Ofgem, 2020b).

Emission Performance Standard (EPS) is another mechanism that was introduced under the EMR. This marked a change in terms of introducing reforms to the mechanisms that were already established under the Labour government. In 2009, the Labour government prevented new coal-fired power stations of at least 300 MW capacity from being built unless they applied the Carbon Capture Storage system[54] (Smith, 2011). The use of the CCS for the new coal-fired stations was confirmed in the Energy Act 2013, which added the EPS as a new mechanism to set an annual limit equivalent to 450gco2/KWh on electricity generated from coal plants (DECC, 2012a). The existing coal plants are

[53] The contract exists between the generators and the government-owned Low-Carbon Contracts Company (LCCC). Under the CfD, the power generators are paid the difference between the costs of generating low carbon electricity and the price of electricity in the market, it is also known as the strike price. When the electricity prices in the market (also known as the reference price) is below the strike price, the payment is made by the LCCC. However, when the reference price is above the strike price, the generator pays the LCCC the difference (Ofgem, 2020b).

[54]Carbon Capture and Storage is a technology used to capture up to 90% of CO2 emissions produced from the burning of fossil fuels. It allows the separation of carbon dioxide from the gas used for electricity generation. It is then transported via pipeline or ship to be stored under carefully selected rock located several kilometres under the Earth's surface. In the UK CCS became Carbon Capture Usage and Storage (CCUS) in 2017 (BEIS, 2017b).

grandfathered[55], they apply CCS and are not subject to the 450gco2/KWh until 2045 (DECC, 2012a). Another aspect to the mechanism was that the gas-fired power plants built once the EPS was in force would be grandfathered until 2045 (DECC, 2012a). This announcement meant that the gas-fired stations would continue their carbon emissions until 2045. This raised uncertainty about the policies designed to achieve the Fourth Carbon Budget and the overall target of reducing 80% emissions by 2050.

In supporting the government's announcement, Chancellor George Osborne (quoted in DECC, 2012b) claimed: "We need to recognise that gas will be a vital part of the mix in delivering affordable and secure low-carbon energy". However, the Climate Change Committee warned against a new dash for gas and recommended that the UK's electricity sector should be almost carbon-free by 2030 (Black, 2012).

The dispute over gas-fired power plants intensified following the publication of the Energy Bill in 2012. While the Bill aimed at delivering a framework for secure, affordable and low-carbon energy, including measures to attract investment in the EMR, it did not contain a specific target for decarbonisation (Lockwood, 2013). This created uncertainties among investors (Lockwood, 2013, p 1340). Although the Bill stipulated that the energy companies would get £7.6 billion to invest in low-carbon energy, it did not include a target for emissions' reduction (*BBC, 2012*). According to the Bill, the target would be covered in 2016, when the Committee on Climate Change would make recommendations for the Fifth Carbon Budget (2028-2032). Hence, to avoid ambiguity, the Committee on Climate Change and a group of seven energy companies pushed the government to give a clear "signal of intent" to decarbonise the power sector (Committee on Climate Change, 2012, p 8). The seven energy firms wrote to the Secretary of State for Energy and Climate Change clarifying that their investment projects were dependent on a long-term stable policy for decarbonisation (Committee on Climate Change ,2012, p 8). In another letter to the Secretary of State for Energy and Climate Change, the Committee on Climate Change (2012, p 8) concluded,

> The apparently ambivalent position of the government of whether it is trying to build a low-carbon or gas-based power system weakens the signal provided by the carbon budgets to investors. It makes more pronounced the perceived risks that the Electricity Market Reform will perpetuate the current stop-start approach to investment in low-carbon technologies.

In November 2012, the government insisted that "Unabated gas will continue to play an important role in our electricity mix into the 2020s and beyond" (Committee on Climate Change, 2012,

[55] EPS until 2045 has been termed 'grandfathering' in other words the cap of emissions under which the new plants are given consent will apply until 204, in order to give the investors long-term certainty of the regulatory system (DECC, 2012a).

p 9). The government supported the role of gas in the energy mix as it was convinced that the sector would provide clean, secure and affordable energy, as well as create jobs. However, as seen below, the dispute over the use of natural gas also coincided with the government's interest in developing fracking technology. This prompted protests against the government's move in favour of shale gas (see discussion below).

The Energy Bill 2012 became a law under the Energy Act 2013. While the Act recognised the role of natural gas in the energy mix, it also asserted that the Fifth Carbon Budget would be set in 2016, based on the timescale of carbon budgets in the Climate Change Act (*Energy Act 2013*). The proposals on the Fifth Carbon Budget (2028-2032) were set in 2015, through the Climate Change Committee's recommendation. The CCC recommended that the budget exclude emissions from international shipping. The budget, therefore, would equate to an average of 1.725MtCO2, which would be appropriate for the period 2028-2032 to achieve the CCA's target of reducing 80% of greenhouse emissions by 2050 (Committee on Climate Change, 2015, p 7). According to the CCC, the budget should be met outside the international carbon credits of the EU Trading Scheme (Committee on Climate Change, 2015, p 7). The Committee also recommended that the government develop policies to reduce 2% of emissions per year between 2014 and 2030, for sectors outside the EUETS (Committee on Climate Change, 2015, p 7).

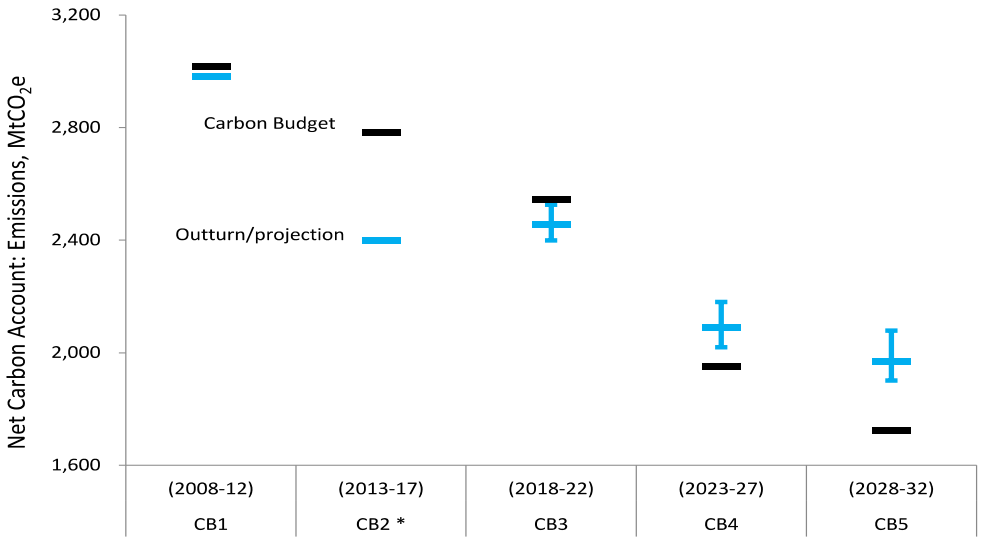
Consequently, the government accepted the CCC's recommendation, and the budget came into force in July 2016, under the Carbon Budget Order 2016. International aviation shipping was included in the Climate Change Act's amendment 2019, under the Theresa May administration. The CCA amendment introduced an important change to the original target set under the Labour government in 2008. The amendment of the Act set a new target of 100% reduction of greenhouse emissions by 2050 at 1990 level. The new target meant that the UK would produce greenhouse emissions at the amount equivalent to the greenhouse emissions removed from the atmosphere by the natural carbon sinks such as forests and oceans. This target was set following the Paris Agreement 2015, which called for limiting the Earth's temperature at 1.5°C. The CCC recommended that the government aim to achieve net-zero emissions by 2050. This recommendation was reflected in the draft, the Climate Change Act 2050 (2050 Target Amendment) Order 2019. The legislation came into force in 2019 under the May government, amending the Climate Change Act 2008. This amendment was confirmed for section 1[56] of the CCA to change 80% of emissions' reduction to net-zero lower than 1990 level (Priestley, 2019a, p 15). It received support across parties, businesses and environmental groups, which I discuss below in detail. The target would be achieved through international carbon credits, which diverged from the initial recommendation of the CCC, that it would be achieved by domestic actions only (Priestley, 2019a, p 3).

[56]Section 1 "The target for 2050" demonstrates the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline (*Climate Change Act 2008*, p 1).

The Conservative government under the May premiership continued to frame new policies to achieve decarbonisation. In 2016, the government introduced the Department of Climate Change within the Business Energy and Industrial Strategy (BEIS) as a merger between the Department for Business and Innovation Skills (BIS) and DECC. Also, during the same year, the then Secretary for Energy and Climate Change, Amber Rudd, published the Clean Growth Strategy to meet the requirements of section 12 and 14[57] of the Climate Change Act by 2017 (Priestley, 2019a, p 11). The Strategy aimed to reduce emissions from transport, business, industrial sectors, and emissions created by heating homes and businesses (BEIS, 2017a, p 11). The Strategy also encouraged the use of renewable technologies, natural gas, which is a low-carbon fossil fuel, and liquefied petroleum gas (LPG) as an alternative to oil.

Overall, the government estimated that 88 MtCo2e would be reduced between 2018 and 2022 (Third Carbon Budget). For the Fourth Carbon Budget (2023-2027), the emissions would exceed the cap set under the budget (see Figure 6.1 below). The BEIS (2019d, p 19) clarified that it would use the Clean Growth Strategy to attempt to reduce 139MtCo2e to address the gap. The emissions would continue to be greater than the cap set by the budgets, notably the Fifth Carbon Budget (2028-2032). The BEIS expected to reduce 245 MtCo2e taking account of the uncertainty of the projection (BEIS, 2019d, p 19).

Figure 6. 1: Actual and projected performance against carbon budgets.



[57]Section 12 "Duty to provide indicative annual ranges for net UK carbon account" clarifies that an annual Parliament report should include an indicative annual range about the amount of carbon emissions reduced per year, which is expected to fall. This involves consultation of national authorities before producing the report. Section 14 "Duty to report on proposals and policies for meeting carbon budgets" indicates that the Secretary of State must place a report before parliament on proposals and policies for meeting the current and the future carbon budgets and how these policies affect the economic sectors (*Climate Change Act 2008*, p 8).

Figure 6.1 shows the performance of the carbon budgets for emissions in MtCo2e. (BEIS, 2019d, p 18, fig. 2.3).

In summary, there was concern about climate change in the energy policies enacted by successive Labour governments between 2000 and 2008. This included significant emissions' targets such as the 20% emissions' cut by 2010 and the establishment of the Climate Change Act in 2008. These steps outlined the continuity of the policies to decarbonise the energy sector, particularly the electricity sector. The target informed debates and decisions during the Coalition government (see Table 6.1 below), notably on issues related to gas-fired power plants and emission reduction targets, which created uncertainties about future climate policies. However, significant progressive actions were introduced by the Coalition government and successive Conservative governments, including the establishment of EPS via the EMR in 2012, the Clean Growth Strategy in 2016, and the amendment of the CCA in 2019. Given the continuity and change of climate policies, it is worth exploring these policy outcomes through our theories of multiple-elitism and neo-pluralism.

Table 6. 1: Main climate change policies between 2000 and 2019

Climate change policies under the New Labour government	**Continuity of climate change policies under the coalition and successive Conservative governments**	**Change of climate change policies under the coalition and successive Conservative governments**
Climate Change Levy 2000 Energy Efficiency Commitment 2002 White Paper: Our Energy Challenge - Creating a Low Carbon Economy 2003 Climate Change Programme Review 2004 Climate Change Bill 2006 Climate Change Act 2008	Climate Change Act 2008 Carbon Budget Order 2011 Carbon Budget Order 2016	Climate Change Levy (the Finance Act 2010 and Finance Bill 2012) Electricity Market Reform 2012 (Emissions Performance Standard (EPS)). Energy Bill 2012 Energy Act 2013 Clean Growth Strategy 2016 Climate Change Act amendment 2019

The Table shows the main climate change policies between 2000 and 2019. (Source: Author).

6.2. Interest groups' mobilisation since the CCA 2008

As seen, the centrepiece of the UK's climate change policies is the Climate Change Act, which shaped the path to reaching the target for reducing emissions (Giddens, 2009, p 83). The Act informed the procedures of climate policies in the UK in terms of designing five-yearly budgets that should

survive with changes in government (Giddens, 2009). Here, as we shall see, although policy continuity and change have marked the politics of the CCA since 2010, political conflict over policy development has also been significant. In this section, I offer a theoretically informed analysis of the engagement of groups in bringing issues onto the political agenda and their involvement in the process of policy implementation. This analysis will allow me to examine the relevance of my theoretical framework of multiple-elitism and neo-pluralism in explaining developments.

Drawing on semi-structured interviews and policy documents, I explore several themes: the engagement of environmental NGOs and business interest groups in high politics and routine politics, the strategies and tactics of such groups, government response and involvement, and policy regulations and reforms. In this respect, I attempt to highlight which theory best explains developments in policies. This includes two considerations. On the one hand, and as explained in Table 5.1 above, there is a closed system within which powerful interest groups form sub-government (producer groups, policy-makers, and government agencies) to dictate a policy and realise their special interests. This multiple-elitist system excludes many groups (McFarland, 2004, p 46). On the other hand, Table 5.1 also indicates the presence of countervailing power, which is associated with a neo-pluralist system. The countervailing power checks elites' involvement in the policy area leads to the emergence of high politics. This requires a relatively open system which contains many actors communicating on a policy. Therefore, I attempt to explore these concepts in the sections below, which discusses the aftermath of the Climate Change Act 2008. Here, I ask, who was involved in the climate policy debates? How did they affect policy change in climate change? And why have they achieved policy change?

6.2.1.The analysis of the Climate Change Act 2008 and its aftermath (2010-2013)

In terms of the policy development of climate change, as noted earlier, the Climate Change Act was introduced by the Labour government in 2008, to ensure the provision of a framework for greenhouse emissions' reduction through the five carbon budgets. However, as we shall see below, natural gas was considered in the 4th Carbon budget, and therefore this issue leads us to raise the questions: how can we explain this shift in support of climate change policy in terms of the consideration of natural gas in the Energy Bill? And why has such a transition occurred?

As seen in chapter 1, the Act was pushed by the efforts of Friends of the Earth, which launched a campaign calling for a 3% emissions reduction every year (Nulman, 2015, p 62). Here, to understand the implications of the CCA, the politics surrounding it and the involvement of interest groups from 2010, we have to consider the Big Ask campaign. The 'Big Ask' campaign was launched to secure the Labour government's pledge of a reduction of 60% of emissions by 2050 (Nulman, 2015, p 62). Friends of the Earth played a role as a policy entrepreneur (Lockwood, 2013, p 1344) in framing the Act around carbon budgets and emissions' targets (see political entrepreneurs in chapter 3). The FoE campaign was

backed by business groups and political parties, which helped reach a significant outcome at the level of legislation.

Initially, the support of David Cameron for the bill played a tactical role, with his strategy to "detoxify" the Conservative Party (Carter and Clements, 2015, p 4). This strategy represented a break between the Conservative Party's poor environmental agenda in the past and the present modernisation of the Party (Carter and Clements, 2015, p 4). Support for the cause of climate change and the environment was important to attract votes, hence the Party sided with NGOs in the green lobby (Carter and Clements, 2015, p 4). This strategic support was reflected in the Party backing the Big Ask campaign because of the popularity of and the public trust in FoE (Nulman, 2015, p 69). However, despite Cameron's support for the climate change bill, the implementation of the Act during the Coalition government encountered opposition.

Although the Climate Change Act provided some sense of certainty in terms of the overall target of emissions reduction, businesses experienced uncertainty without detailed policies about the target. According to the Environment Director at Business in the Community (BITC)[58], Gudrun Cartwright (quoted in *The Telegraph*, 2019, para. 8), "The lack of a stable policy environment in the UK has made it challenging for businesses to plan and take decisive action with certainty". Hence, this uncertainty in policy details affected the implementation of the Act, which faced opposition from the Tory right and dispute at the level of the Fourth Carbon Budget (see above).

As seen, the bill was not embraced by all the MPs in the government. The bill faced criticism from a few backbenchers. The Conservative MPs were not convinced of man-made climate change. A ComRes survey in 2008 found that one third of Conservative MPs still questioned the existence of climate change (Carter, 2010, p 7). This scepticism inside the government was visible following the introduction of the Energy Bill in 2012. In the Energy Bill, natural gas appeared to have major importance in the UK's energy mix. Hence, Chancellor George Osborne was accused by Greenpeace of being pressured by the industrial lobby, the British Institute of Energy Economics, which was sponsored by Shell and BP (Merrick and Chorley, 2012). This alarmed the environmental NGOs, as the Bill focused on the use of gas and did not include commitments to electricity decarbonisation by 2030. Both the use of gas and lack of commitment to electricity decarbonisation were reiterated in the Energy Act 2013. The Act confirmed that the decarbonisation target would be decided by the 30th of June 2016, that is, once the Committee on Climate Change (CCC) had provided advice on the level of the 5th Carbon Budget (2028-2032) (DECC, 2013c).

Tim Yeo, the Chairman of the Commons Energy and Climate Change Committee, also accused Chancellor Osborne of undermining the green energy policy to please backbench Tory MPs (Merrick

[58] BITC is a business community that works with the companies in the UK and internationally who are committed to improving their society through offering programmes and advice (BITC, 2021).

and Chorley, 2012). An incremental change informed the policy details of the Act; most notably, the Energy Bill was expected to set details about emission reduction target for the Fourth Carbon Budget. This issue was not included in the Bill. Instead, the government advocated the role of gas in the energy mix, allowing gas-fired plants to continue emissions until 2045. The Bill did not introduce a radical change to the climate policy, and therefore the government was accused of siding with the big oil companies.

Given these policy outcomes, the theory of neo-pluralism would explain that the increased attention to climate change leading to the implementation of the CCA has fundamentally described the emergence of high politics. However, high politics gave way to the emergence of routine politics, which was evident as climate change became less salient during the period and natural gas was considered in the 4th Carbon Budget. As seen in chapter 4, high politics involves the participation of different groups in framing a policy. It can include committees and subcommittee members, interest groups, and often the high court. In high politics, policy-makers either side with producer groups or the countervailing power to achieve a structural change in policy and participation (McFarland, 2004, p 51). In this context, high politics brings alternative policies and laws that change the status quo. The course of policy shifts involves media attention and public discussion. In this respect, the issue of climate change became salient to the public, and thereby governmental officials supported the proposed policy.

In this vein, the political events that surrounded the possibility of reforms were a clear instance of high politics. This is linked to the 'Big Ask' campaign and its demand to implement the climate change bill. The campaign depended fundamentally on the political opportunity, media and the public's concern for the climate. The political opportunity involved several aspects. Most notably, the scientific basis for climate change was becoming more prominent, and more NGOs were becoming interested in climate change (Nulman, 2015, p 94). At the 2004 Labour Party conference, then Prime Minister Tony Blair revealed his intention to become an international leader on climate change issues (Nulman 2015, p 94). Later, in the 2006 election and prior to the Big Ask campaign, there was a competition between the Labour and the Conservative parties' campaign promises about climate solutions. As such, the Labour Party promised to cut 60% of emissions by 2050; meanwhile, the Conservatives promised to phase out hydrofluorocarbons (Nulman, 2015, p 91). Hence, FoE attempted to achieve a practical solution towards emissions reduction. This was realised through campaigns and meetings with environment ministers, with whom the group enjoyed some favourable access (Muinzer, 2013, p 8). According to John Kingdon (1984, quoted in Goodwin, Ainsworth and Goodwin, 2012, p 68), "Interests wait patiently until events are so fortuitous that policy change is likely".

Following the campaign, media coverage surrounding climate change issues increased significantly between 2005 and 2006 (see Figure 6.2). The public became more concerned about climate change. For example, in 2005, climate change and global warming were a much higher concern for

people in the UK. Poortinga, Pidgeon, and Lorenzoni's (2005, p 5) survey, which included 1491 respondents, found that 82% of the respondents were very or fairly concerned about climate change.

Figure 6. 2: UK newspaper coverage of climate change (2003-2006)

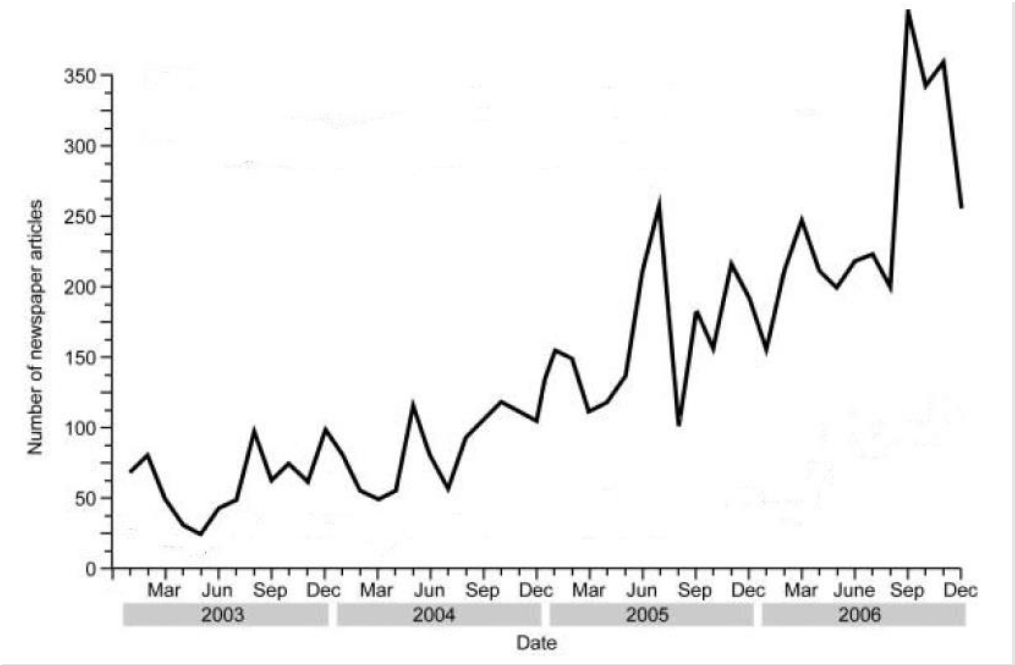


Figure 6.2 identifies the increased attention towards climate change between 2003-2006. Newspapers such as The Independent, Independent on Sunday, The Times, The Sunday Times, The Guardian and The Observer covered articles about the climate science and the human contribution (Boykoff, 2007, p 473, fig. 1).

Whilst the increased support for climate change and the implementation of the CCA illustrate high politics, routine politics seemed evident in the declining attention to climate change and the consideration of natural gas following the implementation of the 4th Carbon Budget in 2011. Here, the theory of neo-pluralism describes that following the occurrence of high politics, the public and media coverage shift attention to other things. In this sense, the public loses interest in an issue, government officials move to other issues and the activity of citizen groups declines (Godwin, Ainsworth and Godwin, 2012 p 193). Importantly, McFarland (2004, p 52) argued that the decline of the interest in a particular issue results in the co-optation of the producer groups. When only producer groups remain lobbying in a policy area, subcommittees and bureaucracy can allocate resources and pay attention to the issue. The absence of the countervailing power and control of agency can lead to the formation of a multiple-elitist system of sub-government (See further discussion in chapter 4).

To put it simply, routine politics emerged between the economic crash of 2008 and the implementation of the Energy Bill 2012, which allowed gas to emit CO2 emissions until 2045. This can be understood in two respects: a decline in public support and attention linked to the lack of media attention and the economic crisis in 2008, and the presence of a powerful lobby led by business interests. In terms of the decline of public support, the Act lost prestige with the public during the financial crisis

of 2008. Climate change was a serious problem at least until the economic crisis in 2008. The public attention towards climate change has slid to below 8% in 2008. In the face of the economic downturn, the independent think tank, Green Alliance, asked respondents which issue is most important, almost 4% of respondents said environmental issue (Green Alliance 2012, p 3). As opposed to January 2007, 19% of the respondents rated environmental issues as the most important issues facing the country (Green Alliance 2012, p 3).

Further, the economic crisis significantly affected public concern towards climate change. The decline in public concern can partly be linked to low media coverage of climate change issues. Only 200 newspaper articles covered the issue of climate change in 2011 compared to 1000 newspaper articles in 2008 (Lockwood, 2013, p 1342). Further, the presence of citizen action groups in advocating for policy development and organising campaigns also declined, as the economic crisis affected the income of environmental groups (Lockwood, 2013, p 1342). The drop in income prevented the environmental campaigners to carry out actions on climate change. Tim Jonson (2020), director at Environment Aviation Federation, reflected in an interview,

> ENGOs are more targeted at the specific outcome and their interests are not always sustained over such a long period of time mainly due to lack of resources, funding (…) or topic [of the campaign] drifts away (my italics).

Therefore, environmental NGOs were influential when the climate issue was highly visible and salient to the public. In an interview with James Diggle (2020), Head of Energy and Climate Change at CBI clarified,

> I think when the financial crisis crashed, it [climate change] did not have that attention. So, during the first half of 2010, we saw a fall down of climate priority although it was still a time when progress was made in the UK; the Conservative and Lib-Dems Coalition brought forward energy market reform (my italics).

As we can see, multiple-elitism indicates that routine politics has informed the period following the implementation of the Climate Change Act 2008. This seems evident in the declining climate change salience during this period. Specifically, as we have seen, the financial crisis has sustained media and public opinion. Further, NGOs were less visible in advocating for climate change. For example, Friends of the Earth tried to take the "Big Ask" campaign further, but it faced less immediate success (Carter, 2014, p 21). Importantly, business groups remained active in a closed system, excluding the countervailing power, which indicates another aspect of multiple-elitism reflected in sub-government rather than interest groups competition (see Table 5.1 above). There were closed meetings between Chancellor Osborne and businesses. Osborne had eight meetings on energy issues with the oil and gas

companies and no single meeting with renewable energy representatives in 2012 (Merrick and Chorley, 2012). In this context, the policy manager of the Solar Trade Association (STA), Cameron Witten (2020) clarified in an interview that:

> Every industry certainly has its special interests in shaping government policy; I think it is fair to say that for a long time the big players in the room were obviously the oil and gas bodies. I think there are still certain structural advantages to sort of more traditional energy sources in the system; when I say structural, I mean the system was built for decades around those technologies.

The pace of routine politics reflecting multiple-elitism has also indicated the government's decision, in the form of the Energy Bill 2012, to allow natural gas to continue its carbon emissions until 2045. This decision can be observed in the then Chancellor Osborne's (2011) claim: "We are not going to save the planet by shutting down our steel mills". The consideration of natural gas remained important in climate change policies, most notably in the 4th Carbon Budget. This has turned politics from high politics of making general decisions that have impacts on changing policies towards day-to-day decisions (routine politics) (McFarland, 2004, p 51). Here, business groups have a significant influence on policies. In 2011, Osborne announced to hand out £250m of taxpayers' money to steel, cement, chemicals and other industries to protect them from EU ETS (see chapter 2) (Osborne, 2011). The Third Generation Environmentalism (E3G) Chairman and policy adviser Tom Burk (2020) reflected in an interview:

> Oil and gas in this country contribute to 60 billion a year in revenues to the public purse, if you are going to shut them down by the middle of the century what are you going to replace them with! I can tell you there is nobody in the NGOs has an answer to that question.

Overall, the implementation of the CCA was an important event in the political history of climate change in the UK. The Act was advocated by ENGOs, businesses, politicians and the public. This was a clear example of high politics described by neo-pluralism. Nevertheless, this situation was followed by a period of decline in support for climate change, characterised by a specific policy outcome, notably the consideration of natural gas in the 4th Carbon Budget. The theory of multiple-elitism describes the process whereby business groups influence policy outcomes. Multiple-elitists view this as routine politics or normal day-to-day decision making. Now, it is worth exploring further routine politics during the period with policy reforms supporting unconventional oil and gas.

6.2.2. Understanding the amendment of the CCA in 2019

Whilst natural gas became a major issue following the implementation of the Climate Change Act 2008, priority for climate change has re-emerged following the Paris Agreement 2015 (see chapter 2)

and the spread of environmental movements around the world. These developments partially led to an important event in climate change policy in the UK, notably the amending in 2019 of the Climate Change Act, from an 80% target to 100% (a net-zero) by 2050. Given this situation, I attempt to look at why the CCA amendment occurred in the UK's climate policies and how we can explain this policy change.

As noted earlier, the CCA amendment was enacted by the May government in 2019, following international and domestic political pressures. Internationally, the UK, under the United Nations Framework on Climate Change (UNFCC), ratified the Paris Agreement in 2016. The Agreement aimed to strengthen climate actions by limiting global warming to well below 2°C, preferably to 1.5°C, compared to the pre-industrial level to 1.5°C (see chapter 2). Following the Agreement, the IPCC published a report in 2018, clarifying that the target of limiting temperature rise by 1.5°C could be achieved through reaching a net-zero by 2050 (IPCC, 2018, p 7).

Following the Paris Agreement 2016, a global movement, Fridays for Future (FFF), was launched. FFF started in 2018 with the school strike led by the 15-year-old Greta Thunberg in the lead up to the Swedish election. The school strike called for policies to support the Paris Agreement 2015. This led to the spread of the movement around the world calling for climate actions. In the UK, a social movement led by the Extinction Rebellion (XR) sparked a debate about climate change to take the issue more seriously, forcing people to think hard about this question (Kumar, 2019, interview). Both Fridays for Future and XR were notable in keeping people focused on the issue and reducing the confusion created by those who believe that climate change has nothing to do with human activities (Lambert, 2020). Significantly, the XR forced campaigners to keep climate change at the top of the agenda, notably during the Brexit referendum (Kumar, 2019, interview). XR movement also generated public support for the amendment of the Climate Change Act.

Given the emphasis on greenhouse emissions' reduction in the Paris Agreement 2015 and the IPCC's report 2018, the Minister of Energy and Clean Growth, Claire Perry, wrote to the Committee on Climate Change (CCC) asking about the suitability of the date to start policy development on the target (Priestley, 2019b, p 4). More than 192 cross-party MPs and 53 members of the House of Lords also signed a letter calling on the then Prime Minister Theresa May to accept the net-zero commitment by 2050 (Priestley, 2019b, p 5).

As can be seen, the amendment of the Climate Change Act was an important policy change. To understand how this change occurred, and given the concepts provided by the theoretical frameworks, multiple-elitism and neo-pluralism, I explore this issue considering a) business influence, b) ENGOs' influence, c) public opinion d) elections, which are directly linked to the concepts of interest groups, public and government institutions in Table 5.1 from chapter 5 above. Along with the concepts provided by the theoretical framework, we will be highlighting an aspect of climate change policy, namely high politics. The amendment of the CCA in 2019 is perceived to be an important change in climate change

policy turning day-to-day decision-making (routine politics) following the implementation of the CCA in 2008, which I discussed above, into a general decision that impacted climate change policies. Let us now explore our theoretical concepts.

In terms of business influence, the business community was fully in support of the net-zero proposal. For example, the CBI Director-General (quoted in BEIS, 2019e, para. 12) said:

> UK business stands squarely behind the Government's commitment to achieving net-zero emissions by 2050. This legislation is the right response to the global climate crisis, and firms are ready to play their part in combating it.

Later, in November 2019, the CBI published a report entitled "The Low-Carbon 2020s: A decade of delivery" to support the net-zero commitment. The report urged the government to focus on decarbonisation across all sectors, notably heat, transport and power (CBI, 2019a, p 4). The CBI set policy recommendations that tackled each sector separately. The main themes of the policy recommendations were related to policy details about energy efficiency to improve homes, reducing transport emissions through the tax system and decarbonisation of vehicles, and accelerating the deployment of renewables and nuclear power (CBI, 2019a, p 4). During an interview with a participant from the international affairs think tank, Chatham House, it is stated that:

> Government can't make radical policies without the support from business. We would not be able to get more ambition in the policy unless we had business supporters. So, I think in general, if you want a radical change, having business supporters is very helpful. (Anonymous, 2019).

In addition to business support and influence, environmental NGOs also backed the net-zero commitment and generated public pressure to persuade the government. The campaign group Extinction Rebellion called net-zero by 2025, and the environmental charity World Wildlife Fund called net-zero by 2045 (Priestley, 2019b, p 10). WWF (2019, p 25) launched a petition signed by 100,000 people and persuaded over 750,000 people to directly lobby their MPs. Meanwhile, the campaign group, Extinction Rebellion, generated a climate strike to push the government to realise the net-zero commitment by 2025. Starting on April 15, Extinction Rebellion organised demonstrations in London to block Marble Arch, Oxford Circus, Waterloo Bridge, Parliament Square and Shell Oil Company's headquarters (*BBC,* 2019a). The demonstration lasted until April 25. The campaign group urged the government to accept their "Climate and Ecology Emergency Bill (Three Demand Bill), which includes policy changes

towards net-zero by 2025 and establishment of a Citizens' Assembly[59] to deliver the Bill (Extinction Rebellion Citizens' Assembly Working Group, 2020).

Closely linked to social movements and EMOs is public opinion. Given the pressure generated by the XR, public opinion seemed to play an important role in achieving the campaign's goals. Public opinion becomes more conscious about climate change issues due to media and the environmental movement led by XR. This concern was also boosted by the visit of Greta Thunberg to London[60] and the BBC documentary of Sir David Attenborough[61] (Watts, 2019). According to YouGov (2019a, p 1) data, concerns over the environment increased significantly from 9% in 2017 to 17% in 2019, who ranked the environment as a significant concern. Between April 29 and 30, environment concerns reached a peak of 24% among those who believed that the environment was an important issue (YouGov, 2019b, p 1).

In terms of elections, as seen, public and media concern over climate change is likely to affect votes. This seemed to be evident as the commitment to a net-zero target by 2050 was also backed by the Labour Party and the Liberal-Democrats. However, views on the new CCA target were mixed. Before the general election was held in December 2019, the political parties promised to take action on climate change by achieving the net-zero target in their general election campaigns. For example, the Labour Party pledged net-zero emissions by 2030 at the Labour Conference in 2018 (Priestley, 2019b). This target was supported by the Shadow Secretary for Business, Energy and Industrial Strategy (BEIS), Rebecca Long-Bailey. This proposed target was reiterated during the 2019 general election campaign (Priestley, 2019b). Meanwhile, the Conservative Party promised a net-zero greenhouse emissions' target by 2050, including investment in clean energy green infrastructure (Priestley, 2019b, p 6), whereas the Lib-Dems pledged to legislate a ten-year emergency programme and phase out emissions from the

Overall, these developments marked a shift in the public mood and provoked the rise of high politics, whereby the issue became salient to the public, media and politicians. Here, it is worth noting that we are seeing that climate change policies are going back to high politics over a period of a decade. In this regard, the amendment of CCA in 2019 indicated a general policy that introduced changes to the overall target of decarbonisation. This marked a shift from normal day-to-day policies known as routine politics towards a radical change of climate policy reflected in high politics. As can be seen, this seems

[59] Citizens' Assembly is a representative group of citizens who are selected at random from the population to share information and learning and make recommendations on a particular issue. They can address structural inequalities and consider vulnerable people affected by economic, political and ecological changes (Extinction Rebellion Citizens' Assembly Working Group, 2020, p 5).

[60] Greta Thunberg visited London in 2019 to join the Extinction Rebellion. She also delivered a speech at the UK Parliament joining MPs such as the Green Party MP, Caroline Lucas, the Labour Leader, Jeremy Corbyn, and the environment secretary, Michael Gove (Watts, 2019).

[61] David Attenborough: A Life on Our Planet is a documentary that reveals Attenborough's story with the natural world in his visit to every continent. The documentary also shows the changes that have occurred in the natural world (WWF, 2019, p 18).

to indicate aspects of neo-pluralism and not multiple-elitism. Specifically, as discussed earlier, business groups and NGOs played an important role in pushing for a net-zero target, although, the target differed among them. Businesses were calling for net-zero target by 2050, WWF proposed a 100% greenhouse emissions cut by 2045, and XR called for a 100% greenhouse emissions cut by 2025. This to some extent revealed that business groups were not in a closed system of sub-government pushing for reforms to serve their special interest as described by multiple-elitism. We can observe this from the environmental movement led by XR as an indirect strategy to put pressure on the government. Along with the environmental movement, businesses have also signed an open letter to Theresa May to legislate the net-zero target. The letter was from over 100 businesses and trade organisations including telecoms company BT, consumer group Unilever, CBI's employers' lobby, Arup, Anthesis and others who asked the government to show leadership to global climate actions (Hook and Pickard, 2019). James Diggle (2020), the Head of Climate Change and Energy at the CBI, commented in an interview:

> When groups come together, they can even make more impact and that's why we are part of a large group of businesses and NGOs calling for the net-zero target. Last year, we got over one hundred companies signing a letter calling Theresa May at that time to put it as a law; that showed an impact if groups come together then we can do big changes.

The Renewable UK Chief Executive, Hugh McNeal (2020), added in an interview:

> There is no doubt that there is a strong relationship across a wide range of business groups through to NGOs. They can be very effective in creating an environment which makes it much harder [for the government] not to be acting on climate change (original italics).

Further, the amendment of the CCA marked the presence of NGOs as a countervailing power, which is an aspect presented by neo-pluralism highlighting that the public is organised. For example, environmental movements partially helped in raising climate change profile among the public (see above) and fossil fuels companies, most notably BP. The BP Chief Executive Officer, Bernard Looney, highlighted the importance of social pressure, including campaigns and climate protests, that pushed the company into action. Looney (2020) claimed, "Energy markets are changing driven by climate change, technology and societal expectations". In this regard, a participant from Community Energy England (2020) clarified in an interview, "They [BP, Shell, and others] have power and they do it quite openly, they often lobby both sides; they lobby for more clean energy policy, and at the same time lobby for a less clean energy policy" (my italics). It is also claimed that:

> They do get exposed to lobby against climate change policy, but I think that's changing. (…) and now they may be lobbying in favour of

> climate-friendly policies (…) they may like saving the climate, but they are doing it in competitive advantage (my italics). (Anonymous, 2020).

Another aspect that indicated neo-pluralism is linked to elections. Government institutions are often portrayed in multiple-elitism as blocked and controlled by business interests. However, in neo-pluralism, politicians are important advocates for policy during elections (see chapter 4). As discussed earlier, political parties in the 2019 general election were promising to achieve a net-zero target. This is significantly linked to public opinion. Neo-pluralism explains that public opinion is important in reaching policy outcomes (Lowery, 2007). The theory sees that this can be linked to political parties competing to be elected or re-elected and thereby attracting voters through election campaign promises (see chapter 4). The then Liberal Democrat MP, Norman Baker (2019), reflected in an interview,

> We saw pressure from XR last time, and we had a debate on the climate. The first time when we had a debate during the general election, we thought more radical policies should be taken with public support.

The Liberal Democrat MP, Robin Teverson (2020), also argued in an interview,

> ENGOs have to keep the pressure on in the areas where public opinion is motivated. If public opinion is motivated, then the government tends to do stuff.

Overall, the amendment of the Climate Change Act marked a policy change advocated by environmental groups, businesses, politicians, and public opinion. The amendment reflected a more ambitious target of reducing emissions by 100% by 2050. The target reflected an intense concern signalled by environmental NGOs and business interest groups to policy-makers. Hence, the issue became salient to the public, media and politicians, leading to the emergence of high politics. The policy change was significant and was characterised by neo-pluralist features, including the presence of the countervailing power, businesses, NGOs, and political parties advocating for the net-zero target. With a focus to achieve greenhouse emissions' reduction, the government pushed for unconventional fossil fuels as a part of its policies towards clean, affordable, and reliable energy.

6.3. Conclusion

In the UK, climate change has become a challenge that requires solutions related to transforming the energy system. Since the 2000s, climate actions emerged in the energy sector with the Labour government's pledge to reduce 20% by 2010 and 60% in greenhouse emissions by 2050. This promise, however, was not sufficient because of the slow pace of climate policies to fight climate change. This inadequacy of climate actions was clearly shown in the Climate Change Programme Review that identified that climate policies were unlikely to reach the 2010 target. Hence, Friends of the Earth

responded with a campaign called the “Big Ask” to call for more ambitious targets and coherent policies to achieve the intended outcomes. The campaign introduced the Climate Change Bill, which later became the Climate Change Act in 2008. The Act pledged to reduce 80% of emissions by 2050.

Climate policies continued during the successive governments that enacted regulations and reforms. These are most notably the Energy Bill 2012 and the Energy Act 2013, the Clean Growth Strategy, the amendment of Climate Change Act in 2019. These policy outcomes were due to the mobilisation of interest groups, namely environmental and business groups which advocated for climate solutions. The regulations reflected by the features of multiple-elitism and neo-pluralism. For example, high politics was evident in public concern, media attention and the emergence of an issue network in the debates on the amendment of the CCA in 2019. Meanwhile, routine politics was revealed in the declining attention to climate change and the powerful position of producer groups, which advocated for special interest in natural gas. Fracking technology also appeared as a major issue during the period. This interest was opposed by the countervailing power generated by social movements. Let us explore this point in chapter 7 below.

7. **Chapter 7:** Interest in unconventional fossil fuels.

The government's support of fossil fuels has been notable under the Coalition government and the successive Conservative governments. In 2012, the Coalition government allowed unabated gas-fired stations to emit carbon emissions until 2045. This decision is coincident with the Coalition government support for unconventional shale gas extraction via hydraulic fracturing (fracking). The government introduced shale gas in the energy mix to achieve energy security of supply, affordability and ensure that the greenhouse emissions target under the CCA is met (see below). Nevertheless, policy support for unconventional shale gas was temporarily blocked under the Johnson government in 2019 following a report published by the Oil and Gas Authority (OGA) that questioned the safety of further hydraulic fracturing operations in the UK (see below).

While unconventional fossil fuels have marked climate change policies since 2010, it is worth exploring the interest in shale gas technology through our theoretical frameworks, multiple-elitism and neo-pluralism. Here, I ask: how can we explain change in shale gas policy? Our attempt to explore this policy area will highlight the influence of interest groups (businesses and ENGOs) and the role of elections in influencing policy outcomes. With these points in mind, I aim to explore whether developments in the shale gas policy area are best understood via the theories of multiple-elitism or neo-pluralism.

7.1. Analysis of unconventional shale gas policies (2010-2019).

As discussed above, while then Chancellor George Osborne dictated a policy that would allow gas-fired stations to continue their carbon emissions until 2045, shale gas emerged as a major energy source supported by the Coalition government. Significantly, the extraction of shale gas is widely known as fracking. The technology is an unconventional gas and oil development[62], which is controversial due to the method of extraction needed to access it. Fracking requires fracturing the rock formation hundreds of metres below the well to stimulate gas or oil flow. This process involves injecting water, sand and chemicals at high pressure into the drilled boreholes (Priestley, 2020, p 3). This technology was successful in the U.S., where the production of unconventional shale gas rose from 2% in 2000 to 14% in 2009 and is expected to continue rising to more than 30% by 2020 (Parliament UK, 2011, p 1). The increased use of hydraulic fracking in the U.S provided an affordable and reliable source of energy. The White House Council of Economic Advisors (2019, p 3) estimated that fracking saves American families $2500/year on gasoline and electricity bills. This development in hydraulic fracking in the U.S. led other countries to explore exploiting their shale gas, among them, the UK (Climate Change Committee, 2011, p 7).

[62] Unconventional gas or oil development is associated with the production of natural gas or oil obtained from specific locations using hydraulic fracturing. Hydraulic fracturing uses fractures in the rock formation to increase the flow of gas. This is achieved by creating wells drilled hundreds to thousands of feet below land surface (BEIS, 2019f).

As seen in chapter 2, the security of energy supply in the UK has been a great concern. For example, in 2009, the UK's total demand for natural gas was approximately 1.000.000 GWh [giga/billion Watt-hour], this was equivalent to approximately 100 bcm [billion cubic meters] (Committee on Climate Change, 2011, p 12). In this regard, natural gas imports contributed to 32% of the general gas supply in 2009 (Committee on Climate Change, 2011, p 20). According to the DECC (2013d, p 3), "By 2025, we expect to be importing close to 70% of the gas we consume, assuming we do not develop shale". From the DECC's point of view, shale gas alongside renewables and nuclear power would help fill the gap in the security of supply and support the economy. This concern for energy security encouraged the development of shale gas in the UK. Shale gas technology was also encouraged to reduce carbon emissions. The DECC (2013d, p 10) highlighted that "Gas is the cleanest fossil fuel and has half the carbon footprint of coal when used to generate electricity". The technology would also stimulate economic growth by attracting an annual investment of £3.7 billion and creating up to 74,000 jobs (DECC, 2013d, p 3). Further, local communities could receive 1% of revenues during the production stage (DECC, 2013d, p 8).

However, the promotion of shale gas technology during the Coalition, Cameron, and May governments led to continuous debate. These debates over the impact of shale gas on climate change were related to worries over the impact of "fugitive methane" emissions. Methane emissions released from shale operations are thought to be more harmful than CO2. This issue was highlighted in the report of Chatham House, which clarified that methane emissions are 70 times more potent than CO2 emissions over a 20 year-period (Stevens, 2013, p 5). Further, the report contended that the experience of the U.S. in fracking cannot be brought to Europe, due to differences in planning experience, geology and research funding (Stevens, 2013, p 5). Environmentalists and anti-fracking activists also insisted that fracking causes earthquakes and water contamination due to chemicals that blast underneath the Earth's surface.

While the debate over shale gas continued, the UK government in effect promoted fracking technology under the Coalition, Cameron and May governments, but there was one year moratorium in 2011 under the Coalition government, and later the subsequent Johnson government temporarily banned fracking. Further, *The Guardian* revealed that the discussion over fracking was ongoing for several months as Conservative Party members believed that the success of the fracking industry was unlikely (Ambrose, 2019). Thus, the Party's concerns during the 2019 general election played an important role in influencing the decision on the fracking industry. Here, it is worth exploring how and why such policy outcomes were achieved. In that respect, with the concepts provided by the theories of multiple-elitism and neo-pluralism, I look at the impacts of a) business groups' interests in fracking policy, b) ENGOs presence c) public opinion, d) policy reforms serving special/ general interest and e) impact of elections on policy outcomes. This can reflect the concepts introduced in Table 5.1 above, which will help us understand group mobilisation and policy outcomes in this policy area in terms of neo-pluralism and multiple-elitism.

In terms of the business interest in fracking, as noted earlier, it is clear that energy security, economic development and carbon emissions reduction have been potential policy gains from shale gas technology. However, key players in the government have also direct economic interests in fracking. In 2013, *The Independent* revealed that important figures in the fracking industry are also at the heart of the government (Leftly, 2013). For example: Lord Browne, a senior adviser in the government and a chairman of the oil company, Cuadrilla, which was exploring shale gas in Lancashire and West Sussex; Baroness Hogg, a non-executive director in the multinational oil and gas company, BG Group, which also has shale gas assets in the US; and the non-executive to the Transport Department, Sam Laidlaw, who is also the chief executive of Centrica, which purchased a 25% stake in Cuadrilla (Leftly. 2013). Further, senior Conservative advisers, including Ben Moxham, who worked in BP, and Lynton Crosby, Chancellor Osborne and Sir Philip Davis, the Head of the Environmental Agency, all had interests in fracking (Rushton, 2017, p 77). Some scientific institutions were also sponsored by fracking companies to deliver reports about the role of fracking in the economy. These are notably the Geo-Science Laboratory at Oxford University, the British Geological Survey and the Natural Environment Research Council (NERC) (Rushton, 2017, p79).

The support for shale gas coincided with the slashing of subsidies for onshore wind (see chapter 8) and the election of anti-renewables ministers. In 2014, Matt Hancock was appointed as new Minister of State (Department of Energy and Climate Change), Liz Truss was appointed as new Secretary of State for Environment, Food and Rural Affairs. Matt Hancock was accused of accepting £4000 a year from the climate sceptic lobbying organisation, Global Warming Policy Foundation (Mason, 2015a). Moreover, in the same year, Philip Dilley was appointed as a chair of the Environmental Agency. Dilley was a chairman of Arup, a company that has an interest in shale gas resources and was writing an environmental report on fracking for Cuadrilla (Mason, 2014).

Interestingly, the role of shale gas in the energy mix was discussed in the Committee on Climate Change report's "Reducing the UK's Carbon Footprint", published in 2013. The report assessed a range of different technologies that could reduce the UK greenhouse emissions, such as coal and gas under CCS, nuclear power, renewables and shale gas. The CCC discussed the latter in terms of its lifecycle emissions associated with methane released during fracking. The report concluded that "Shale gas may be no worse than conventional gas from a carbon perspective if fugitive emissions are appropriately treated" (Committee on Climate Change, 2013b, p 64). Another report discussing the impact of fracking on greenhouse gas emissions was written by Professor David J C MacKay and Dr Timothy J Stone. The study was requested by the DECC to gather evidence of the production of greenhouse gas emissions from the use of shale gas in relation to climate change targets (DECC, 2013e, p 4). The DECC (2013e, p 3) report concluded that "local GHG emissions from shale gas can represent a small proportion dominated by CO2 emissions if adequately regulated".

During the same year, the House of Commons Energy and Climate Change Committee published a report on "The Impact of Shale Gas on the Energy Market". The report recommended that the government set appropriate policies to facilitate the fracking process and maintain the highest standards of protection, ensuring that the industry should be accepted by the public (Climate Change Committee, 2013b, p 23). The report also encouraged the government to maintain a tax regime for shale gas to promote investment and called on the government to assess tax breaks during commercialisation (Climate Change Committee, 2013b, p 24).

In terms of the ENGOs presence in the fracking policy area, whilst investment in shale gas was justified for economic and climate change reasons, anti-fracking movements emerged at the local and the national levels. The anti-fracking movement started in 2011, as the Coalition government announced its intention to support fracking. The movement was a coalition of national and more local groups against fracking. Significantly, it included a network of environmental NGOs and campaign groups such as Ribble Estuary Against Fracking, Frack Off, Friends of the Earth, Drill or Drop, Greenpeace, Residents Action on Fylde Fracking, Campaign Against Climate Change, No Fracking in Sussex, and Talk Fracking. According to Friends of the Earth (2020), "more than 300 groups are resisting shale gas in the UK and around 74% of people who support renewables, more than four times as many as support fracking".

In 2011, a protest was led by Frack Free Lancashire near Cuadrilla Resources' drilling site at Banks in Lancashire. The protest emerged as Cuadrilla was given the green light to fracking in Lancashire. The movement attempted to show the fracking firms that they would not be allowed to gain a foothold (Reclaim the Power, 2021). This coincided with another protest that was led by the Frack Off campaign group, which gathered to disrupt the Shale Gas Environment Summit in London (Meikle and Malik, 2011). The movement was activated following a minor earthquake in 2011 that was linked to fracking in Lancashire (Meikle and Malik, 2011). Following the earthquake, Cuadrilla produced a report "Geomechanical Study of Bowland Shale Seismicity" in November 2011. The report mentioned that "The repeated seismicity was induced by direct injection of fluid into the same fault zone. Slippage of the fault induced by high pressure occurred with strongest events after the injection." (De Pater and Baisch, 2011, p iv). As a result, the Coalition government suspended fracking for one year in 2011.

The movement against fracking continued in 2012, through a network of campaign groups. This was led by Frack Off activists who organised a national anti-fracking gathering in Manchester with Campaign Against Climate Change, Friends of the Earth and the Cooperative Society. These groups organised events as part of the British Isles Anti-Fracking Network, which included hundreds of environmental activists around the country (Campaign Against Climate Change, 2020). The network was formed to exchange knowledge and information about fracking in local areas. This was informed by presentations on fracking, reports and workshop sessions (Campaign Against Climate Change, 2020).

Further, in the summer of 2013, anti-fracking protests took place in a village in West Sussex near Balcombe, following the attempt of Cuadrilla to drill a 900m vertical well to explore oil (*BBC,* 2014). The protest was organised by an alliance formed of villagers, veterans, environmentalists, notably Friends of the Earth, and anti-fracking campaigners, including the national direct-action campaign Frack Off, and the local campaigners, Frack Free Sussex, Gas Field Free Sussex and No Fracking in East Kent (Hanley, 2013). As a result, an exploratory attempt to test for oil was delayed following six days of protest (*BBC,* 2014). The anti-fracking movement included campaigns that called on the general public to send emails and letters to their local MPs (Campaign Against Climate Action, 2020). The movement against fracking indicated the concept of the countervailing power linked to neo-pluralism. It revealed that the public is organised, unlike the multiple-elitist system where the public is unorganised (see chapter 4). The anti-fracking movement was significant in raising the issue of fracking to the public to find a solution to the problem of fracking. Consequently, there was falling public support for fracking; in a survey by the government polling, public support for fracking technology has fallen from 29% in 2014 to 19% in 2016 (BEIS, 2016a). Further, following the anti-fracking movements, Cuadrilla's planning applications in Little Plumpton and Roseacre Wood in Lancashire were rejected. In 2015, Lancashire County Council rejected both planning applications on the grounds of noise and traffic and commented that it was "democracy in action" (*BBC News,* 2016).

The movement against fracking succeeded in drawing the attention of the wider public to a particular situation. The network of environmental groups was a countervailing power that attempted to check the rise of the producer groups' interest at the expense of the general interest. This leads us to consider the other concept of policy reforms in multiple-elitism and neo-pluralism of whether they served the special or the general interest. As seen, while multiple-elitism identified that policy reforms would serve the special interest of sub-government participants, neo-pluralism clarified that the competition between interest groups in the policy area would result in policy reforms that would benefit the general interest. In this context, policy reforms seemed to indicate multiple-elitist feature. This is most evident in the establishment of the Office of Unconventional Gas and Oil (OUGO) in December 2012 and the provision of tax breaks in July 2013. Here, the expansion of unsafe fracking in local areas is an example of producer groups' interests prevailing. The OUGO was established within the DECC's Energy Development Unit, with responsibility for encouraging energy development, including licensing oil and gas exploration and production (DECC, 2015a). In this regard, OUGO would ensure the promotion of safe, responsible, and environmentally sound recovery of unconventional reserves of oil and gas (DECC, 2015a), including the development of shale gas and other forms of unconventional energy production such as coal bed methane (DECC, 2015a).

Further, other policy reforms were also biased towards supporting the interest of the fracking industry. In July 2013, Chancellor Osborne announced a tax break of 30% for onshore shale gas production to encourage investment in the technology. This significantly reduced the tax portion of a

company's production income from 62% to 30% as new North Sea operations required a top rate of 62% and up to 81% for older offshore fields (Macalister and Harvey, 2013). The decision came following a British Geological Survey, which revealed that more resources could be explored through shale gas to supply Britain over a 25-year-period (Macalister and Harvey, 2013). The Chancellor (quoted in DECC, 2013f, para. 9) defended his announcement arguing, "I want Britain to be a leader of the shale gas revolution because it has the potential to create thousands of jobs and keep energy bills low for millions of people". Tax breaks for fracking sparked a wave of criticism, mainly by environmental groups such as Friends of the Earth and Greenpeace (Macalister and Harvey, 2013).

Support for shale gas reflects the privileged position of the producer group, Cuadrilla. Businesses seem to enjoy this privilege as they are perceived to provide public welfare in society. Vogel (1987, pp 391-392) explained that businesses are responsible for mobilising and organising society's resources, such as deciding the nation's industrial technology, market structure, location of industry, the pattern of work and executive compensation. These major decisions are considered as social functions of businesses, and the government's role is to offer tax incentives, infrastructure services or protection of investment to help businesses perform their functions (Mandel, 1983, p 387). Further, Lindblom noted that businesses often depend on the government to protect their interests in the world economy (Vogel, 1987, p 392) by asking for fewer regulations and calling for reasonable taxes (Vogel, 1987, p 393).

The Infrastructure Act 2015 has also demonstrated the privileged position of business groups reflecting the private interest of the fracking industry as portrayed in multiple-elitism. The Act tackled transport, electricity generation by local communities, planning regulation, onshore petroleum and geothermal energy. It imposed some restrictions on companies considering seismicity management. The Act strengthened the provision that the companies were required to apply to the Oil and Gas Authority (OGA) for a Petroleum Exploration & Development Licence (PEDL), which allows for pursuing a range of oil and gas exploration subject to planning permission and drilling consents (BEIS, 2019f). Further, the companies were expected to submit a Hydraulic Fracture Plan (HEP) to ensure that the risks over seismicity are managed. The HEP would be approved by the OGA, the EA, and the Health and Safety Executive (HSE) (BEIS, 2019f). This Act was an important reform that sought to manage the fracking industry concerning its environmental impacts. The former Secretary of State for Energy and climate change (2012-2015), Ed Davey (2020), argued in an interview:

> In the Coalition government, the Tories were keen on fracking. I was very sceptical about it; I didn't stop it because it was part of the deal in the coalition. I proposed quite tough regulations particularly on seismicity and those regulations I posed nearly killed fracking in the UK. So, the regulations I passed, I think, have been very effective in the very least slowing it [fracking] down dramatically. I think in the time

> since then we have gone to learn that we just don't need more fossil fuels and the combination to meet the environmental standard that I was putting in and the increasing realisation that we don't need any more fossil fuels, we shouldn't have any fossil fuels means (my italics).

However, though the Act imposed restrictions to regulate fracking, it also guaranteed the right of companies to exploit oil, gas and geothermal energy. Companies are allowed to drill for oil and gas at a depth of 300 meters below the surface; in other words, the Act permitted the energy companies to exploit petrol or geothermal energy without the permission of the landowners under whose property they drilled. This included the right to exclude the landowners' liability for any loss or damage associated with the operations (*Infrastructure Act 2015 section 44*). Before the Infrastructure Act, the energy industry had to provide a voluntary commitment to notify the local communities and reach an agreement with landowners to access the resources. This also required the consent of neighbouring land for access routes (Priestley, 2020, p 16). The Infrastructure Act confirmed the Conservative government's commitment to continue fracking.

Nevertheless, whilst the Infrastructure Act was passed to expand the fracking industry, in 2015, Northern Ireland, Scotland and Wales temporarily banned fracking. The Scottish government also announced a permanent ban in 2017. In England, however, the debate over the use of shale gas continued under the Premiership of Theresa May, following the resignation of Cameron's government after the Brexit referendum in 2016. May turned the Department of Energy and Climate change into the Department of Business and Energy Strategy (BEIS); BEIS was led by the fracking supporter, Greg Clark (Tootill, 2016, p 67). In 2018, the May Government also established the Shale Environment Regulator Group (SERG), which coordinated the Environmental Agency (EA), the Oil and Gas Authority (OGA), and the Health and Safety Executive (HSE).

In 2016, the Conservative government gave the go-ahead to Cuadrilla to start fracking in Preston New Road in Lancashire. This decision resulted in continuous protests at the site to stop the industry. These protests were opposing policies of fracking, as they were against the general interest of the public. In the same year, Greenpeace brought a life-like fracking rig and drill to Parliament Square in protest against the government's support for fracking (Greenpeace, 2020). In 2017, Reclaim the Power ran a mass camp for hundreds of people during the entire month of July at the Lancashire fracking site (Reclaim the Power, 2019). The demonstration blockaded the gates to Cuadrilla's frack pad. Campaigners claimed that around 200 people attended the gates each week, including faith groups, trade unions, farmers, food-growers, families and others (Reclaim the Power, 2019). The protest aimed at sending a message to investors that the fracking industry had no social license to operate (Reclaim the Power, 2019).

Whilst the exploration of oil and gas resumed despite the protests, the oil company, Cuadrilla, caused 57 small earthquakes during two months in 2018, pausing the project five times (Friends of the Earth, 2020). The earthquakes caused by Cuadrilla's project included a 1.4 and 2.6 magnitude event (*BBC,* 2019b). The government restrictions required the fracking company to cease drilling for 18 hours if the operation caused an earthquake above 0.5 magnitude event (*BBC,* 2019c).

As can be seen, fracking became unpopular among the public and protests against the technology have characterised the period. Further, as the violation of public interest by the elites becomes widely recognised by citizens, journalists and politicians, the government realises the need for new legislation and regulations to correct the problem (McFarland, 2004, p 85). Here, the general election served to achieve and change in policy outcomes. This concept is fundamentally linked to neo-pluralism. Specifically, in the general election of 2019, fracking became a major topic in the parties' manifestos. For example, the Labour Party promised a new clause for the Environment Bill[63] (2019-2020), which would ban fracking in England, the Liberal Democrats promised to ban fracking under their plan for a Green Society and Green Economy,[64] while in its manifesto, the Green Party undertook to ban fracking under their proposal, the Green New Deal[65] (Priestley, 2020, p 9). Though none of these parties won the election, the new government led by Boris Johnson withdrew support for the industry. The government announced an indefinite suspension following a 2.9 magnitude earthquake that was recorded at Cuadrilla's site in Preston New Road in Lancashire in August 2019. Hence, the OGA advised the government that they would not be able to say with confidence whether further hydraulic fracturing would meet the government's policy aim to ensure that the operation is safe (BEIS, 2019g). This confirms Grant's (2018, p 84) argument that "Business does not always get what it wants, the debate can shift against it; the weight of evidence against an indefensible position can become too strong".

This development confirms the neo-pluralist view that the battlefield shifts during elections as producer groups' power are limited by political parties. In other words, policy change can occur following elections as a new party or new president takes control, and therefore unorganised individuals have the opportunity to vote and decide the party that matches their interests (Ainsworth, Godwin and Ainsworth, 2012, p 198). In an interview with the former Green MP, Jane Lambert (2020) commented:

[63] The Bill was announced in 2019 and passed for a second reading in 2020. The Bill will ensure the provision of environmental policies following the UK's withdrawal from the EU. It covers specific policy areas such as waste, air quality, water, nature and biodiversity, and conservation covenants. The Bill contains 133 clauses and 19 schedules (Priestley, 2020).

[64] The Lib-Dems' plan included investment in renewable energy by 80% by 2030 and banning fracking for good, protecting nature and planting 60 million trees. The plan also included achieving net-zero greenhouse emissions by 2045 (Green Liberal Democrats, 2019).

[65] Green New Deal aims at ending pollution by 2030, generating electricity from wave, wind and solar energy, protecting wildlife and planting trees. The Plan also called for banning fracking and other unconventional forms of fossil fuels extraction forever (Green Party, 2019).

> Certainly, ENGOs have been really pushing on climate. I think, in fracking, there have been some really strong campaigns which have had strong ENGOs presence and very strong [argumentation] presence on the ground too to really make national government have to fight for its position (my italics).

The decision to temporarily suspend fracking was supported by environmental groups and anti-fracking activists, although Friends of the Earth, the Green Party and Lib-Dems started to call for a permanent ban on the fracking industry. Yet, a permanent ban for the technology was not achieved despite the growing consideration for climate change following the amendment of the CCA (see above). Shale gas is still believed to have a role to play in the energy mix. According to the BEIS (2019f, para. 3), "Shale gas has the potential to provide the UK with greater energy security, economic growth and jobs. It could also support our transition to net-zero emissions by 2050".

As can be seen, the role of shale gas has emerged in climate policies since 2010 to reduce greenhouse emissions, provide energy security and investment. Here, features from multiple-elitist and neo-pluralist perspectives are visible in this policy area. Under multiple-elitism, the special interest in the investment in fracking had opposed the general interest of the public. As seen, the public opposed fracking due to the risks associated with the technology, such as water contamination and seismicity. In addition, they argued against the technology as shale gas would increase carbon emissions. Meanwhile, key players in the government had a special interest in fracking, and some scientific institutions sponsored by oil companies published reports endorsing fracking, most notably the Royal Society and Royal Academy of Engineering[66]. The interest in the technology was crystallised by the establishment of OUGO, providing tax breaks to oil companies and allowing them to drill wells without the consent of the landowners. The Green Party Peer, Natalie Bennett (2020) mentioned in an interview:

> There are two key factors related to fracking interest: lack of democracy, lack of democratic control and power of lobbyists. Fossil fuel lobby until recent years have had a huge impact on governmental policy, they have very close ties and very close relationship with the government. The government was chasing fracking when it should have been for onshore wind. The weakness of our democracy that they were chasing after the UK COP [COP 26] it's opposite from what you expect for a populist government (my italics).

[66] The use of shale gas was also justified in a report published by the Royal Society and Royal Academy of Engineering in 2012. The report reviewed the risks associated with Hydraulic Fracturing and recommended that fracking could go ahead if appropriately managed. A similar conclusion was reached by the Public Health England's report that favoured the use of shale gas under regulations (Tootill, 2016, p 70).

In an attempt to break the fracking lobby, the environmental NGOs raised the problem of fracking through protests and campaigns based on a network of several anti-fracking groups. The movement was triggered by the fact that Cuadrilla drilling sites were causing earthquakes. This led to a rise of the movement, which attracted public support and media coverage. Further, the calls to ban fracking were articulated in the election manifestos. As noted earlier, elections have been notable in achieving policy outcomes. Therefore, the new Johnson government temporarily suspended fracking following the OGA report published in 2019, which revealed the risks of shale gas. This has fundamentally informed neo-pluralism.

> We saw pressure from XR last time, and we had a debate on the climate. The first time when we had a debate during the general election, we thought more radical policies should be taken with public support (Baker 2019, interview).

The Liberal Democrat MP, Robin Teverson (2020), also argued in an interview,

> ENGOs have to keep the pressure on in the areas where public opinion is motivated. If public opinion is motivated, then the government tends to do stuff (Teverson 2020, interview).

Overall, the amendment of the Climate Change Act marked a policy change advocated by environmental groups, businesses, politicians, and public opinion. The amendment reflected a more ambitious target of reducing emissions by 100% by 2050. The target reflected an intense concern signalled by environmental NGOs and business interest groups to policy-makers. Hence, the issue became salient to the public, media and politicians, leading to the emergence of high politics. The policy change was significant and was characterised by neo-pluralist features, including the presence of the countervailing power, businesses, NGOs, and political parties advocating for the net-zero target. With a focus to achieve greenhouse emissions' reduction, the government pushed for unconventional fossil fuels as a part of its policies towards clean, affordable, and reliable energy.

7.2. Conclusion

The policies to support the interest of fracking technology included the establishment of OUGO in 2012, the provision of tax breaks to oil companies in 2013 and the establishment of the Infrastructure Act in 2015. These policy reforms informed multiple-elitism as they represent concepts of special interest therefore blocking the general interest of suspending fracking. The shift of policy support of fracking towards temporarily abandoning fracking operations is evident under neo-pluralism. Here, environmental NGOs were countervailing power against the special interest, public opinion and the elections were also important in achieving policy reforms in 2019.

Since the debate over sustainability has characterised fossil fuels policy area, controversies over future energy efficiency have also marked other sectors, notably nuclear power. This was inevitable as the Climate Change Act required a low carbon energy system. Chapter 8 below discusses, interest in nuclear power, which has been revived to reduce greenhouse emissions and achieve energy security.

8. **Chapter 8**: Case study two: Analysing the revival of nuclear power

The growing concern over climate change played a role in framing the energy policies in favour of a low-carbon energy sector. By the beginning of the 2000s, these policies started focusing on the decarbonisation of the electricity sector. Alongside natural gas, technologies such as nuclear power and renewables were being considered to meet the targets of reducing emissions, particularly the Kyoto Protocol target set in 1997. In the context of reducing carbon emissions, nuclear power secured a privileged position. It was supported by successive Labour governments and later by successive Conservative governments, as they thought it would bridge the gap in security of supply and reduce emissions.

In fact, interest in nuclear power before and after the 1970s oil crisis has shaped the history of the UK's energy policies (see chapter 2). However, in the first half of the decade of the 2000s, interest in nuclear power was revived under the so-called "nuclear renaissance" (see Johnstone, 2010). This mainly influenced the Energy Act and the Planning Act of 2008, which contained legal procedures for the operation and the decommissioning phases of new nuclear power plants. The Acts signalled the need for restoring the nuclear power option to deal with the issue of electricity consumption. The need for the nuclear option in the energy mix continued under the Coalition government. The latter, in effect, introduced procedures that would help the operation of nuclear power in the electricity market. This made nuclear technology commercially attractive, however, local concerns over its impact on the environment also surfaced. The environmental NGOs began to raise the issue of the harmful effects of nuclear power, especially following the Fukushima disaster in 2011.

This chapter analyses the main issues of nuclear power, notably the expansion of nuclear new builds. Informed by elite level interviews and policy documents, in this case study I focus on the period 2010-2020, to describe and explain energy and climate change policies pertaining to nuclear power. I look first at the expansion of nuclear new builds and its implications. This includes a study of policy continuity and change since the Labour government's decision to revive the nuclear industry. Second, I examine the role of environmental NGOs, government institutions, and businesses in nuclear power. Through my analysis I identify the main themes linked to the theories of neo-pluralism and multiple-elitism that are relevant for understanding developments in nuclear energy policy. As such, I study the nuclear power agenda in the light of the role of interest groups, group strategies and tactics, and the government's response. Hence, I explore the concept of influence to understand the policy process through key questions. Specifically, I ask: how has nuclear power been revived since the Conservatives came to power? Did the policies present continuity or change? How did interest groups articulate their interest in this policy area? And did they achieve policy outcomes?

8.1. The nuclear power option since 2010: continuity or change

A nuclear renaissance in the energy sector is notable because it received support under successive Labour and Conservative governments. The nuclear power option was selected to provide affordable, reliable and low-carbon sources of electricity. It is significant to note that support for the nuclear option was translated into policies marked by continuity and change under the Coalition and successive Conservative governments. Here, I raise the following questions: what were the initiatives of successive Conservative governments? And have they marked any change in the nuclear agenda from the policies of the previous Labour administrations? In order to answer these questions, I conducted and analysed 10 semi-structured interviews and analysed the following policy documents: Department of Trade Energy and Industry (DTI) (2006); DTI (2007); Department of Business, Enterprise &Regulatory Reform (2008); DECC (2011a); DECC (2011b); BEIS (2017d); National Audit Office (2017); BEIS (2018a); BEIS (2018b); BEIS (2018c) and BEIS (2019j) (see list of references and appendix D, p 261 below).

As seen in chapter 2, interest in nuclear power was revived in the first half of the decade of the 2000s as electricity supply became a serious matter. First, there was a National Grid failure in 2003, leading to an electricity cut in South London; and second, the dispute between Russia and Ukraine over gas supply between 2006 and 2009 brought the issue of energy supply onto the agenda (see chapter 2). In 2005, the issue of the energy security was articulated by the then Prime Minister Tony Blair, in a speech to the CBI. The Prime Minister mentioned that the UK would become heavily dependent on foreign imports of gas, mostly from the Middle East, Russia and Africa (see chapter 2). Further, the issue of carbon emissions was also considered, as nuclear power emits less CO2 in its life-cycle (see Figure 8.1 below). This was highlighted in a review report produced in 2006, on the energy challenge. The review clarified the challenge and the need to reduce emissions through low-carbon energy, and estimated that around 25GW will be required of new electricity generation over the next two decades (Department of Trade and Energy Industry, 2006, p 15). According to the review, the retirement of the existing coal and nuclear power plants would affect electricity generation and therefore substantial new investment would be required (Department of Trade and Energy Industry, 2006, p 15).

Figure 8. 1: Carbon footprints of various energy sources.

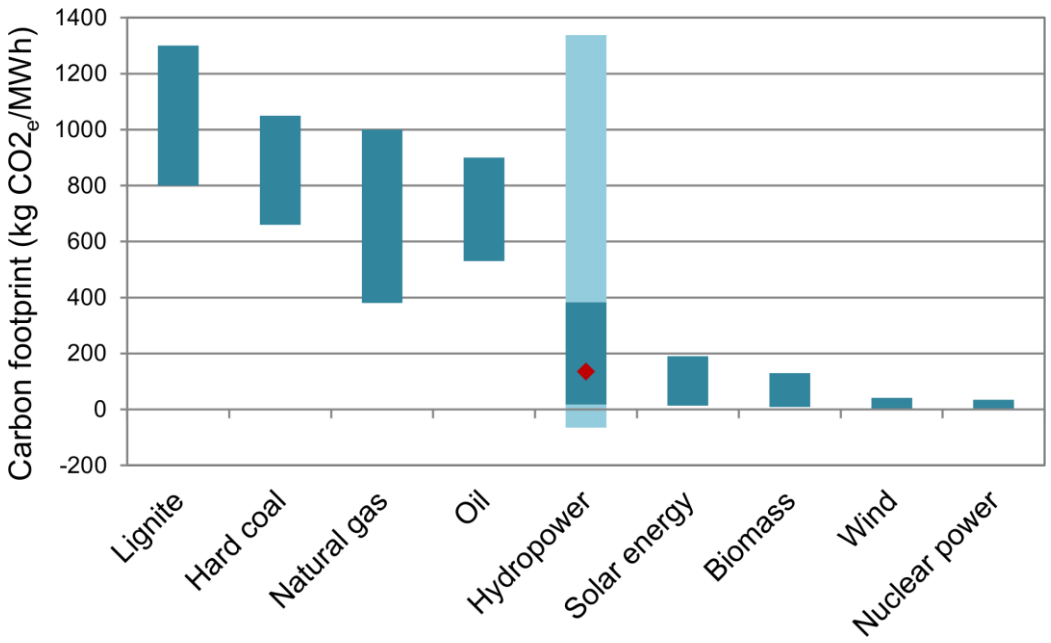


Figure 8.1 shows that nuclear power produces the same amount of CO2 emissions equivalent per electricity unit as offshore and onshore wind and one third of CO2 equivalent per electricity unit compared to solar energy (Scherer and Pfister, 2016, p 11, fig. 2).

Further, in May 2007, the government released *Meeting the Energy Challenge: A White Paper on Energy*. The Paper discussed the technologies used to generate electricity and clarified that electricity supply was reliant on a limited number of technologies, which would pose problems to the security of supply (Department of Trade and Energy Industry, 2007, p 17). The White Paper mentioned, "There would also be a risk of higher costs to the UK economy: by excluding nuclear as an option, our modelling indicates that meeting our carbon emissions' reduction goal would be more expensive" (Department of Trade and Energy Industry, 2007, p 17). These claims were backed by the White Paper, *Meeting the Energy Challenge: A White Paper on Nuclear Power*, released in January 2008, under the Gordon Brown premiership. The Paper confirmed the government's support for the construction of new nuclear power plants, which would play an active role in the energy mix alongside other technologies (Department of Business, Enterprise &Regulatory Reform, 2008, p 10). It also stated that the energy companies would fund the new constructions, including the costs of decommissioning and waste management (Department of Business, Enterprise & Regulatory Reform, 2008, p 10).

The support for the nuclear power option was crystallised with the introduction of the Planning Act and the Energy Act in 2008. The Acts set procedures for operation and decommissioning as part of the process of nuclear expansion (see chapter 2). With regards to the selection of sites, the government nominated Hinkley Point C, Oldbury, Sellafield, Sizewell and Wylfa, as well as Bradwell, Braystones, Hartlepool, Heysham, and Kirksanton (Gray, 2010). Further, the government established the Office of

Nuclear Regulations (ONR)[67], the Office for Nuclear Development (OND)[68] , and the Infrastructure Planning Commission (IPC)[69] to lead the new nuclear power programme.

The interest in nuclear power continued when the Coalition government came to power in 2011. As seen in Table 8.1 (see below), the National Policy Statement (NPS)[70] on nuclear power, produced by the DECC in 2011, clearly shows the continuity of the nuclear power policy. The statement emphasised the need for policies to decarbonise electricity before 2025 through nuclear power (DECC, 2011a, p 7). It stated, "Given the urgent need to decarbonise our electricity and enhance the UK's energy security and diversity of supply, the Government believes that new nuclear power stations need to be developed significantly earlier than the end of 2025" (DECC, 2011a, p 7). The deployment of the new nuclear power programme by end of 2025 was already identified in the Labour government's White Paper on nuclear power entitled, *Meeting the Energy Challenge: A White Paper on Nuclear Power*, published in 2008, and in the 2009 Nuclear National Policy Statement (DECC, 2009c, p 3). The DECC (2009c, p 3) argued: "All the nominated sites will need to be assessed under the SSA[71] [the Strategic Site Assessment]. This will include assessing whether a site is credible for deployment by 2025" (my italics).

Further, the expansion of nuclear power required the private sector to cover the costs of nuclear new builds. According to Chris Huhne (2010), the Minister of Energy and Climate Change in 2010, "The coalition agreement is clear that new nuclear can go ahead as long as there is no public subsidy". The government's support for the new nuclear power programme was also related to climate change. During an interview with The Liberal Democrat and the former Minister of Energy and Climate Change (2012-2015), Ed Davey (2020) commented:

> The conservative side of the Coalition was keen on nuclear power I was less keen. However, because it was a zero-carbon power, I wasn't fundamentally against it because it could contribute to reducing global emissions.

The National Policy Statement (NPS) produced by the DECC in 2011 also mentioned a list of potentially suitable sites for deployment, with slight changes to the original list introduced by the Labour government. The NPS removed Braystones and Kirksanton and confirmed the remaining eight sites

[67]ONR is responsible for nuclear safety and security in the UK. It provides regulations for nuclear industry, such as a regulatory approach for nuclear radiation, generic design assessment for nuclear power plants, and decommissioning process (ONR, 2020).
[68]OND was created to remove barriers to nuclear investment in nuclear new builds. It is made up of civil servants, and expert staff from the industry. Its task is to remove obstacles for companies to do business in nuclear power (BEIS, 2020c).
[69]IPC was a non-departmental body responsible for the decisions made for national infrastructure. It was abolished in 2012 (BEIS, 2020d).
[70] National Policy Statement (NPS) is produced by the government to provide explanation of the policies linked to mitigation and adaptation of climate change (DECC, 2012c).
[71] The Strategic Siting Assessment (SSA) was established to identify sites in England and Wales that are potentially suitable for the nuclear deployment programme by end 2025 (DECC, 2011a, p 8).

from the list provided by the Labour government in 2008 (DECC, 2011a, p 33) (see the map in Figure 8.2 below). Further, between 2012 and 2016, nuclear power continuity was asserted when EDF announced a ten-year life extension of the existing nuclear power reactors. More specifically, in 2012, EDF announced a seven-year life extension for Hinkley-Point and Hunterston (Jowit, 2012a). Moreover, in 2014 and 2015, Dungeness and Sizewell B were offered licence extension of ten years, respectively. In 2016, EDF announced a five-year life extension for Heysham I and Hartlepool, and a seven-year extension for Heysham II and Toreness (Farrell, 2016).

Figure 8. 2: Sites of existing and proposed nuclear power stations in the UK.

The figure shows established and new nominated sites for new nuclear power stations (DECC, 2012d).

As we can see above, given the continuity of nuclear revival between successive Labour governments, the Coalition and the successive Conservative governments, it is also possible to identify significant policies changes since 2010. As we shall see, there is a clear policy change in nuclear power under the Coalition and the successive Conservative governments, which aimed at improving the development of nuclear power. In 2011, the Coalition government introduced an energy White Paper entitled, *Planning our Electricity Future: A White Paper for Secure, Affordable and Low-Carbon Electricity.* The paper revealed the government's commitment to transform the electricity sector under the Electricity Market Reform (EMR) (DECC, 2011b, p 5). The paper clarified, "The Electricity Market Reform will put in place the institutional market arrangements to deliver the scale of change in the power sector needed to meet the UK's carbon budgets" (DECC, 2011b, p 5).

The transformation of the electricity market was justified by the need for policies to secure affordable and reliable sources of energy. As mentioned in the paper, demand for electricity was expected to double by 2050 (DECC, 2011b, p 6). Further, electricity prices were estimated to increase dramatically by 2050, due to the implementation of environmental policies (DECC, 2011b, p 6). To solve the problems in the electricity sector, the EMR would provide an investment of £110bn by 2020, and reduce the impacts of higher bills on consumers in the future (DECC, 2011b, p 6). The EMR brought in a new measure to promote nuclear power, namely Contracts of Difference (CfD) (DECC, 2011b, p 22). It was thought that these CfD would increase the confidence of the investors and pave the way for other nuclear power projects (National Audit Office, 2017, p 6).

The CfD mechanism was launched in the Energy Act 2013, to encourage low carbon electricity generation (*Energy Act 2013*, p 5). The new provision would be required for all technologies, notably nuclear power and renewables (see chapter 8). At its heart is the mechanism of the Strike Price to stabilise the revenues of investors and reduce the energy bills of consumers. The mechanism sets a Strike Price that provides a fixed price over the life of the contract (see chapter 6). Further, the Coalition government replaced the Infrastructure Planning Commission (IPC) in 2012, which was responsible for examining national infrastructure applications, with the Major Infrastructure Planning Unit (MIPU) (DECC, 2011b, p 2).

The arrangements that were made to facilitate the new nuclear constructions were reflected in the Hinkley Point C project. According to the EDF Chief Executive Vincent de Rivas (quoted in Harvey, 2012, para. 6): "it's very clear that we will not be able to make our final investment decision without a Contracts for Difference and without a robust legal framework for this contract". Hence, as the government considered nuclear power to be low-carbon energy like renewables, the industry was offered state aid (Harvey, 2012). In 2012, the government authorised EDF Energy and its partner China General Nuclear (CGN) to build two EPR reactors at Hinkley Point C (Bolton and Hinson, 2021, p 11). This project would operate with a strike price of £92.50/MWh linked to price inflation over 35 years (National Audit Office, 2017, p 6). The strike price aimed to guarantee the €19 bn investment for both EPR reactors to EDF. However, some of the Lib-Dem MPs described the agreement as hidden subsidies (Martin, 2014). The Lib-Dem group leader at the European Parliament, Fiona Hall (quoted in Martin, 2014, para. 20) argued "If it looks like a subsidy and smells like a subsidy, it is a subsidy". The strike price has clearly shown that nuclear power policy has moved against the earlier commitment that nuclear power would not be subsidised.

Further, in 2013, the European Commission (EC) launched an investigation into the agreement of Hinckley Point C in Somerset. The EC questioned whether the amount was in line with the EU State

Aid Rules[72] (Macalister, 2013). It asked for a justification of the nuclear aid, which was estimated to reach £17billion. The EC saw that the British consumers could pay £17bn to fund construction of the country's first new nuclear plant in a generation (Gosden, 2013).

The Hinkley Point C project was planned to be completed by 2023. This date was extended to 2025, due to delays in approving the project. It was only in 2016 that the Conservative government under the Theresa May premiership gave it the final approval (Hinson, 2020, p 12), after the European Commission, in October 2014, accepted that the nuclear aid for Hinkley Point C conformed to the EU State Aid Rules. The Aid included three parts: first, the Contracts for Difference to ensure a stable price for electricity sales during the operational stage; second, an agreement between the investors and the UK Secretary of State for Energy and Climate Change on guaranteeing compensation in the event of an early shutdown; third, a financial guarantee for the project to be provided by the government to deal with the risk of rising debts for the infrastructure (DECC, 2014b). The European Commission approved the aid because it would facilitate the development of certain economic activity which was considered to be compatible with the internal market (The Court of Justice of the European Union, 2020).

EDF and CGN also invested in other nuclear new builds, such as Sizewell C in Suffolk and Bradwell in Essex. Sizewell C completed two stages of public consultation, in 2013 and 2017 (EDF 2017, p 7), whereas the application for Bradwell would be assessed under the Generic Design Assessment (GDA)[73], which would be completed by 2021 (EDF, 2017, p 15). Other new nuclear projects were expected to be built in Moorside (Sellafield), Wylfa (Anglesey) and Oldbury (South Gloucestershire), however, they faced delays and cancellations. Moorside was delayed because its generator, Toshiba, faced financial issues. The company intended to sell its Moorside stakes to the majority state-owned Korean Electric Power Corporation (Kepco) (Hinson, 2020, p 20). In 2017, a provisional deal was reached between both energy utilities. The deal provided that Kepco would build an AP1400 reactor design instead of AP1000, which required a new application for the GDA (Hinson 2020, p 14). The Wylfa and Oldbury projects, however, were suspended due to agreement issues between the generator, Horizon, and the government over funding the project. The government decided that it could not provide a guaranteed price, known as the strike price, similar to EDF with Hinkley Point C. The government also claimed that the project would not offer good value to the taxpayers (Parliament. House of Commons, 2018).

[72] EU State Aid Rules are adopted when a company receives financial support from the government through grants, interest and tax relief, guarantees, CfDs, government holding of some parts of the company or providing goods and services on preferential terms. This financial support would help EU members achieve climate target with the least possible costs for taxpayers and without harming competition in the Single Market (Robins and Chakma, 2016, p 248).

[73] GDA is a process that assesses nuclear reactors' security and safety, including waste management and environmental protection. The operator must obtain the permission of the GDA, which consists of Site Licence from ONR, Environmental Permit from the EA, and Planning Permission from the BEIS (BEIS, 2021b).

In 2017, the May government published a green paper, *Building our Industrial Strategy*, introducing the New Sector Deal (BEIS, 2017c). The Deal was established to support technologies for electricity generation through government leadership. For nuclear power, the government published a statement clarifying the measures of the Deal in 2018. The statement mentioned proposals consisting of key commitments such as 30% reduction of costs for the new builds by 2030, savings of 20% of costs for decommissioning, supporting the Small Modular Reactors' (SMRs)[74] technology, and a range of proposals to support investment and workforce (BEIS, 2018a, p 17). The Deal was welcomed by energy industries, the trade association, the Nuclear Industrial Association (NIA), and the trade union, Prospect[75].

In the same year, the Conservative government launched a consultation on the criteria for siting, which required a new National Policy Statement (NPS) EN6[76] for the deployment of new power stations between 2026-2035 (BEIS, 2018b). The nuclear power stations would deploy over 1 GW of single reactor electricity generating capacity (BEIS, 2018b). Hinkley Point C was excluded from the list of suitable sites for deployment as it already had its development consent (BEIS, 2018b, p 5). Further, in the 2019 and the 2020 consultations, the government introduced the Regulated Asset Base model (RAB) as a new framework to fund nuclear power. The model was established following the collapse of financial support for the Moorside plant and the suspension of the Hitachi plant at Wylfa in 2019. Under the model, the energy company would recover all its spending on the nuclear projects through increasing consumers' bills and would be offered government subsidies in order to guarantee longer return (Ambrose, 2019).

In summary, the nuclear power policy area has witnessed a series of policy-making decisions since the Labour government announced the revival of nuclear power. This revival was informed by the aims of economic development, the security of supply, and CO2 emissions' reductions. Hence, the Labour government introduced provisions in the Energy Act 2008, which were later developed to deal with the nuclear revival process during the coalition government and the successive Conservative governments. Whilst the support for nuclear power technology has continued since 2010, policy change and reforms have also been apparent following the establishment of the EMR 2012, the New Sector Deal 2017 and the proposed RAB model 2019 (see Table 8.1 below). Now, it is worth moving on to explore the policy outcomes through the theoretical framework of neo-pluralism and multiple-elitism.

[74]The high costs of large power reactors led to the need for small electricity grids under about 4 GWe. SMRs are built independently, and their capacity is added incrementally when required. These small units operate under 300MWe. They are considered as a much more manageable investment than investment in big nuclear projects (See BEIS, 2016b).

[75] Prospect is a trade union that represents over 150,000 members from different sectors. Prospect aims to improve careers, contracts and conditions of employment, pay, pension and other issues (Prospect, 2021).

[76] National Policy Statement (NPS) EN6 is a government policy on nuclear power (DECC, 2012b).

Table 8. 1: Government legislation on nuclear power since 2006

Nuclear power policy under the New Labour government	**Nuclear power policy continuity under the coalition government and successive conservative governments.**	**Nuclear Power policy change and reforms under the coalition and successive Conservative governments.**
2006 The Energy Challenge Review (report). 2007 White Paper on Energy 2007 - Meeting the Energy Challenge. 2007 Planning for a Sustainable Future - White Paper. 2008 Meeting the Energy Challenge: A White Paper on Nuclear Power. 2008 Energy Act Chapter 32 2008 Planning Act Chapter 29 Meeting the energy challenge: A white paper on nuclear power 2008. 2009 the Road to 2010: Addressing the Nuclear Question in the Twenty First Century	2011 Planning Our Electricity Future: A White Paper for Secure, Affordable and Low-carbon Electricity. 2011 National Policy Statement for Nuclear Power Generation EN6 Volume I of II.	Electricity Market Reform 2012. Energy Act 2013. 2017 Building our Industrial Strategy Green Paper. 2018 Consultation on Siting Criteria and Process for New Power Stations' Deployment between 2026-2035 2019/2020 RAB Model for Nuclear: Consultation on a RAB Model for New Nuclear Projects. National Policy Statement for Nuclear Power with Single Reactor Capacity over 1 gigawatt Beyond 2025.

The Table shows the policies enacted by the Labour and the Conservative governments to revive the nuclear power sector for electricity generation. Under the Coalition and successive Conservative governments, more policy changes have been enacted to improve the performance of the sector (Author).

8.2. Understanding nuclear power revival and group mobilisation since 2010

In this section, with the help of concepts drawn from multiple-elitism and neo-pluralism, I attempt to study the role of a range of actors in the policy outcomes of the nuclear power sector. As discussed in chapter 4, the theory of multiple-elitism offers the concept of sub-government to refer to a closed system that lacks democratic interaction between a wide range of actors in a policy area. By contrast, the theory of neo-pluralism emphasises the concept of issue networks to refer to a relatively open system that includes many producer and citizen groups. As producer groups tend to have a superior position,

citizen groups act as a countervailing power to check their influence and mobilisation. The countervailing power operates through direct and indirect strategies to block the business groups' co-optation of policies to serve their private interests. In the light of these ideas within multiple-elitism and neo-pluralism, I raise the following questions: who are the groups that have operated in the nuclear power policy area? What are their objectives? What are their strategies for lobbying? Did the groups operate in a closed system (multiple-elitism) or a relatively open system (neo-pluralism)? And did the government's response support the producer groups or the environmental NGOs? Let us start our analysis by exploring the mobilisation of business interest groups and then environmental NGOs in the nuclear policy area.

8.2.1. Business interest groups in the nuclear power sector

Business groups were active in lobbying to support the government's decision for nuclear power revival. More specifically, there are energy companies that supported the revival of the nuclear power expansion. Perhaps the most visible supporter is EDF and its partner CGN in the Hinkley Point C project, which was given the go-ahead in 2015. In order to get the government's approval for its application, EDF engaged in public consultations through newsletters, a website, broadcast and media coverage, meetings with local authorities, community groups, and local organisations. According to EDF (2011, p 6), "The company has engaged with 6480 consultees, held 34 public exhibitions, attended 67 meetings with local authorities and other stakeholder groups, and attracted 109,000 unique visitors to its project websites". The consultation was held over two years, between 2009 and 2011, processing 33,000 comments which were broken down into 1200 topics that required a response from EDF (EDF, 2011, p 6). The topics included the environmental impact of nuclear power, the impact of nuclear radiation on health, and waste management. EDF stressed the need to take on board the recommendations provided in the consultation to improve its proposals.

Further, the producer group, EDF, was also a significant member of the trade associations, Energy UK and the Confederation of Business Industry (CBI). Energy UK is a business interest group that is keen on an electricity sector based on mixed technologies, namely renewables, nuclear power, coal and gas (Vest, 2020, interview). Energy UK encouraged the industry colleagues to put forward finance and investment because they saw that decarbonising the electricity sector had many benefits (Vest, 2020, interview). One of these benefits would be economic growth, as the energy industry invests £12.5 bn annually, creates a healthier environment and provides long-term employment (Energy UK, 2019, p 3). In an interview with Paul Spence (2020), Director of Strategy and Corporate Affairs at EDF commented:

> We have several trade associations as well as the CBI and there is a trade association called Energy UK who represents about a hundred energy companies (…) they are groups of companies that cover particular focus and particular interest. There are a lot of trade

> associations and groupings who are established and set up to make sure that there is real talk with a credible voice (my italics).

A point to note is that some energy companies that are represented by trade associations such as Energy UK and the CBI advocate specifically for renewable energy, for example, Drax Group[77], Brock Well Energy[78], Ecotricity[79], Low Carbon[80], Pure Planet[81], and Good Energy[82], as well as E.ON, which switched entirely to renewables in 2019. In an interview with Barbara Vest (2020), the Energy UK's Special Advisor claimed:

> As a trade association we don't advocate on behalf of one particular technology; what we absolutely understand that there is a real energy mix required (…) sometimes members fall out with each other because they don't agree, but they all really understand that they are doing this for better world and we work well together (my italics).

Significantly, the CBI advocated for nuclear power in the electricity sector over the last few years. It is the largest business group in the UK that speaks on the behalf of 250,000 companies and associations (CBI, 2019b). According to Rydin (1993, p 229), "although the firms tend to compete with each other in economic activities, they have recognised the benefit of grouping to influence governmental decisions and policies". This business interest group admitted that it has created a strong relationship with the government appointed committee, the Climate Change Committee (CBI, 2019b). The group has been advocating for decarbonisation of electric power and transport, heat and energy efficiency and all the pathways leading to net-zero targets (Diggle, 2020, interview). The CBI backed nuclear power in the energy mix with specific strategies and tactics.

Strategies cover the overall approach of lobbying, which includes elements such as goals to be achieved, identification of policy-makers to be persuaded, and the ways to communicate with them (Thomas, 1998, p 141). Tactics are more specific and consist of which public officials and branches of government to be contacted, who will contact them, and how to deliver the message to them (Thomas, 1998, p 141). To be precise, scholars often distinguish between the different strategies and tactics used by groups and make a distinction between insider and outsider strategies and tactics, or direct and

[77] Drax Group Plc is an energy company that operates in Selby, North Yorkshire. It provides 8% of the UK electricity. It is transforming into a major biomass fuelled electricity generator (Energy UK, 2019).
[78] Brockwell Energy is an energy company that is developing projects of electricity generation from onshore wind (Energy UK, 2019).
[79] Ecotricity was founded in 1995 as the first green energy company, supplying over 160,000 customers in the UK with electricity from renewables (Energy UK, 2019).
[80] Low Carbon is renewable energy and infrastructure investor. It has invested in large infrastructure assets, notably in solar PV, onshore wind, gas CHP, anaerobic digestion, and concentrated solar power (Energy UK, 2019).
[81] Pure Planet is a digital renewable energy supplier that was founded in 2017 to encourage cheap green energy (Energy UK, 2019).
[82] Good Energy was founded in 1999 to supply electricity generated from renewable energy such as wind, sun, biomass, and water (Energy UK, 2019).

indirect lobbying. Direct lobbying involves direct interaction with policy-makers. As such, the direct approach consists of private and agency meetings, consultation on legislation drafts, building alliance or forming networks, and providing technical and political information to legislators. This strategy is based on direct contact between the lobbyists, group representatives or group members and policy-makers. The direct contact could be through personal meetings, by phone, emails, or letters. Indirect lobbying deals with generating public pressure, attracting media attention, holding demonstrations, and public protests. This strategy requires a third party such as the media or opinion polls (Thomas, 1998, p 142).

The CBI engaged mostly in direct lobbying. In 2009, it submitted a report to the government calling for the construction of six or eight new plants. It justified its proposal on the grounds of low carbon electricity and low electricity prices. The latter was estimated to rise to 30% by 2020 (Macalister, 2009). CBI believed that while there are generous subsidies for wind power, the national planning statements are urgently needed to build new nuclear plants (Macalister, 2009).

The CBI's recommendations were accepted by the Climate Change Committee; in its 2010 report it declared that "It is difficult to reach the CBI's goal of making 80% of electricity generation by 2030 without the use of new nuclear power" (Climate Change Committee, 2010, p 248). The Committee emphasised that around 16GW of nuclear energy would be desirable as the current nuclear capacity is nearing retirement (Climate Change Committee, 2010, p 248). It advised the government to incorporate these recommendations in the nuclear NPS.

The CBI's lobbying strategy also took the form of letters. In June 2019, in a letter to the Department of Business and Industrial Strategy (BEIS), the business interest group urged the government to give priority to decarbonising the UK economy. In the letter, the CBI emphasised its support for the Electricity Market Reform, including the Contracts for Difference (CfD). The group also called on the government to consider Small Modular Reactors (SMRs) to encourage domestic and foreign capital investment for new nuclear projects (CBI 2019a, p 2). As noted in chapter 6, in November 2019, the group published a report entitled "The Low-Carbon 2020s: A Decade of Delivery". The report outlined 18 policy recommendations to be considered in the Energy White Paper. It emphasised the role of nuclear power in achieving low-carbon electricity and energy efficiency (CBI, 2019a, pp 3-6). The policy recommendations also advised the government to help the business community to accelerate with decarbonising the electricity sector using nuclear power, over the next decade (CBI, 2019a, p 4). The report also mentioned the CBI's support for the proposed framework of the Regulated Asset Base model (RAB), to help the nuclear industry finance nuclear power projects. As seen earlier, the model is based on the financing of nuclear power plants through consumers' bills during the period of construction. The Head of Energy and Climate Change at CBI, James Diggle (2020), argued in an interview:

> One thing we were calling for last year was to get a financial mechanism to support nuclear power. We have one nuclear power [plant] under construction in Hinkley point C in Somerset which has been operating by the Contracts of Difference. But then, we have seen issues with other projects to get the financial support with the CfD. We called for a Regulated Asset Based model which is used in a large infrastructure project and the result of that has been that the government brought a consultation. There is no final decision yet, but it is something that we have been speaking publicly about. And, in June last year, we published a letter written to the government, we were talking about the new model and trying to get progress there (my italics).

Alongside the CBI, the Nuclear Industry Association (NIA) also backed the revival of nuclear power. The NIA is a trade association that represents 260 companies. Its approach was entirely based on a direct lobbying strategy, which took the form of annual briefings, annual conferences, responding to consultations, letters, and personal meetings. Its main goal was to support the nuclear power programme and to ensure that its interests were properly articulated and included in the nuclear agenda. This approach was reflected in the consultations of the Nuclear Decommissioning Authority Draft Strategy (2015), the Treasury consultation on National Infrastructure Commission (2016), the BEIS consultations on the GDF (2018) and the RAB Model (2019). Through all these consultations, the NIA supported nuclear power. The business interest group, NIA (no date, quoted in Parliament. House of Commons, 2013, p 5), claimed:

> Nuclear energy has become a mainstay of Britain's energy mix since its inception sixty years ago and it makes a significant contribution to the country's need for secure, clean and affordable electricity .

The NIA interest in workforce supply was also articulated in the NIA's capability report published in 2012. NIA (2012, p 3) argued:

> The scale of the nuclear new programme will substantially increase the demand for skills and industrial resources (…). [Manpower estimates] indicate that total resources for 16GWe programme will build to a peak at around 30.000 and will then drop off into the operational phase (my italics).

Moreover, the NIA also adopted an indirect strategy to support nuclear power. In an open letter to the candidates in the 2019 general elections, the NIA called for strengthening the support for nuclear power as a pathway towards a green economy (NIA, 2019). The group also considered nuclear power to be a low-carbon backbone, alongside renewables, and an economic powerhouse employing hundreds

of thousands of people directly and in related industries (NIA, 2019). The written comments also emphasised the need for the government to support the design of Small Modular Reactors (SMRs) in the construction of new nuclear builds.

Furthermore, the NIA chairman, Tim Stone, is co-chair of the Nuclear Industrial Council Forums (NIC). The government held meetings with energy companies, trade associations, and trade unions to structure the policy framework and to engage a number of stakeholders in the discussions on the nuclear power programme. The NIC was introduced to serve as a platform for nuclear discussions and agreement between the industry and the government led by the DECC and later by the BEIS (see below). Members of the NIA also attended the NIC meetings between 2013 and 2019 (see NIC, 2013a; NIC, 2013b; NIC, 2013c; NIC, 2014; NIC, 2018; NIC, 2019 in list of references below).

Additionally, nuclear power was also supported by the trade unions, most notably GMB[83], Unite the Union[84], Union of Construction, Allied Trades and Technicians (UCATT)[85], and Prospect. In a letter sent to EDF in 2016, the leaders of the trade unions claimed: "the UK trade Unions are 100 per cent in support to Hinkley Point C and believe that it is vital to make a final investment decision" (Macalister, 2016, para. 10).

In summary, the nuclear power option was supported by the business interest groups, the CBI, NIA and the trade unions. These groups endorsed the government's decision to revive nuclear power in the energy mix. They justified their support with the need to decarbonise the electricity sector, provide energy security and investment. Their support was translated in their interaction with the government and the producer groups, most notably EDF in the Hinkley Point C project. Their support for the nuclear option was communicated by direct lobbying strategies such as reports, letters, annual briefings, and their response to consultations, and by indirect lobbying strategies, notably attracting media attention. Having discussed the role of business groups in the nuclear power area, it is worth examining environmental NGOs' views and strategies on the technology.

8.2.2.Environmental NGOs in the nuclear power sector

The anti-nuclear movement in the UK has voiced concerns over nuclear power technology and the proliferation of nuclear weapons since the 1950s; it emerged in the UK following the UK's government announcement to develop its nuclear weapons in 1952 (see CND, 2021). With the revival of the nuclear power programme, the anti-nuclear movement included social Movement Organisations (SMOs) and anti-nuclear campaign groups that were critical of nuclear power expansion due to the increased costs

[83] GMB is a trade union that represents 620,000 members working in every type of job across public and private sectors. GMB calls for better payment and working conditions and ensures that people have their rights at work (GMB, 2021).
[84] Unite the Union is a trade union that represents welfare rights and members' interests in the workplace. Unite ensures safety and equal pay for its members (Unite the Union, 2021).
[85]UCATT was a trade union that was founded in 1971 to represent the views of workers. In 2017, UCATT was dissolved and merged with the trade union, Unite the Union (Unite the Union, 2021).

of construction, the harmful effects of radioactive wastes on human health and the environment. According to Friends of the Earth (2020), "The nuclear waste debate is a big one; there is also the risk of catastrophic impacts, and a poor record of building power plants on time and budgets". Further, there is the issue of nuclear weapon proliferation; for instance, the first commercial reactor at Hinkley, the Magnox A plant announced in 1956, had also operated for military production purposes. The anti-nuclear campaign group, Stop Hinkley (2016a, p3), explained, "With the current confusion over Hinkley's latest promised reactor, the military history of the site should not be forgotten". Walt Patterson (2020), Associate Fellow of the Energy, Environment and Resources Programme at Chatham House clarified in an interview:

> If you worry about climate and you better be, why would you put all your political will into the slowest, the most expensive, the narrowest, the most inflexible, and the riskiest of all the available options which is nuclear. It is taking away time and resources we should be putting in something that would be paying off much quicker and much more surely.

Generally, the anti-nuclear movement comprised several groups throughout the UK, such as Friends of the Earth, Greenpeace, Friends of the Earth Scotland, World Wildlife Fund (WWF), and Earth First, all of whom supported anti-nuclear campaigns and included anti-nuclear concerns among their broader agenda. The movement also embraced environmentalists, scientists, journalists, political parties, politicians and anti-nuclear weapon groups, notably Trident Ploughshares[86]. Perhaps, the most prominent national anti-nuclear group in the UK is Campaign for Nuclear Disarmament (CND), which includes 84 anti-nuclear local member groups around the UK (CND, 2021). It was established in 1958, and it has since been consistently campaigning against nuclear weapons. This group supports nuclear disarmament and opposes nuclear power use for electricity production. More specifically, in terms of climate change, CND (2021) argues that "Building more nuclear power stations is not the answer to climate change (…) for the simple reason that uranium mining, milling and enrichment are all carbon-intensive" (my italics). Recently, CND publicly condemned the Hinkley Point C deal between the government and EDF, claiming that the project would place high burdens on taxpayers (CND, 2021).

Further, the anti-nuclear movement also included anti-nuclear campaign groups who demonstrated their opposition to the technology at the local level, most notably Stop Hinkley and Shutdown Sizewell. Some of these newly established groups that were formed to resist the recent nuclear renaissance are: Heysham Anti-Nuclear Alliance (HANA), Blackwater Against New Nuclear Group (BANNG), Stop New Nuclear Power Network, Nuclear Free Local Authorities (NFLA), Kick Nuclear, South West

[86] Trident Ploughshares is an anti-nuclear weapon group that was established in 1998 to support nuclear disarmament in a nonviolent way. The group is a member of the Extinction Rebellion and the Stop New Nuclear network (Trident Ploughshares, 2016).

Against Nuclear, and Shepperdine Against Nuclear Energy. Moreover, other anti-nuclear campaigning groups raised more specific concerns, such as supporting renewable energy as an alternative technology opposing nuclear waste and the radioactive effects of nuclear power on human health and the environment. They are namely Bradwell for Renewable Energy, Campaign Against Nuclear Storage and Radiation (CANSAR), and Cambrians Opposed to a Radioactive Environment (CORE). The anti-nuclear groups lobbied the government against nuclear expansion through indirect strategies and tactics to generate public pressure against the government's decision. To some extent, their strategies differ from the strategies used by business groups which often directly lobby the government (see above). In an interview with Rebecca Newsom (2020), the Head of Politics at Greenpeace:

> If you are in their face making this visible to them, it will be hard for them to ignore. So, we do have a network of lobbying activists that are spread across our constituencies in the UK. I think we are exploring what we can do with them to brief them to build their relationships with their local MPs and to leave the pressure upwards with the government that way; I mean all the tactics that we can use are just really high-level engagement at the very top level of the government and that's still very difficult to succeed with and that is not going to be enough certainly the government is prepared to listen to groups much more than others.

To illustrate, Stop Hinkley submitted briefings to its members to outline the latest updates on nuclear power policies. It also campaigned through letters, asking its members to send a letter to the former Secretary of State for Energy and Climate Change, Ed Davey, entitled "Go on Ed ...be a hero!" in July 2013 (Stop Hinkley, 2013, p 2). The letters called Ed Davey to stop new nuclear builds in Hinkley Point.

The anti-nuclear group, Stop Hinkley, led a series of movements, most notably the anti-nuclear movement in 2011. This movement was triggered by the Fukushima disaster in 2011 in Japan, which was caused by an earthquake followed by a tsunami, leading to leakage from the reactors due to the failure of the cooling systems. The nuclear disaster caused fires, explosions, contaminated hundreds of thousands of tonnes of water, and more than 140,000 people were evacuated from the area (Murakami *et al.*, 2020, p 2). In March 2011, the campaigners sent an open letter to West Somerset Council (WSC) demanding action over contaminated Hinkley after the Fukushima disaster (Stop Hinkley, 2011a, p 1). The campaigners called EDF to submit an appropriate contamination assessment[87]with its application.

[87] The appropriate assessment is linked to the Habitats Regulations Assessment (HRA), which deals with several stages of assessments to determine if a plan or project may affect the site, before authorising the project. If a project or a plan is considered likely to affect the habitat sites, then an appropriate assessment should be carried (BEIS, 2019h).

EDF's consultant organisation, AMEC[88], confirmed that the uranium in the site was not dangerous. The DECC (no date, quoted in Stop Hinkley, 2011a, p 1) argued, "It's in no one's interest, including the government, to grant the consent to something that would be obviously harmful to human beings. Why would anyone want to do that?". In 2012, EDF and AREVA published a Generic Design Assessment (GDA) report on the EPR reactor used in Hinkley Point C, clarifying that the reactor design uses less uranium and produces less radioactive waste. According to the report,

> The EPR design has the following objectives: to reduce core damage frequency, to reduce the frequency of large releases of radioactivity, to mitigate severe accidents (…) to give increased savings on uranium consumption per MWh produced, to achieve further reduction of long-lived actinides generation per MWh through improved fuel management (my italics). (AREVA NP and EDF, 2012, p 3).

Further, in October 2011, the anti-nuclear groups held a blockade at the Hinkley nuclear power station. The blockade was led by an alliance of already existing networks and environmental NGOs called "Stop New Nuclear". This anti-nuclear alliance consisted of several anti-nuclear groups such as Campaign for Nuclear Disarmament (CND), CND Cymru, Stop New Nuclear Power Network, Kick Nuclear, South West Against Nuclear, Trident Ploughshares, Stop Hinkley, Shutdown Sizewell, and Sizewell Blockaders. The alliance was funded by its members to help with the costs of events. More than 200 activists from the alliance gathered to blockade access to the Hinkley nuclear power station in protest against EDF's plan to install two nuclear reactors at Somerset (Stop New Nuclear Alliance, 2012). The group protested with a theatre troupe, which performed a nuclear disaster scenario similar to Fukushima *(The Guardian*, 2011).

In December 2011, Stop Hinkley took the battle of opposing nuclear power to Downing Street. The group delivered a petition signed by 13,000 people, joined by Wells MP Tessa Munt and the Green Party leader Caroline Lucas (Stop Hinkley, 2011b, p 1). According to Stop Hinkley (2011b, p 1), "Employees of French-owned nuclear power company are lobbying on the inside of the government while the passionate British public is expected on the outside. How can this be fair to democracy?".

Meanwhile, a network of social movement organisations, including Stop Hinkley, submitted a report to the Environmental Agency on marine and radioactive gases discharged by the Hinkley Point project. The report was sponsored by Stop Hinkley, Friends of the Earth, Cymru and CND Cymru. It was also supported by the MPs such as Caroline Lucas, Martin Caton, Paul Flynn and Jill Evans (Stop Hinkley, 2011b, p 3). The report was co-authored by a marine pollution consultant, Tim Deere-Jones, and a

[88] AMEC is an organisation that specialises in assessing air quality, archaeology and heritage, contaminated soils, environmental management, hydrology and food risk, geology and topography, groundwater, land use, noise and vibration, radiological effects, surface water quality. In 2007, AMEC formed an alliance with Areva and EDF to help them build new generation of nuclear reactors (Webb, 2007).

consultant on radiation in the environment, Dr Ian Fairlie, who concluded that the EDF's understanding of the behaviour and the fate of radioactive waste was weak and flawed (Stop Hinkley, 2011b, p 3).

Further, in 2016, Stop Hinkley joined a protest against EDF by forming a multi-bannered demonstration at King's Square, outside the old EDF office (Stop Hinkley, 2016a, p 1). This demonstration attracted local media. The campaigners submitted a letter to EDF, explaining the increased debt of EDF that amounted to £25bn, which would affect the financing of a massive project such as Hinkley Point C. The letter also discussed the reactors of Flamanville in Normandy and Olkiluoto in Finland, which have a similar design as the reactors in Hinkley. These reactors were facing construction problems. The letter stated, "Flamanville is currently 6 years late and around 7.2 bn euros over budget. Olkiluoto is expected to be 10 years behind schedule and 5.5 bn euros over budget" (Stop Hinkley, 2016a, p 2). Stop Hinkley (2016a, p 2) believed that EDF's commitment to build two EPR reactors in Hinkley in 9 years would be difficult, as the construction time of the other reactors in Flamanwille and Olkiluoto was estimated between 10 and 15 years.

One month before the new Conservative government led by Theresa May could give the go-ahead to Hinkley Point C, Greenpeace joined Stop Hinkley in a campaign to block the decision. Greenpeace commissioned a public opinion poll, which showed that 44% of the general public opposed Hinkley Point C, and only 25% supported the project (Stop Hinkley, 2016b, p 2). Campaigners of Stop Hinkley and Greenpeace launched a petition in September, gathering 300,000 signatures. The petition was taken to Number 10, Downing Street, demanding that the new Prime Minister Theresa May cancel the project. However, in October 2016, the Hinkley Point C project was approved. The Labour Party and environmental NGOs criticised this decision and highlighted the issue around investment and security (Hall, 2020, interview). They saw that it would alter national security as the project was backed by the Chinese state nuclear firm, CGN (Hall, 2020, interview). The government placed measures to make sure that China and other foreign investors could not own stakes in the British nuclear plant without government approval (Mason and Goodley, 2016). Hence, EDF would not be able to sell its ownership to the CGN without the government's permission, and this would include a special share to the government for future projects (Mason and Goodley, 2016).

Overall, the environmental NGOs opposed the revival of nuclear power using indirect strategies and tactics. They submitted briefings, letters, and reports to articulate their objection. They also formed alliances, most notably the Stop New Nuclear Alliance that opposed the Hinkley Point C project through a blockade at the Hinkley site following the Fukushima disaster. Given this situation, it is worth exploring what policy outcomes were achieved.

8.2.3. Analysing nuclear forums and the government's policy options for nuclear power

As seen, there are business interest groups that support nuclear power in the energy mix. These mainly include big trade associations, such as the CBI and the NIA. However, the environmental NGOs

were on the opposing side of the issue, urging the government to abandon the expansion of the new nuclear power programme. They launched protests following the Fukushima disaster 2011 and campaigns in 2016, to block EDF's plan, Hinkley Point C. The business interest groups' support was related to employment, energy security and low-carbon emissions. The environmental NGOs mainly feared nuclear accidents like Fukushima occurring in the UK. They also raised issues over waste disposal, budget and timescale of projects, and consumers' future bills.

Whilst business interest groups and environmental NGOs applied strategies and tactics to reach their goals, the government set up a forum to allow for detailed discussion on the issues. This forum, however, did not bring both groups together. Instead, businesses met with the government at the Nuclear Industry Council (NIC) forum and the environmental NGOs met at the Nuclear Non-Government Organisation Forum. The NIC forum included energy companies, trade associations, and trade unions on a platform for discussions and agreement with the government, led by the DECC and later by the BEIS. The Nuclear Non-Government Organisation Forum included campaigners and environmental NGOs presenting their local communities' concerns. Both forums often included scientists who joined the discussion and shared their findings. In order to further explore nuclear policy area, I have analysed 23 documents. They are meeting minutes that summarised the nuclear discussion between the government and interest groups in the forums (see list of references below)

Let us consider the NIC and the Nuclear Non-Governmental Organisation Forum from the perspectives of multiple-elitism and neo-pluralism. While the concepts of multiple-elitism and neo-pluralism are summarised in Table 5.1 above, it is worth mentioning that we will be exploring the concepts of interest groups' dynamics and information exchange. In the concept of interest groups' dynamics, we will be looking at whether data shows the features of the multiple-elitist system of sub-government or/and neo-pluralist features of interest groups competition in a relatively open system called issue network. As seen in chapter 4, issue networks and sub-government occurred as two opposing concepts. The former was explained by neo-pluralism and the latter was established by scholars on multiple-elitism. In a sub-government, the producer groups, government agencies and policy-makers share similar interests, discuss policy agenda, circulate political and financial support and information in a closed system. Sub-government in this regard aims at achieving private interests rather than the general interest of the public (see section 4.5, see also Table 5.1).

Meanwhile, issue networks contain producer groups, government agencies, policy-makers, scientists, journalists, trade associations and environmental NGOs. As seen in chapter 4, the issue network is a concept introduced by Heclo (1978), who saw that the policy-making process includes many technical experts who frequently circulate information about an issue. Here, we will consider the concept of information. As discussed in section 4.5, the participants in a network communicate and check information to challenge elites. This system contradicts the outlook of the multiple-elites in sub-

government, who restrict public information about a policy (McFarland, 2004, p 50). In the issue network groups do not necessarily agree as information and knowledge may or may not produce an agreement (McFarland, 2004, p 50). Given that multiple-elitism and neo-pluralism provided two distinct concepts in the policy process, it is worth exploring the following indicators to clarify which theory can best describe the nuclear power groups: a) participants in the forums, b) if members shared similar interests among them or had opposing ones, c) political and financial support among members. Here, I aim at reflecting the concept of interest groups in multiple-elitism and neo-pluralism. d) if the information was restricted by policy elites, and e) if the countervailing power exists and gets involved to check information and bring onboard its views. Under these views, I will be exploring the concept of information. I later discuss the government's response and policy outcomes. Overall, I investigate whether the forums were a closed multiple-elitist system of sub-government with shared interests, information, political and financial support among members, or a neo-pluralist system of issue networks open to several members, including the countervailing power with opposing interests, who exchange knowledge in the policy area. Let us consider each one of them.

In terms of interest groups, we see in Table 8.2 below that different groups attended the NIC forum, notably energy companies; the nuclear research centre, Nuclear Advanced Manufacturing Research Centre (NAMRC), owned by the University of Sheffield, professionals from Young Generation Network[89]; trade unions, such as Independent and Prospect; the trade association, Nuclear Industry Association; government agencies; and scientists such as Professor Andrew Sherry and Professor David Delpy.

Table 8. 2: NIC members and issues discussed (2013-2019).

NIC Attendees	**Issues discussed**
Industry: Nuclear Industrial Association (NIA) Young Generation Network	Implementation of Supply Chain Action Plan to maximise job opportunities.
Nuclear Advanced Manufacturing Research Centre (NAMRC) SNC-Lavalin Jacobs Magnox	Nuclear Industrial Strategy (publication process of consultation document, work force numbers and Electricity Market Reform regarding the price for investors and price for consumers).
NNL EDF Energy	Negotiating Cost reductions for new builds.

[89] Young Generation Network is a professional body that focuses on nuclear safety, nuclear security and application of nuclear technology. It is a part of the organisation, the Nuclear Institute, and its members should be under the age of 37. It promotes communication, collaboration and professional development in the UK and around the world (The Nuclear Institute, 2021).

UKAEA Britain's Energy Coast Business Cluster Prospect Sellafield Westinghouse	Proposing a Nuclear Workforce Model after EDF and Trade Unions reached an agreement (NWM provides data about the long-term forecast of skills and supply of big companies).
Unite Hydrock Cavendish Nuclear Rolls-Royce (Submarines)	Business capability (discussing investment, information, and equipment among UK companies).
Independent	Providing comments on Trade and investment.
China General Nuclear (CGN) Corporation	New Sector Deal (backed by EDF and Prospect) agreement and approval.
Government: Department of International Trade Nuclear Decommissioning Authority (NDA)	Calls for lowering risks to investors.
Ministry of Defence Department of Business, Energy, and Industrial Strategy (BEIS) Office for Nuclear Regulation (ONR)	Initiating Public Understanding (creating a pool for nuclear experts, developing nuclear narratives, and opening visitor centres).
Environment Agency	Fund Decommissioning Programme (FDP), this includes costs of plans for decommissioning, waste disposal, and management

Source: Collected by Author (for NIC forums see reference list).

The NIC's members were interested in supporting the new nuclear programme. According to the BEIS (2017d, p 1), "The NIC is the main body to facilitate co-operation between the nuclear industry and the government. Its overreaching role is to tackle long-term challenges facing the industry and to help realise future opportunities through strategic decision-making". Therefore, the members discussed issues related to nuclear power infrastructure, Research and Development (R&D), costs, investment, skills, and jobs creation (see Table 8.2). The members had to engage with the government's stakeholders by submitting reports on their findings. In 2013, the NIC focused on discussing the Supply Chain Action Plan established by the Minister of State for Energy, John Hayes, in 2012. The NIC (2013a, pp 4-5) discussed the Action Plan considering skills, investment in Small Modular Reactors (SMRs), trade and investment, waste management, cost reduction, business capability, and workforce numbers. With regards to business capability, a Supply Chain Capability Group, led by Jason Smith from Rolls Royce, was established to identify what capabilities the UK needs to develop and compete for business (NIC, 2013b, p 3). The group presented reports on the progress of business capability. Peter Greenhalgh from the engineering company, M&W Group, led and reported on cost reduction, the costs of wastes and decommissioning, design, and construction (NIC, 2013b, p 7). Roger Hardy from the UK's leading

nuclear services company, Cavendish Nuclear, headed a group to report on the number and quality of people for the industry (NIC, 2013b, p 5). In the trade and investment, the reports on investment needed and opportunities to assure the nuclear programme were led by Clive White from the British multinational engineering and project management company, Amec (NIC, 2013b, p 5).

In terms of political and financial support, as we have seen, the government supported the revival of nuclear power through rhetoric and designing policies to promote the technology. The Secretary of State for Energy and Climate Change during the Coalition government, Chris Huhne (2011b), claimed: "Nuclear power can play an important role in the future of our energy security provided there is no public subsidy. We have done everything we can to make sure it is safe, regulated, secure and affordable. Now our partners in the private sector must rise to the challenge and deliver it". The government's support was confirmed in the 2011 Nuclear National Policy Statement (EN6), which clarified that: "The government believes that energy companies should have the option of investing in new nuclear power stations" (DECC, 2011a, p 1).

In this regard, policies such as the Contracts for Difference (CfD) via the Electricity Market Reform and the New Sector Deal were designed to attract investment in the technology. EDF, who recommended sharing with the government the costs of risks at the early stage of construction, set an agreement with the government on the Strike Price for the Contracts for Difference (CfD) for Hinkley Point C. Therefore, the coalition government offered a strike price of £92,50 MWh, reducing it to £89. 50 MWh for 35 years, if EDF achieved a Final Decision on Investment (FID)[90] for Sizewell C (BEIS, 2018c). Moreover, EDF was guaranteed £2 billion in loans for Hinkley Point C to be available between 2018 and 2020 under the infrastructure (financial assistance) Act 2012. These loans would assist energy industries to come forward with investment.

Further, the New Sector Deal was established during the May government in 2017 to provide the nuclear energy industries with government leadership. The Deal was an agreement between the energy industries and the government about key issues, and it was a co-created nuclear model (BEIS, 2018a, p 11). The energy industries and the government reached the New Sector Deal agreement at the NIC, which included cost reduction, funding of research and training, employment, and financial loans (NIC, 2018; NIC, 2019).

However, the anti-nuclear groups saw that the political and financial support for nuclear power gave the technology a privileged position. According to the anti-nuclear groups, "nuclear power appears to be given privileged position within the energy market, in the form of subsidies and foreign funding" (BEIS, 2018d, para. 29). At the Nuclear Non-Governmental Organisation Forum, they pointed out that Hinkley Point C was guaranteed a price for 25 years and the same for Wylfa and Moorside, although

[90] FID is the final decision achieved by the board of investors to undertake the construction of a project. This is based on the subsidies received of the construction and the approval of the government (BEIS, 2018c).

they did not look feasible (BEIS, 2018d). A similar remark was made by Professor Andy Browers (quoted in BEIS, 2019i, p 6) in the 2019 forum, who pointed out that "based on economics it was difficult to understand the rationale for nuclear beyond Hinkley Point C. It was deemed that some could argue there is no role for nuclear, especially in the mid-2030s"

Concerning information circulation, information on nuclear power technology was shared among members of the NIC and was provided to the general public in the Supply Chain Action Plan following the Fukushima disaster in 2011. Under the Plan, information on nuclear power technology was put under a scheme called, Public Understanding of Nuclear Energy (PUNE), led by Professor Andrew Sherry. The scheme outlined the communication between the government and the public, emphasising the need for more initiatives to engage the public across the sector. The DECC (no date, quoted in NIC, 2014, para.34) claimed, "The most trusted people to give messages about nuclear power are scientists and academics ".

The scheme also highlighted the role of new media such as Facebook as a means of communicating with people (NIC 2013c, p 8). It also required EDF to open more visitors' centres to improve people's knowledge of nuclear power (NIC 2013c, p 8). The DECC (no date, quoted in NIC, 2013c, p 7) argued, "The public perception of nuclear energy would have an impact on future developments, and it was therefore important to bring attention to the benefits in terms of the security of supply, low carbon and economic opportunities". Moreover, information was also circulated to the Nuclear Non-Governmental Organisation Forum. The information included the Hinkley Point C agreement, nuclear safety procedures, and public engagement.

The Nuclear Non-Governmental Organisation Forum facilitated communication between anti-nuclear campaign groups, environmental NGOs and government stakeholders. At the Nuclear Non-Governmental Organisation Forum, anti-nuclear local groups and environmental organisations, notably Stop Hinkley, Nuclear Free Local Authorities, West Cumbria North Lakes FoE, Friends of the Earth, Greenpeace, and scientists such as Professor Andy Blower and Professor John Harrison presented their views to the government's stakeholders, the DECC/BEIS and the Office of Nuclear Development (OND) (see Nuclear Non-Governmental Organisation Forum members in Table 8.3 below). The groups checked policy updates, the Hinkley Point C state aid case and EDF investment, and the contracts for Moorside, Sellafield Ltd, TEPCO, and Magnox (DECC, 2014c). The groups also checked details on the Hinkley deal (DECC, 2014c).

Table 8. 3: Nuclear Non-Governmental Organisation Forum members and issues discussed.

Nuclear Non-Governmental Organisations forum attendees	**Issues discussed**

Environmental groups: Blackwater Against Nuclear Group (BANNG) Parents Concerned About Hinkley (PCAH) Communities Against Nuclear Expansion (CANE) Bradwell for Renewable Energy (BRARE) Ayrshire Radiation Monitoring Group (ARM) Nuclear Free Local Authorities (NFLA) Stop Hinkley Greenpeace Save our Lake District West Cumbria and North Lakes FoE Government: DECC/BEIS Environmental Agency Office for Nuclear Development (OND)	Commenting on the funded decommissioning programme (NGOs were asked to give ideas and thoughts surrounding radiation). Questioning public engagement in the debate of site selection. Calling the BEIS to send copies of terms and agreements between EDF and the government for Hinkley Point C to be able to review it. Evaluating the Hinkley Point C consultation. Questioning the Nuclear Liabilities Fund (NFD), financial support if the developer goes bankrupt. Discussing the New Sector Deal and calling the government to have a Sector Deal for renewables. Discussing health issues, safety and security.

Source: Collected by the author (see DECC/BEIS NGOs forums in the list of references).

The NGOs also raised the issues of nuclear subsidy, Electricity Market Reform, waste management, and the Hinkley Point C deal. The forum highlighted the issue of waste management, the Geological Disposal Facility (GDF), and decommissioning financial arrangements. On these issues, the NGOs posed questions about public health, the nuclear legacy for the future generation, spent fuels and radioactive waste (DECC, 2010a). Following the Fukushima disaster in 2011, the NGOs mainly discussed issues on nuclear security, the procedures of emergency planning, informing people of nuclear risks, and health issues (DECC, 2011c). According to the BEIS (2020e, para. 1), "The purpose of the Forum is to provide a regular opportunity for representatives of the interested Non-Governmental Organisations to have direct access to government policy and engage with decision-makers including ministers".

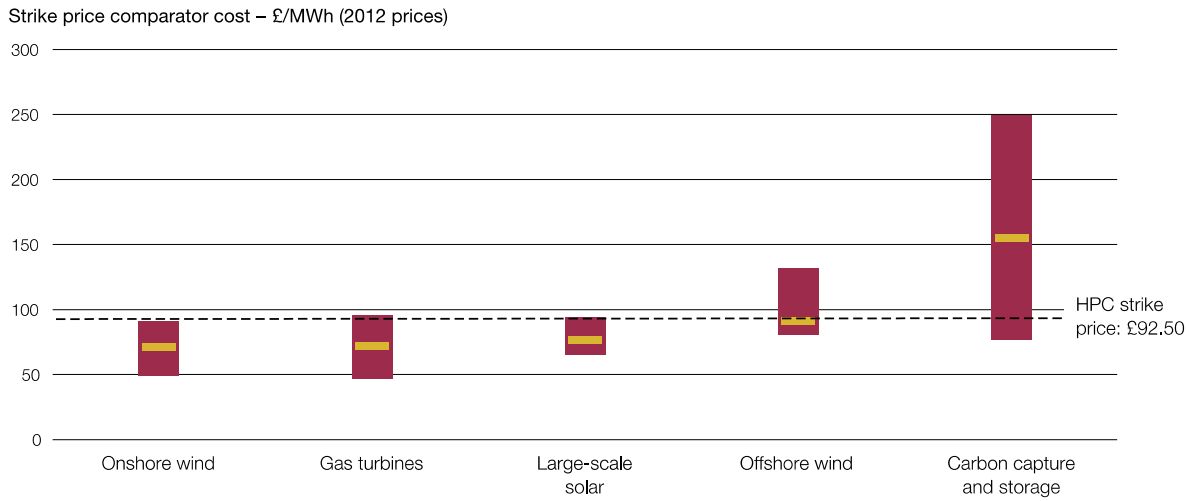
As can be seen, the discussion in the forums revealed two distinct platforms to communicate knowledge and expertise in the policy area of nuclear power. This leads us to ask questions: what can the forums tell us about policy models as reflected in multiple-elitism and neo-pluralism, and what evidence do we have for either of these tendencies at the level of impact on government policy? Here, the nuclear industry's discussions with the government at the NIC included features from the multiple-

elitist model of sub-government and the neo-pluralist model of issue networks. Firstly, from a multiple-elitist view, the NIC members shared an interest in nuclear power. We can recall from Table 8.2 above that the members belonged to the nuclear industry, which aimed to improve policies about nuclear power. In this context, the BEIS (no date, quoted in NIC, 2019, para. 8) claimed, "Discussions with industry and government had shown a degree of consensus that improved ways of working should be explored, in particular with a view to improving the UK's performance". Secondly, the same table shows that anti-nuclear power groups, who are a countervailing force against nuclear power, were not members of the NIC. Instead, their views were communicated in a separate forum, namely the Nuclear Non-Organisational Forum.

Third, as we have seen, political and financial support was provided to nuclear power to facilitate investment in the technology through strike price and loans. Dr William Blyth of Oxford Energy Associates told the Environment Audit (2013), "Despite the Ministerial announcements as recently as October 2010 that there would be no subsidies for the nuclear new plant, it is apparent that several subsidies will, in fact, be in place, some explicit, some implicit, driven in large part by the rapid escalation in the estimates of capital costs for building new nuclear plants". This gave nuclear technology a privileged position. The Green Party MP, Caroline Lucas (quoted in Stop Hinkley, 2011b, p 1), commented, "Companies such as the big six energy firms do not lend their staff to the government for nothing; they expect a certain degree of influence, insider knowledge, and preferential treatment in return".

Whilst multiple-elitism expects that the privileged position of business groups would allow them to dominate a policy within a closed system of sub-government, the theory then clarifies that the co-optation of business groups in a policy area would lead to economic decay (see chapter 4). This was partly reflected in Hinkley Point C's costs. Hinkley Point C was expected to cost EDF £18 billion with a strike price of £92.52/MWh, making nuclear power an expensive option (See Figure 8.3 below). Moreover, the proposed Regulated Assets Based (RAB) model for future plants would expect consumers to pay high energy bills while power stations are being built. Although this model would help raise funds for nuclear constructions, environmental NGOs suggested that the new nuclear was unlikely to be value for money given the falling price of renewables and that RAB model for nuclear would provide preferential treatment to nuclear over renewables and affect market competitiveness (BEIS, 2019j, p 7).

Figure 8. 3: Expected strike price comparator costs for alternative large-scale power resources in the mid-2020s



The figure shows that the onshore wind strike price is expected to be 23% (£71/MWh in medium case) cheaper than Hinkley Point C by mid-2020. Also, gas turbines, large-scale solar and offshore wind are expected to be 22% (£72/MWh in medium case), 17% (£ 77/MWh in medium case), and 2% (£91/MWh in medium case) cheaper than Hinkley Point C respectively. This could expose taxpayers to losses if the government share the project's risks (National Audit Office, 2017, p 30, fig. 6).

The meetings between the energy companies and the government have also revealed features from the neo-pluralist model, such as the issue network. As we have seen, the issue network includes politicians, journalists, interest groups and academics to discuss policies. In this context, the academic community was present at the NIC to share expertise and knowledge. The BEIS (2017d, p 1) explained: "The NIC will work with the wider industry and the academic/research community to underpin those actions needed to realise industry and government's long-term vision for the sector". Further, although the members of the NIC gathered to advocate for the role of nuclear power technology, the members worked to improve the sector by providing knowledge and information. The BEIS clarified that the members of the NIC were sharing their expertise rather than their organisations' interest. According to the BEIS (2017d, p 1), "Members have been selected to provide a breadth of knowledge and experience and will be expected to speak for their areas of expertise, rather than companies or organisations". Meanwhile, information was not dominated by elites in the NIC. According to the DECC (2011d, p 3), "The Government should be sharing information as much as possible, although some information has security implications, but, where possible would err on side of publication as sensitive information can be enacted from reports".

In terms of the anti-nuclear groups' meetings with the government at the Nuclear Non-Organisation Forum, the interactions revealed mostly features of issue networks. The forum expressed distinct views on nuclear power. The government supported the expansion of nuclear power meanwhile anti-nuclear campaign groups and environmental organisations opposed it. The NGOs questioned why nuclear was part of the energy mix and argued that the future energy supply could be achieved without new nuclear plants (DECC, 2013g, p 3). They backed their argument with papers, such as '2030 Non-Nuclear UK

electricity system' and an accompanying 'Report on Non-nuclear electricity scenarios to 2030', which questioned the costs for generation, accuracy and reliability of the technologies and scenarios on handling nuclear wastes (DECC, 2013g, p 3). In the 2018 forum, the NGOs mentioned, "The support for renewables has been reduced leading to additional imports of gas for energy production" (BEIS, 2018d, para. 28).

The communication between the government and the NGOs also entailed sharing expertise and knowledge. In June 2013, the government set the Managing Radioactive Waste Storage (MRWS) as a framework to manage high activity radioactive waste through safe and secure geological storage. The NGOs were invited to a special workshop to share their suggestions and concerns about how the DECC should take forward the selection of sites for a geological disposal facility (GDF) (DECC, 2013h, p 1). The workshop took into account the possible issues that the participants could agree on to improve the process of site selection. As such, key NGOs participated in the workshop, most notably Greenpeace, Blackwater Against New Nuclear Group (BANNG), Communities Against Nuclear Expansion (CANE), National Trust, and West Cumbria & North Lakes Friends of the Earth.

Moreover, as we have seen, groups at the Nuclear Non-Organisation Forum checked the policies and decisions on nuclear power discussed in the NIC, most notably Hinkley Point C. They called on the government to share information about the costs of the project with the public. For McFarland (2004, p 48), "[In a neo-pluralist system] power of producer groups (business groups or professional groups) was often checked by the power of the countervailing group such as citizen groups or business groups with different interest" (my italics).

However, in terms of policy outcomes, despite the involvement of the local groups and environmental organisations in the nuclear forum and their protest outside the forum (see section above), their goal of blocking the expansion of nuclear power new builds was not achieved. According to the NGO representative Sean Morris (quoted in BEIS, 2017e, p3) "NGOs are frequently asked about their opinions, those opinions are not acted on". In an interview with the Scottish Green Member of the Scottish Parliament, Mark Ruskell (2020), commented:

> "The UK government made active price support for nuclear power. (…) There is clear government intervention at the UK level. It is clear that the industries are being supported by the government and I don't see the views of mainstream NGOs who are against nuclear power being taken into account there" (my italics).

Here, McFarland (2004, p 51) concludes that "Issue network is not a panacea to the problems of plural elitism [multiple-elitism] (…) top policymakers may ignore issue networks, out of either principle or ideology depending on one's point of view" (my italics). The ideology behind supporting nuclear power was reflected in the DECC's (2015b) claims at the Nuclear Non-Organisation Forum 2015 that

“The government policy is that nuclear power should be part of the energy mix in the future, alongside renewables and clean coal and gas. The former Secretary of State for Energy and Climate Change, Ed Davey (quoted in DECC, 2015b), added: “If we do nothing, the light will go out, and the cost of electricity for our homes and our businesses will soar because it will become a scarce resource. We also know that we need to decarbonise the electricity and the longer we delay those decisions, the more painful and expensive they will be”.

Overall, the nuclear power forums and policy outcomes revealed features of multiple-elitism and neo-pluralism. This was evident from the existence of a network of actors discussing policies and mechanisms to improve policy development in nuclear power. More specifically, political and financial support for the technology gave the technology a privileged position. This multiple-elite driven tendency, however, was challenged by the presence of countervailing power. Despite the government’s support for the technology, the countervailing power checked the policies and information about the technology and campaigned against the technology. Yet, the views of the countervailing power to block the expansion of nuclear power did not influence the government’s policy options.

8.3. Conclusion

Nuclear power policies in the UK have witnessed a continuity since the decision of the Labour government to revive the nuclear power technology. The sector was also marked by reforms and changes in terms of policies that aimed at improving the sector under the Coalition government and later by the successive Conservative governments. The decision to revive nuclear power was supported by the government because of an estimated electricity shortage linked to the electricity generation capacity. This estimation was based on the fact that coal and nuclear power plants were ageing in the next few years. Additionally, alongside the electricity supply problem, there was the issue of climate change, which highlighted the need for alternative sources to fossil fuels, to achieve energy security and low carbon emissions. Hence, this perspective was advanced by the policy-makers with financial commitments and policies to facilitate the process of nuclear renaissance.

Nevertheless, the nuclear case has been framed in terms of safety, security, and costs. On the one hand, this was enhanced by the anti-nuclear activists who opposed the nuclear option in the energy mix. They aimed to push for more regulations on safety and conservation. Thus, they followed tactics to gain a powerful status and have access to the government. On the other hand, the government pushed for the nuclear option in the electricity sector and excluded it from receiving public subsidies. This required agreements to be settled with nuclear power companies, who called for sharing costs of risks with the government.

Hence, the representation of groups in the nuclear agenda can be explained from a combination of perspectives linked to neo-pluralism and multiple-elitism. The policy outcomes revealed the privileged

position of nuclear industry, with political and financial support for the technology overriding the views of the anti-nuclear groups. Despite this conclusion, anti-nuclear groups were important in the issue networks in checking energy companies and the government's decisions and agreements. Having explored the nuclear power sector, now it is worth moving on to renewable energy to understand the policy outcomes in that sector.

9. **Chapter 9**: Case study three: Analysing renewable energy policies (solar and wind energy)

As we have seen, following the Kyoto negotiations in 1997, concerns over climate change escalated in the political arena. It was recognised that global warming required urgent attention and the energy policies renewed their emphasis on this issue, especially following the Climate Change Act in 2008 and the EU Directives 2009. The CCA set a target for the year 2050, to reduce 80% of greenhouse emissions lower than the 1990 baseline, and the EU Directives required 20% of electricity generation and of energy consumption from renewables by 2020. To achieve the CCA target, the government set five carbon budgets to hit the 2050 target (see chapter 6). Meanwhile, to reach the EU's binding targets, the UK set a national target that required 15% of energy from renewables by 2020. Here, the Labour government, which had already introduced the Renewable Obligations (RO) in 2002 to increase the share of renewables in the energy mix (see chapter 2), began to reconsider the scheme in the light of the CCA and the EU's binding targets.

The government established the Feed-in-Tariff system in 2008 to accelerate the move to renewable energy in the UK. The FiT is a scheme that was introduced under the Labour government and came into action under the Coalition government. The scheme was designed to increase the share of renewables in the energy mix through small-scale renewable projects. Those policies implemented under the Labour government to reduce emissions from renewables were marked by continuity and change since 2010. While the Coalition government established the Electricity Market Reform (EMR) in 2012, it became evident that the Contracts for Difference (CfD) would be the main mechanism to support renewable energy generation. In this vein, the RO continued to operate for the existing generations until 2037. However, as seen below, the government announced changes in the FiT and the RO schemes for specific technologies. The government FiT was cut by 87% in solar photovoltaic in 2015. The RO was also closed a year earlier than planned for new large solar photovoltaic and Onshore wind projects that generate more than 5MW in 2015. These policy changes created political conflicts between the government, environmental NGOs and the renewable energy industry.

While climate change requires several low carbon energy options to reduce its effects, my focus in this chapter is to explore the expansion of renewables. Here, I look at the implementation of renewable energy policies since 2010, highlighting developments and reforms since the successive Labour governments. I aim to study the continuity and change of renewable energy policies. The focus of this case study is the development of solar and wind power in the UK since 2010. Both technologies raised tensions due to the conflicting interests of the government and the pressure groups. Hence, I attempt to answer the following questions: what are the renewable policies introduced by the government since 2010? Did they mark change or continuity? Here, I further aim to explore the policy process through the theories of multiple-elitism and neo-pluralism. I raise these questions: how did environmental and business groups represent their interests? Did they achieve outcomes around solar and wind power? And why?

9.1. Renewable energy policies under the Conservatives since 2010

Due to concerns over climate change, the energy policies for the electricity sector were framed around sustainable energy. The sector was fundamentally concerned about the security of supply, affordability, and carbon content. In this regard, renewable energy became prominent to achieve sustainability at low costs (Kumar 2019, interview). In this vein, electricity generation from renewables increased significantly in the UK since 2000. For example, electricity generation from all renewables accounted for 2.8% of UK electricity generation in 2000 (Department of Trade and Industry, 2002, para. 7.12). The largest contribution is from biofuels (82.3%) and large-scale hydro (14%) (Department of Trade and Industry, 2002, chart 7.1). In 2018, renewable sources of energy comprised 33% of the total electricity generation (See Figure 9.1 below). This includes a significant contribution of solar photovoltaic (12%), offshore wind (28%) and onshore wind (5.2%).

Figure 9. 1 : Renewable electricity generation by different sources (2000-2018)

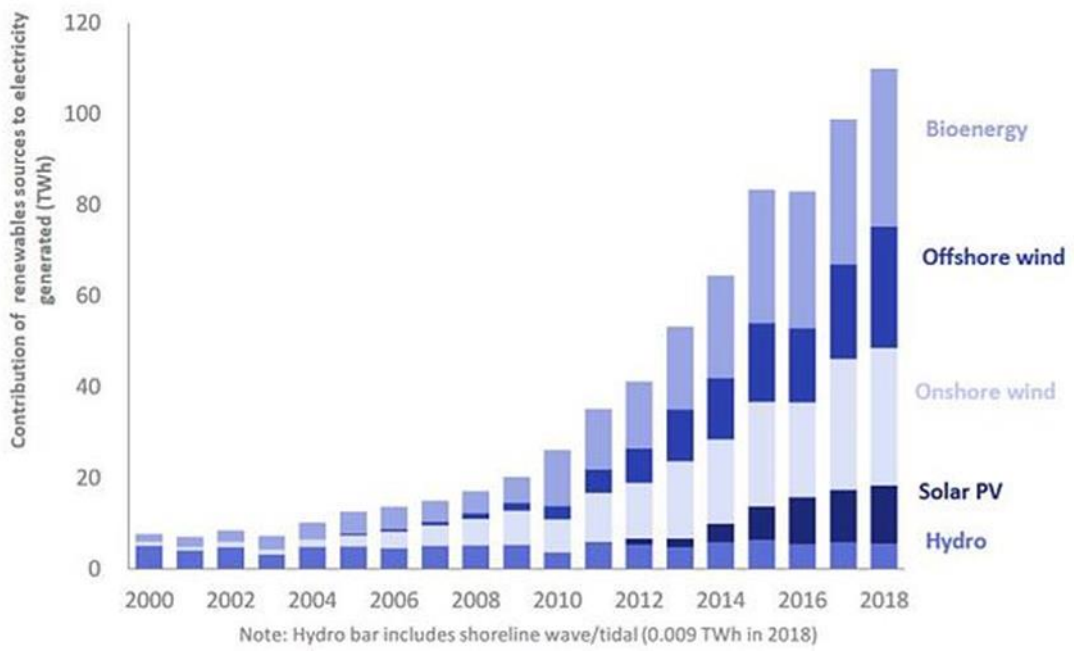


Figure 9.1 shows electricity generation from renewables increased significantly since 2000. In 2018, renewable sources of energy reached 33% of the total electricity generation. The electricity generated from renewables accounted for 11% (110 TWh) of the total energy consumption in 2018. Offshore wind and onshore wind generation increased by 28% and 5.2% respectively. Meanwhile, solar PV grew by 12% (BEIS 2019k, p 7).

I aim to look at the policies on renewables under the Coalition government and successive Conservative governments between 2010 and 2020, to explore whether they show continuity or change. In an attempt to answer these questions, I analysed policy documents produced by the DECC and the BEIS during that period. These are: DECC (2012e); DECC (2012f); DECC (2012g); DECC (2012h) DECC (2013i); DECC (2013j); DECC (2014e); DECC (2014f); DECC (2014g); DECC (2014h); BEIS (2020e); BEIS (2021c) and chapter 15 of the Energy Act 2016 (see list of references and Appendix E, p

261 below). Alongside these policy documents, elite interviews were also conducted and analysed to understand whether the policies enacted during the period reflected aspects of change or continuity and the conflict of interests between renewable energy companies, environmental NGOs and the government (see below). The interviews captured the views of important people from major organisations such as the Solar Trade Association, Energy UK, Renewable UK and the environmental NGOs Greenpeace, and Green Alliance. Overall, the policies in the renewable energy sector were marked by continuity and change following the establishment of the Electricity Market Reform under the coalition government in 2012. However, before we explore continuity and change of renewable energy policies since 2010, it is worth revisiting some of the Labour government's policies that attempted to improve the contribution of renewable energy in the electricity sector discussed in chapter 2.

As seen in chapter 2, the Labour government had intended to generate 10% of electricity supply from renewables by 2010. This proposal was reflected in the New & Renewable Energy Consultation Paper published in 1999, which also stressed the need for a market-based instrument, notably the Renewable Obligation to achieve the 10% renewable electricity target (Foxon and Pearson, 2007, p 1540). Hence, the Renewable Obligations scheme was established in 2002, to support-large scale renewable electricity generation. The scheme provided incentives to increase the proportion of electricity generated from renewables annually. The level of the obligation expanded annually from 3% in 2002-03 to 10.4% in 2010-11, which was due to remain at that level until 2025-26 (Foxon and Pearson, 2007, p 1541). These obligations were to be met under the Renewable Obligation Certificates (ROCs) to be presented in three forms: either by generating electricity from renewable sources, or by buying an equivalent amount of ROCs in the market, or by paying 3p/KWh (by passing the price on to consumers to pay additional costs to meet the obligation) (Foxon and Pearson, 2007, p 1541). The RO increased the share of renewables significantly from 2% in 2001 to 4.4% in 2006 (Smith, 2008, p 7). However, the Labour government announced reforms for the RO in 2003, following claims of the renewable generators that there was no firm commitment to increase the level of RO beyond 2010 (Foxon and Pearson, 2007, p 1541). In 2003, the Labour government published a White Paper on Energy Policy, which sought to increase electricity generation from renewable energy to 15% between 2015-2016, to reduce the risk of investment in the RO (Mitchell and Connor, 2004, p 1940).

However, this raised another issue, as clarified in the consultation of the Renewable Energy Strategy (RES) launched in 2008. The consultation stated electricity production from renewables had to increase to 30-35% under the RO by 2020 (Smith, 2008, p 4). The RES also estimated that only 14% of electricity would be generated from renewables between 2015 and 2020 (Smith 2008, p 8). Hence, the UK would be unlikely to achieve the EU 2020 target (Smith, 2008, p 8). As seen in chapter 2, the EU target was set at 20% of energy consumption and 20% of electricity generation from renewables by 2020. Therefore, in 2007, the UK pledged to generate 15% of energy from renewables by 2020 under

the EU binding target. This target came into force in 2009, following the publication of the Renewable Energy Strategy (RES) (DECC, 2009b, p 4).

The RES saw that it would be challenging for the UK to achieve 15% of energy from renewables for heat, transport, and electricity. This would require 29% of electricity generation from renewable energy to achieve the target (DECC, 2010b, p 2). As it became clear that the RO scheme would not be eligible for a target of this scale, the government proposed a new scheme called the Feed-in Tariffs (FiTs) (Smith, 2008, p 8).

In 2008, the Renewable Electricity Financial Incentives (REFI) consultation was launched to seek views on how to provide financial incentives to the mechanisms of RO and Feed-in-Tariffs (FiTs) (DECC, 2010b). The FiTs was already introduced in the Energy Act in 2008 to be implemented in April 2010. The FiTs applied to small businesses and provided incentivised renewable electricity installations with a maximum capacity of 5 MW[91] (DECC, 2013i, p 55). In this regard, the consultation proposed several reforms to help achieve the challenging 2020 target. The REFI confirmed the proposal of the RES and added proposals such as a 20-year time limit for support of the RO, an extension of the lifetime of the RO between 2027-2037, transitioning microgeneration from RO to FiT, and presenting the proportion supplied in the number of ROCs rather than percentages of the number of MWh of electricity supplied (DECC, 2013i, p 55). The number of ROCs will be presented under the headroom process in which the size of the Obligation would be lifted between 8% to 10% above the expected generation in the Obligation over four years (DECC, 2010b, p 2). Moreover, the REFI called for increasing the share of offshore wind through banding ROCs for offshore wind projects with accredited wind turbine contracts from 1.5 to 2 ROCs/MWh (DECC, 2010b, p 3).

Since the RES and REFI were trying to develop the existing mechanism, it was expected that their proposals would be reviewed and applied under the Coalition government in 2010. The reforms proposed for the RO scheme under the Labour government continued under the Coalition government. In this regard, the amendment of the Renewable Obligation was passed in the Renewable Obligation (Amendment) Order 2010. According to the DECC (2010b, p1), "This Order introduces changes to extend and modify the RO, helping drive greater deployment of renewable energy". The Order accepted the recommendations proposed by the REFI, except for the proposal of setting headroom of 8% and 10% in four years and offshore wind projects proposals with government authorised wind turbine contracts. Minor amendments were made to these proposals. The Order mentioned that it would move the headroom to 10% directly in 2011/2012 rather than in four years (DECC, 2010b, p 9). As for offshore wind projects, banding 2 ROCs/MWh would be eligible for all wind projects between 2010 and 2014

[91] Under FiT, the electricity generator will pay a fixed rate (tariff) for each unit (kwh) of electricity generated. This depends on the type of technology and the size of the installation. Besides, all technologies receive a further fixed rate for each unit of electricity supplied to the grid. Here, electricity generated on-site will reduce the amount of electricity required from the grid leading to reduced energy bills (Cherrington *et al*., 2013, p 422).

(DECC, 2010b, p 9). Further, the Order confirmed that the microgeneration, which was operating under the RO would remain under the scheme as the FiT applied to the new generations (DECC, 2010b, p 9). Consequently, between 2010 and 2011, the FiT started operating as a major scheme to support small scale electricity generation. The FiT generated 68,559.4 MWh of electricity between 2010 and 2011, from 30,201 installations dominated by solar photovoltaic with 77.7 MW capacity followed by wind technology with 18.9 MW capacity (Ofgem, 2011, pp 13-14).

While continuity is clearly evident in the acceptance of the RO scheme and the implementation of the FiT under the Coalition government, the renewable energy sector also experienced policy changes over the decade. The government decided to open CfD for renewables in 2014. The RO for the existing projects would remain in operation under the 20-year lifespan until 2037 (DECC, 2014d). This meant that all the new generations would be operating under the CfD from 2017. As we have seen, the CfD operate under the Electricity Market Reform, which introduced the concept of the strike price to reduce the risks of investment to the generators. Hence, payment would be made to generators depending on the difference between the reference price and the sale of electricity (see chapter 6). As for the other scheme, Feed-in Tariffs, in 2018, the government announced the closure of FiTs from 1 April 2019 for new applicants. This decision was confirmed in the Feed-in-Tariffs (Closure, etc.) Order 2018.

However, under these policy changes, specific technologies, notably solar photovoltaic and wind energy, experienced radical policy change at the level of subsidisation. Initially, in 2011, the Coalition government published a "Renewable Roadmap" to review renewable energy technologies. As such, the review considered several technologies, namely onshore and offshore wind, marine energy, biomass electricity and heat, and heat pumps (DECC, 2011e, p 7). Solar PV technology was later considered in the updated reviews of the Renewable Roadmap, in the versions published by the DECC 2012d, 2013j, and 2014f (see list of references below).

Solar photovoltaic was mentioned for the first time in the UK Renewable Energy Roadmap Update of 2012 (DECC, 2012e, p 4). The Roadmap mentioned that the costs of the solar PV installations fell by 50% between 2011 and 2012 (DECC, 2012d, p 4). For offshore wind, the costs were estimated to fall by a third by 2020 (DECC, 2012e p 4). The Roadmap also clarified that onshore wind capacity had increased since 2011 by 1.3 GW (DECC, 2012e, p 11). Evidently, the costs of the technologies were expected to decrease, which required reducing the subsidies. The Roadmap concluded, "The Government is clear that as costs come down, the unit costs of renewable subsidies must also be reduced in order to minimise pressure on consumer bills" (DECC, 2012e, p 4). The Roadmap added:

> The uncertain nature of deployment across the portfolio of technologies [biomass electricity, offshore wind, onshore wind, marine energy, solar PV, biomass heat, ground source and source heat pump, and renewable transport] as well as their relative cost-effectiveness means that

> generation may end up at the high end of one technology's deployment range and therefore requiring less deployment of others (original italics). (DECC, 2012e, p 12).

In 2013, the Roadmap Update identified that renewables accounted for 15.5% of all electricity generated in 2012 (DECC, 2013j, p 4). Offshore wind was identified as an ideal technology in the UK as the country's strong wind resources would play a key role in achieving the 2020 target (DECC, 2013j, p 50). The technology was supported under the Electricity Market Reform (EMR) to deploy 16 GW by 2020 and 39 GW by 2030 (DECC, 2013j, p 50). In terms of onshore wind, in 2013, the government decided to cut the RO by 10% because the costs were falling (DECC, 2013j, p 44). This was a policy change from the measures implemented by the Labour government (DECC, 2013j, p 44). Here, the Planning Act 2008 was amended in terms of the compulsory pre-application and engagement of local communities for wind development of greater than 50MW and for onshore wind less than 50 MW (DECC, 2014e, p 8). The Act was amended according to the Localism Act 2011 and in the Town and Country Planning (Development, Management Procedure and Section 62A Applications) (England) (Amendment) Order 2013, which extended the compulsory pre-application consultation to all onshore wind developments in England of more than two turbines, or where the hub height exceeds 15 metres, which would be in effect until December 2020 (DECC, 2014e, p 8).

As for solar PV, the Roadmap confirmed the government's support for the technology would continue at all scales (DECC, 2013j, p 59). The Contracts for Difference's (CfD) support for renewables, particularly for the solar PV, was considered in the Roadmap Update of 2014, which ensured the need for the scheme to support the technology (DECC, 2014f, p 14). The CfD was introduced for solar companies competing for contracts for the first allocation round between 2014 and 2015.

The support for solar energy changed significantly under the Conservative government notably between 2015 and 2016. In 2015, the government decided to cut subsidies through the FiT, including for rooftop solar panels. The government believed that it would protect consumers' bills from the rising impacts of renewable energy subsidies. The government's proposal to cut 87% of subsidies was criticised by environmental groups such as Greenpeace and Friends of the Earth (Macalister, 2015). Friends of the Earth remarked that this undermined the government's credibility to deal with climate change and that it would be a massive blow to jobs. The Solar Trade Association[92] warned that around 6000 jobs would be lost (Macalister, 2015).

The FiT cuts led to widespread protests, including a court case filed by Prospect Law[93] and Friends of the Earth. The court case was successful and was backed by a High Court Judge. The DECC

[92] STA is a non-profit association representing the voice of the UK's solar industry. It provides analysis for governmental branches, NGOs, and the media. It also covers lobbying in the area of solar energy (STA, 2020).
[93] Prospect Law is a multidisciplinary organisation that provides legal advice in energy and infrastructure and conducts litigation at all levels at court (Prospect Law, 2020).

attempted to appeal, however, it was not permitted by the Supreme Court. The court concluded that the DECC proposal was unlawful (see below). Consequently, the government's approach towards cutting FiT by 87% was reduced to 64%, raising the PV price to 4.39p/KWh from the earlier proposed price of 1.63p/KWh (Elliott, 2019, p 161).

The government also blocked solar farm planning in 2014. Blocking of solar farm was justified on the grounds that land was needed for agricultural crops as the solar farms covered around 100 hectares and 1000 ground-based solar farms were expected by the end of the decade (Elliott, 2019, p 158). The block on solar farms was also justified by the need to reduce consumers' energy bills. Hence, in 2015 new solar PV capacity above 5 MW was closed (Elliott, 2019, p 159). In the following year, new solar PV at 5MW or less was also cut from the RO (Ares and Grimwood, 2016, p 8). This decision was introduced in the Renewable Obligation Closure Order 2014, Renewable Obligation Closure (Amendment) 2015 and the Renewable Obligation Closure Etc. (Amendment) 2016 which announced that new large solar projects were due to close by 31st March 2015, and small new solar PV projects on 31st March 2016. These changes were viewed with scepticism by businesses. For example, during an interview with the Director of Strategy and Corporate Affairs at EDF, Paul Spence (2019), clarified:

> As the cycle changes, political parties change and the topic of concern changes. The next party who takes control changes the direction and changes the regulations and that's the worst outcome for businesses. In the last government [Coalition government], we saw some fairly unexpected changes in the tariffs offered for solar panels and that was not helpful when that happened. (my italics).

Nevertheless, support for offshore wind continued under the Coalition government. In 2014, in the first round of the CfD, the government awarded 5 offshore wind farms 15-year CfD at a strike price of £140-150/MWh (National Audit Office, 2014, p14, fig. 1). In 2017, in the second CfD round (2022-2023), the government sought a price cut for offshore wind by reducing the strike price by 50% in two offshore wind projects that were offered a strike price of £57.5/MW (Elliott, 2019, p 156).

The technology was further explored under the CfD scheme in the consultations that were launched in 2017[94], 2018[95], and 2020[96] (see Table 8.1 below). The consultations proposed that the scheme would continue till 2030, by which time offshore wind would operate to deliver 30 GW by 2030 to help achieve the net-zero target by 2050 (BEIS, 2020f, p 16). The government was aiming to bring offshore wind costs down by providing a separate strike price and thereby enabling the technology to

[94] Proposed changes to the Contract for Differences (CfDs) scheme 2017.
[95] Contracts for Differences (CfD): Proposed amendments to the contract 2018.
[96] The Contracts for Differences for Low Carbon Electricity Generation: Consultation on the proposed amendment to the scheme 2020.

compete for auctions in Pot 2[97] projects (BEIS, 2020f, p 16). Further, in 2017, offshore wind was included in the Clean Growth Strategy to be provided with financial support to achieve 10 gigawatts of new capacity in 2020 (BEIS, 2017a, p 24). As for onshore wind, in the first CfD round in 2015, the technology was offered a strike price ranging from £79.23 to £82.50/MWh (Elliott, 2019, p 156). Onshore wind, however, was not supported by the government, thus making it hard for these projects to progress (Elliott, 2019, p 156).

Whilst offshore wind enjoyed a favoured position in the energy mix, onshore wind marked a policy shift in terms of support and subsidisation. Reflecting over a decade of opposition from local communities, onshore wind faced opposition from the Tory MPs. A total of 101 MPs signed a letter in 2012 calling on David Cameron to slow down onshore wind planning (Jowit, 2012b). They believed that onshore wind was forcing consumers to pay for its expansion through taxpayer subsidy (see below). Hence, in 2013, the Communities and Local Government Secretary, Eric Pickles, turned down applications to build 19 onshore wind farms (Elliott, 2019, p 157). In 2015, the new Conservative government closed the RO for new onshore wind projects generating capacity above 5MW from April 2016, a year earlier than expected. This decision was brought into effect in the Energy Act 2016. The government also ended CfD for the technology, which was already confirmed in 2015 in a statement of the then Secretary of State Amber Rudd (Rudd, 2015). Here, the government blocked CfD for onshore wind for the auction round of 2017 and focused only on Pot 2 technologies (Elliott, 2019, p 157). The block to the onshore wind might cost consumers £0.5 billion (Elliott, 2019, p 157). In 2019, onshore wind was back on the agenda under the Johnson government. It marked an important reform by the Conservative government based on the need to meet a net-zero carbon target (see below).

Overall, the Labour government policies which promoted renewable energy through the RO and FiT schemes were both continued and changed under successive conservative governments. Although the coalition government continued the application of the RO and FiT, CfD was introduced for new applications following the establishment of the Electricity Market Reforms (see Table 9.1 below). Another change in the renewable energy policy was the cutting of subsidies for onshore wind and solar PV under the successive Conservative governments. This created political conflict as environmental groups and renewable energy companies opposed the government's decision. Let us explore these developments in more detail below.

Table 9. 1: Government policies for renewable energy since 2002

[97] The renewable CfD split renewable technologies under Pot 1 and Pot 2. Pot 1 included the established technologies, which compete based on progress in cost reduction, such as onshore wind, solar PV, CHP, hydro, landfill gas and sewage gas (Elliot 2019, p 147). Pot 2 technologies, however, required long-term cost reduction and cheap deployment. As such, the Pot 2 category involved offshore wind, wave, tidal energy, advanced conversion (biomass) technologies, and dedicated biomass with CHP and geothermal (Elliot, 2019, p 147).

New Labour government	Continuity under coalition and successive governments	Change under Coalition government and successive Conservative governments
Renewable Obligation (RO) 2002 Renewable Energy Strategy 2008 Renewable Energy Strategy 2009 Feed-in-Tariffs (Energy Act 2008)	Feed-in-Tariffs (Energy Act 2008) Renewable Obligation (Amendment) Order 2010	Renewable Energy Road Map 2011 The Localism Act 2011 Electricity Market Reform 2012 Renewable Energy Roadmap Update 2012 Renewable Energy Roadmap Update 2013 The Town and Country Planning (Development, Management Procedure and Section 62A Applications) (England) (Amendment) Order 2013 UK Solar PV Strategy Part2: Delivering a Brighter Future 2014 Renewable Obligations (Amendment) Order 2014 Renewable Obligations Closure Order 2014 Renewable Obligations Closure (Amendment) Order 2015 Renewable Obligations Closure Etc. (Amendment) Order 2016. The Energy Act 2016 Clean Growth Strategy 2017 (for Offshore wind). Proposed changes to the Contracts for Difference (CfD) scheme 2017

		Feed-in-Tariffs (Closure, etc.) Order 2018. Contracts for Difference (CfD): Proposed amendments to the contract 2018 Contracts for Difference for Low Carbon Electricity Generation: Consultation on the proposed amendment to the scheme 2020

The Table shows the main initiatives for renewable energy of the Labour, the Coalition, and the Conservative administrations. (Collected by Author).

9.2. Interest groups' mobilisation for renewable energy policies

As we have seen, while the RO would continue to operate for the existing renewable energy projects until 2037, in 2017 CfD became the main mechanism for the new installations replacing the RO (see DECC, 2014d). This transition in renewable energy policies also included cutting subsidies for onshore wind and solar PV in 2015. The shift in policies of solar PV and wind became highly politicised (Elliott, 2019, p 164). In this context, in the analysis of the renewable energy sector in the UK, I have focused more on offshore and onshore wind and solar power policies as they appeared to be central issues raised in the 13 semi-structured interviews informing this chapter. These policies seemed to stir the most political conflicts in the sector despite the controversies surrounding the other main option, biomass[98]. While solar and onshore wind policy areas were surrounded with policy changes under the successive Conservative government, there are different conflicting interests that should be highlighted notably the interest of the government, businesses, and environmental groups. These interests can be summarised in terms of three main themes: 1) conflicting interests in the policy-making process in solar and onshore wind power policies, 2) pushing the agenda towards policy change leading to high politics, and 3) policy outcomes as a result of government officials advocating for solar and onshore wind policies. This raised fundamental questions such as: What are the strategies adopted by interest groups to articulate their concerns and achieve their outcomes? Were they successful in achieving policy outcomes? If so/not why? To what extent do the developments and conflicts in renewables energy policy considered in this chapter policy reflect the theories of neo-pluralism and/or multiple-elitism?

[98] In biomass technology, some of the large plants used wood pellets imported from North America, which raised environmental objections. This approach was criticised for harming what is known as the carbon sink. The government, however, was supportive of this option as long as it was properly controlled (Elliott, 2019, p 163).

9.2.1.Understanding reforms in the solar energy sector (2010-2015)

Significantly, the FiT scheme was launched in 2010, the costs of solar PV installations had fallen by at least 30% in Autumn 2011 (DECC, 2012f, p 6). The falling costs in the installations would significantly result in a rise in electricity generation; in effect, the returns from the solar PV would be able to back its generation without the need for tariff support (DECC, 2012f, p 8). Hence, the schemes that were introduced by the Labour government, notably the RO and FiT were subject to reforms and regulations under the Coalition government. In this vein, in 2011, the FiT scheme was reviewed, provoking the need to reduce the tariffs provided for solar PV projects. Therefore, the government proposed to cut the tariffs by 87%.1

In 2011, the Energy Minister, Greg Barker, delivered a speech on the FiT for solar PV, claiming the need for reforms. Barker (2011) said: "lower tariffs would mean uptake with FiTs support could continue to grow sustainably, and the micro gen sector can be the engine of a green economy recovery". The Secretary of State for Energy and Climate Change, Chris Huhne (2011c), argued:

> The prospect of largescale solar PV projects under FiTs, which was not fully anticipated in the original scheme and could if left unchecked, take a disproportionate amount of available funding or even break the cap on total funding.

The reduction was provocative as it reduced the tariff from 43.3p/kWh to 21p/kWh (Elliott 2019, p 160), putting around 25,000 jobs in Britain's new solar industry at risk (Vaughan, Harvey and Gersmann, 2011). The reduction provoked the opposition of both environmental NGOs and business interest groups. Together, environmental NGOs and renewable energy companies challenged the government's decision because they believed that would hit employment and slow down the progress towards reducing emissions. The Special Advisor of Energy UK, Barbara Vest (2020) commented in an interview:

> I think that was really a short-term vision. I think that everyone has been blindsided by the rapid progress of the solar sector (…) there were hundreds and thousands of people that lost their jobs because the Feed-in-Tariff was removed and yet solar is the cleanest of all technologies (my italics).

Since this sparked a conflict in the policy area, it is worth asking: how interest groups articulated their interests and what outcomes were achieved. Following the decision of the government to reduce the FiT, in 2011, the renewable industry and environmental NGOs lobbied the government using mostly indirect strategies and tactics. As seen in chapter 7, indirect strategies are often applied to draw wider attention to an issue through grassroots movements and campaigns. The groups launched a campaign called "Cut don't kill". The campaign was led by a coalition of environmental NGOs, notably Friends

of the Earth, and solar companies, bringing together 500 solar industry workers (Vickytreen, 2011). The campaign called on its members to send letters and emails to their local MPs against the proposed change (Vickytreen, 2011); and in November 2011, the solar industry and the environmental campaigners marched on Westminster bridge, calling on the government to abandon the FiT cut. The campaigners walked to Downing Street and met with the MPs on the same day to articulate their arguments. They also claimed that they would present a petition at a later stage in the campaign (Vickytreen, 2011). The protest was supported by MPs such as Caroline Lucas, Caroline Flint, and Alan Simpson.

Meanwhile, there was a judicial review[99] led by Friends of the Earth; the organisation Prospect Law; the newly formed solar companies, HomeSun and Solar Century; the Solar Trade Association and West Community Energy. The DECC was represented by Greg Barker, the Minister of State for Climate Change; Moira Wallace, Permanent Secretary at DECC; and Simon Verily, Director General at DECC (Vickytreen, 2011). They were also joined by officials from the Treasury, notably the Economic Secretary of Treasury, Chloe Smith, and the Director-General, Energy, Environment and Agriculture, Jonathan Mills.

Following the judicial review against the FiT cut, the DECC's decision was declared unlawful by the court. The DECC attempted to challenge the decision leading to a Court Appeal. It failed to obtain permission from the High Court to appeal the verdict. The Campaigners believed that it was pressure inside the government that forced the cut in the FiT. They accused the DECC of being pressured by George Osborne and the Treasury to cut the one scheme that gives households control over their rising energy bills (Carrington, 2011b). Greenpeace saw that the government cut FiT for solar and instead allowed the operation of Hinkley Point C, which would require four years' worth of subsidies of the whole solar sector in just one month (Macalister, 2015).

Let us consider these developments from a theoretical point of view. The coalition between the environmental NGOs and business groups formed a countervailing power that checked the decision-making in the solar energy policy area and pushed for a change. As noted in chapter 4, a countervailing power can include either business interest groups, environmental NGOs, or both groups seeking change in a policy area. The idea of countervailing power contradicts multiple-elitism, in which state agencies are controlled by producer groups. More precisely, they form a sub-government to influence the government's decision and capture a specific public area (McFarland 2004, p 47). The countervailing power in this context checks and enhances the effectiveness of a public policy.

The judicial review led by Friends of the Earth and the solar industry challenged the decision-making and thereby sought policy reform. Their countervailing power was activated through the court

[99] A judicial review is often used to declare government decisions as unlawful. It is a court case used to challenge a government body when they perform a public function. The government's decision will be declared unlawful, if the judicial review is successful and another decision will have to be made (BEIS, 2021c).

case. They also treated the decision of cutting FiTs as a civil rights issue because businesses claimed it was a violation of the Human Rights Act 1998. They claimed damages from the government due to commercial losses of a combined value of £200 million (The Department of Energy and Climate Change v. Beyer Group PLC and others, 2015, para. 87). They called the government to rectify the damage caused to solar PV businesses by unlawful policy changes announced by the Energy Minister, Greg Barker, in 2011. In this regard, the judicial process was used to gain countervailing power in an issue that was treated as a violation of civil rights. For McFarland (2004, p 142), interest groups file lawsuits to get the judiciary to frame a policy as a legal issue to obtain countervailing power. In this context, the Hon. Mr Justice Coulson, the High Court judge (quoted in the Department of Energy and Climate Change v. Beyer Group PLC and others, 2015, para. 104), argued:

> Although the entitlement, to damages, will ultimately depend on the facts, as a matter of general principle, the claimants have demonstrated an entitlement to damages assessed by reference to the loss of those possessions for which recovery is permissible.

The government consultation of cutting FiT launched in 2011 and 2012 also played a role in creating an opportunity for the countervailing power to articulate its concerns. The government proposed a reduction in FiT for solar PV in a consultation held in March 2011 and a second consultation in October 2012, notably during the government's appeal (DECC, 2012g, p 4). The DECC revealed in the second consultation that 81% of participants disagreed with solar FiT reduction (DECC, 2012g, p 5). Such consultation opportunities are significant for the industry's insiders. The Policy Manager at STA, Cameron Witten (2020), commented in an interview:

> I think there is a good amount of opportunity for stakeholders to weigh in on issues that matter to them. Obviously, it is a useful opportunity for any trade body or NGO to feed into policy development. Not all consultations are created equal, some are easy for sort of the average members of the public to engage with. And some that are hugely complex that it creates barriers to engage with for anyone who is not already an expert on that policy which is understandable when it comes to complex things like energy policy but at the same time, there are decisions that affect not just our industry and our stakeholders but all the stakeholders across the board.

Overall, the reform of FiTs in the Solar PV policy was considered a victory for interest groups. But how can we confirm whether developments in this policy area are better understood by neo-pluralism than by multiple-elitism? Neo-pluralism provides an accurate interpretation of this area by highlighting four issues that should be considered. First, information circulation is a significant concept

of neo-pluralism and multiple-elitism. As seen, elites block information to misinform the general public in multiple-elitism (see chapter 4). In the FiT cut for solar PV, this was not the case. Information was circulated under the Impact Assessment (IA) in 2012. The IA was publicly accessible and presented a detailed explanation of the FiT reduction proposal and evidence justifying its reduction (see DECC, 2012g), which significantly reflects the neo-pluralist view of information circulation.

Second, the government committees, the Environment Audit Committee and the Climate Change Committee showed autonomy. Those reflect another concept linked to government institutions (see Table 5.1 above). On the one hand, neo-pluralism sees politicians as advocates for policies. On the other hand, government agencies are not blocked by elites as the countervailing power will enhance their autonomy. As opposed to the neo-pluralism view, multiple-elitism describes government agencies as controlled by the sub-government (see chapter 4). The autonomy of government institutions described in neo-pluralism is evident in the Environment Audit Committee and the Climate Change Committee's willingness to investigate the impact of the FiT cut on the renewable industry. Here, when the government proposed cutting FiT in 2011, the Committee called for evidence, inviting organisations and members of the public to an inquiry on the impact of the rate of FiT on green jobs and emissions' reduction (Environmental Audit Committee, 2011b).

Third, in terms of policy reforms, they were enacted for the benefit of the wider public and not for a particular group that funds the installation. This was reflected in Greg Barker's (2011) speech claiming, "We will look at streamlining the scheme to make sure it works for industry and consumers with a minimum of bureaucracy". Barker (2011) added, "We will make sure that the interests of bill-payers are protected by making sure the scheme is not open to abuse". The issue of the increasing bills was also highlighted in the Impact Assessment (IA), revealing that:

> Under the Do Nothing option, the cost to domestic bills of solar PV would have been around £18 in 2015 and £46 in 2020. Option 2 [FiT cut] would reduce this cost to around £8 in 2015 and £9 in 2020 (my italics). (DECC, 2012h, p 28).

This evidence opposes the assumption of multiple-elitism, which claims that sub-government elites seek to prevent the decision-makers from enforcing regulations for the benefit of the constituencies (McFarland, 2004, p 36). Neo-pluralism instead stipulates that policy reforms can benefit the wider interest as the policies are checked by the countervailing power (see chapter 4).

Fourth, the decision opposed the interest of the solar companies, who saw that it would put employment rates at risk. They formed a coalition with environmental NGOs to activate their countervailing power rather than trying to control a policy in a sub-government. This coalition of interests illustrates the neo-pluralist conception of a welter of groups in a policy area with several interests. As seen, government officials in neo-pluralism are effective advocates for an issue; they are

fundamentally not neutral in pushing their interests (Ainsworth, Godwin and Ainsworth, 2012, p 191). The interest in reducing FiT was pushed by some government officials, most notably Greg Barker, George Osborne, and Chris Huhne. The opposing side reflected the interests of environmental NGOs, producer groups, notably solar companies, trade associations such as the Solar Trade Association and the CBI. This side called for reviewing the FiT cut as it raised the risk of unemployment. In neo-pluralism, a competition of interests can lead to significant reforms and regulations in the policy area (McFarland, 2004). The presence of the environmental NGOs, producer groups, trade associations and government officials also reflected the general neo-pluralist idea that a large number of different groups are found in a single-issue area (McFarland, 2004, p 41).

In summary, the decision of the coalition government to cut the FiT for solar panels provoked groups who opposed the decision. These groups expressed the need for reforms regarding the sudden cut in solar energy subsidies. The groups in opposition included environmental interest groups, notably the Friends of the Earth, and business groups, such as HomeSun and Solar Century. Their position was supported by the CBI, and the Solar Trade Association, which put pressure for reform. Since this had been the situation in the solar policy area, now it is worth looking at what happened in the wind energy area.

9.2.2.Wind energy subsidies (2015-2019)

Wind energy has become a key player in the UK's energy mix alongside gas and nuclear power (See Figure 9.2 below). In the last decade, wind energy has become reliable and affordable, generating 19.8% (64.1 TWh) of electricity in 2019 compared to only 2.7% (10.3 TWh) in 2010 (BEIS, 2020g, p 61). For example, onshore wind and offshore wind produced 10.9% and 9.1% of the total electricity generation in 2020 (BEIS, 2021d, p 14). Offshore wind has become cheaper than CCGT. According to the analysis of BEIS (2020h, p 26),

> Onshore wind and offshore wind are expected to cost £ 46/ MWh and £57/MWh by 2025. CCGT is estimated to cost £85/MWh by 2025, which is significantly higher price than renewables (See Figure 9.3 below).

Figure 9. 2 : UK electricity generation in 2020

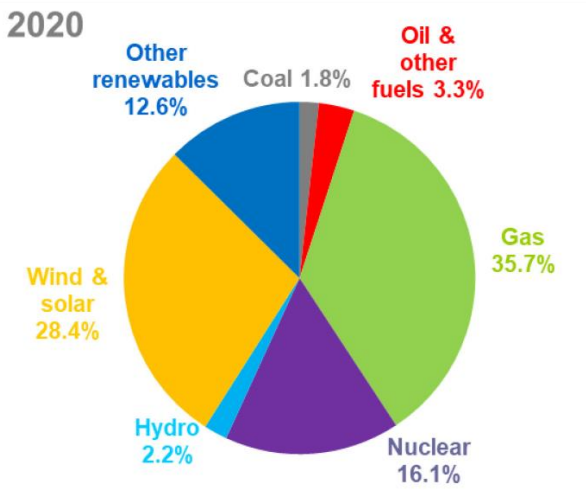


Figure 9.2 highlights that in 2020 wind and solar accounted for 28.4% (88.5/TWh) of the total electricity generated. (BEIS, 2021a, p 28).

Figure 9. 3 : Levelized costs estimates for NOAK projects commissioning in 2025, sensitivities, £/MWh, in real 2018 prices.

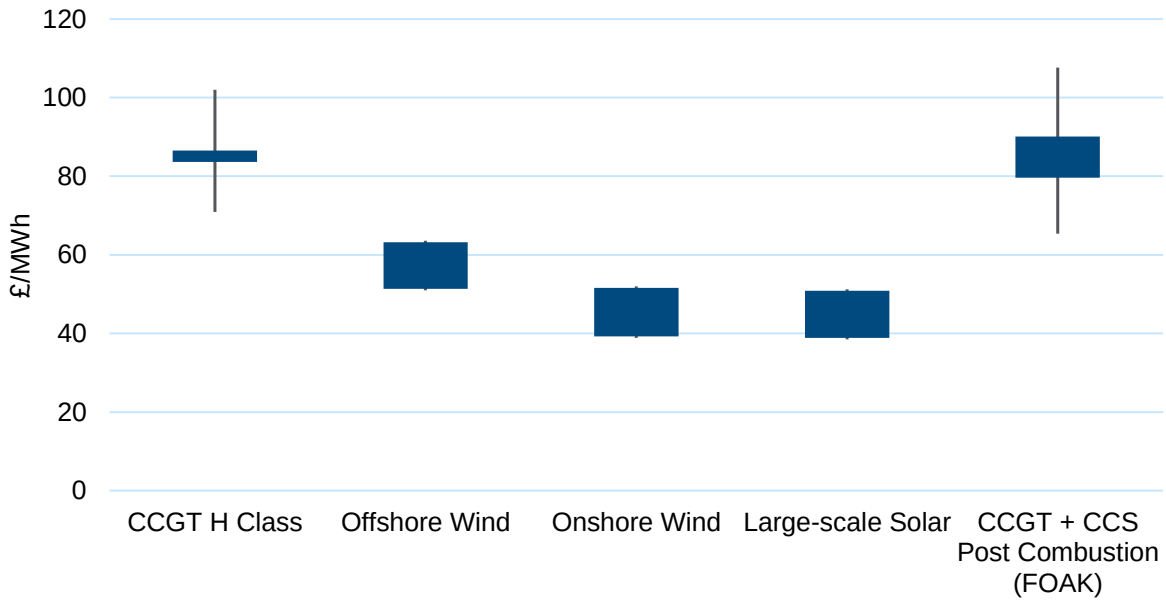


Figure 9.3 shows that the offshore and onshore costs are expected to decline dramatically for projects starting in 2020. This made onshore and offshore wind technologies cheaper than combine cycle gas (CCGT) (BEIS, 2020h, p 26, chart 4.2).

Investment in the wind energy sector rose significantly under the Coalition and the successive Conservative governments, particularly offshore wind. This was due to the inclusion of the technology in the CfD scheme. In an interview with the Liberal Democrat and the former Secretary of Energy and Climate Change (2012-2015), Ed Davey (2020) clarified:

> We introduced the Contracts for Difference, an auction scheme, for that [renewable energy projects]; we promoted more investment in renewables, they got the price down because we had competition and Britain now is the world-leading offshore wind, the price of offshore wind is coming down dramatically (my italics).

The technology was also aided by the efforts of environmental NGOs, notably Greenpeace, who lobbied to raise the profile of offshore wind in the energy mix. The Head of Politics at Greenpeace, Rebecca Newsom (2020), reflected in an interview:

> Greenpeace has been campaigning for offshore wind for over twenty years and it has taken that length of time to go from that technology being considered as marginal, irrelevant and costly to now being the backbone of the UK's energy system and that has not happened just because of the Greenpeace work but we have played a significant role to push the debate forward and some of that has been building a narrative and trying to win a narrative battle before we even entered into a space of discussing a policy (my italics).

The wind energy sector has become popular among the public. Around 79% supported onshore wind in 2019 (BEIS, 2019l, p 6). Meanwhile, 83% of the general population supported offshore wind (BEIS, 2019l, p 6). Although wind energy is widely supported in the renewable sector, it has often faced local protests during planning. Local residents have been campaigning against the expansion of wind farms over the last 20 years (see Vaughan, 2018) due to environmental and visual impacts. These residents believe that wind farms create noise, destroy the landscape and are likely to kill birds. The fight against wind farms was led by strong coalitions of national and local anti-wind groups, comprising more than 300 groups that warned local residents of the potentially harmful effects of wind farms (see *Country Guardian*'s Website).

Although sections of the public opposed the development of wind farms in local areas, environmental NGOs such as Friends of the Earth, Greenpeace, WWF, RSPB and renewable energy companies remained supportive of the technology. This support was evident following the government's decision to cut onshore wind subsidies. The government introduced tougher policies to block onshore wind under the RO and later under the CfD scheme. This decision was enacted in 2015 by the Conservative government under the premiership of David Cameron, in a bid to ensure that the policy planning for onshore wind was less risky to consumers. In a statement by the then Secretary of State, Amber Rudd (quoted in Parliament. House of Commons, 2015, para. 1),

> Onshore wind has deployed successfully to date and is an important part of our energy mix. We now have enough onshore wind in the

> pipeline, to be subsidised by bill payers through the Renewable Obligation or Contracts for Difference, for onshore wind to play a significant part in meeting our renewable energy commitments.

Another step by the government was to allow local communities to influence and shape decisions about projects in their local areas. In 2013, the National Planning Policy Framework stated, "Local planning authorities should take a proactive approach to such proposals, working collaboratively with community organisations to resolve any issues before draft orders are submitted" (BEIS 2021e, p 28). This ensured the early engagement of local communities in approving the proposed onshore wind development (Pickles, 2013). In 2014, around 57% of all onshore projects were turned down as a result of tough planning guidelines and local communities' objection to the technology (Mason, 2015b).

These decisions attracted the criticisms of green lobbyists and wind energy companies, who complained about the imbalance of policy support between offshore and onshore wind, and local communities' power to have the final say in the onshore planning system. Environmental groups such as Greenpeace and Friends of the Earth also opposed the decision, including businesses, such as Good Energy[100], Energy Savills[101], Scottish Renewables[102], Ecotricity, and the trade body, Renewable Energy Association[103] (REA). The Chief Executive of Renewable UK, Hugh McNeal (2020), reflected in an interview:

> We have pushed hard for a large market for offshore wind that was in the Conservative party manifesto and hopefully that will be taken forward by the government. The flip side is that the Conservative Party has fought very hard against onshore wind. This has changed the planning system in England; there is no same level of support from the government for onshore as there is for offshore wind.

Since this had a subsequent impact on the development of onshore wind, it is worth raising the following questions: how did the different groups represent their interests? And why were such policy outcomes achieved? Multiple-elitism expects that the public is unorganised because of the logic of collective action (see chapter 4); that is, the general constituents can organise only if interest groups provide selective benefits. Multiple-elitism stipulates that few units of elites co-operate to restrict benefits among them and not for the public. Neo-pluralism, however, expects that the presence of the

[100]Good Energy is a British renewable electricity supplier. It supplies electricity from 1600 different locations from sources like solar, wind, biofuels and rain. It one of the largest FiT providers (Good Energy, 2020).
[101] Energy Savills includes experts to assist with funding, planning, development and management to help investors, costumers and landowners to develop renewable energy projects (Energy Savills, 2020).
[102]Scottish Renewables is the voice of the renewable industry in Scotland (Scottish Renewables, 2020).
[103]REA is a non-profit trade association that promotes renewable energy through informing policy and advocating on behalf of its members in the government. It has around 500 member organisations representing all types of renewable energy (REA, 2020).

countervailing power is effective in organising a mass lobby exploiting lobbying tactics and the popularity of the issue. In this context, Lowery (2007, p 44) believes that the effectiveness of outside or inside lobbying tactics depends greatly on public support and how the most salient issue is discussed. Lowery and Gray (2004, p 171) added that "if mass opinion effectively constrains policy at the broadest level, then organised interests can, on their own, move policy only so far and so fast". This significantly leads to Godwin, Ainsworth and Godwin's (2012, p 49) assumption that if the business interest is not in line with the public interest, the policy-makers are expected to check business when it counters the public interest. Further, as discussed in chapter 4, the theory believes that elections can lead to a change in policy, as government officials lobby indirectly through political parties, pushing the preferences of unorganised individuals, to increase the likelihood of winning election or re-election (Godwin, Ainsworth and Godwin, 2012, p 49). Given these multiple-elitism and neo-pluralism assumptions, now it is worth exploring whether they help us understand this policy area. I attempt to frame the discussion to explore the policy outcomes of blocking onshore wind subsidies in 2015 and the later shift in the policy towards supporting the technology in 2019. Here, elections and interest groups' lobbying are important aspects to explore.

In terms of the government's decision to block onshore wind subsidies, the decision resulted from the advocacy of backbench MPs who were lobbied by their constituents. They signalled their opposition to wind farms through a letter to the Prime Minister, signed by 101 MPs (*The Telegraph,* 2012). The MPs represented their constituents in 24 local areas[104]. The letter aimed to reflect the views of the local communities, arguing, "We think it is unwise to make consumers pay, through taxpayer subsidy, for inefficient and intermittent energy production that typifies on-shore wind turbines" (*The Telegraph,* 2012, para. 2). The letter added:

> We are also worried that the new National Planning Policy Framework, in its current form diminishes the chances of local people defeating unwanted on-shore wind farm proposals through the planning system. (…) We would argue you to ensure that planning inspectors know that the views of local people and long-established planning requirements should always be taken into account (my italics). (*The Telegraph,* 2012, para. 4).

[104] Daventry, Tamworth, Mid Bedfordshire, Staffordshire Moorlands, Wycombe, Haltemprice and Howden, West Suffolk, Central Suffolk and North Ipswich, St Albans, Warrington South, Redditch, Strafford-on-Avon, North-East Derbyshire, Truro and Falmouth, Torridge and West Devon, Great Yarmouth, Gravesham, Folkestone and Hythe, Morecambe and Lunesdale, Altrincham and Sale West, Corby, North Dorset, Cannock Chase, and Harrow East (*The Telegraph,* 2012).

The letter resulted from the pressure of local residents who opposed onshore wind farms in their local areas and raised concerns over the landscape, heritage, and local amenities (Pickles, 2013). This was reflected in the 2013 ministerial statement by the Rt Hon Lord Pickles (2013, para 4.), who argued:

> Following a wide range of representations, including the letter of January 2012 to the Prime Minister from 101 Hon. Members, and in light of the Department of Energy and Climate Change's call for evidence, it has become clear that action is needed to deliver the balance expected by the National Planning Policy Framework on the onshore wind.

In this regard, some backbench MPs engaged in collective bargaining to push change in the onshore wind energy policy. In this context, neo-pluralism emphasises that political parties and elections matter in influencing policy. This notion was reflected in the then Prime Minister David Cameron's justification in 2012 and his election manifesto in 2015. Clearly, in 2012, Cameron justified his decision by claiming he had sympathy for local residents' concerns (Jowit, 2012b). In his election manifesto, Cameron (2015, p 57) clarified:

> We will halt the spread of onshore farms (…) onshore windfarms often fail to win public support, however, and are unable by themselves to provide the firm capacity that a stable energy system requires. As a result, we will end any new public subsidy for them and change the law so that local people have the final say on the wind farm applications (my italics).

The onshore wind policy changed significantly with the new target for achieving net-zero by 2050. The issue was re-framed with a focus on climate change, leading to a significant shift in rhetoric. The non-profit charity, Possible[105], which generally focuses on climate change issues and particularly lobbies for onshore wind, exploited the new target to push onshore wind back onto the agenda. The group launched its campaign in 2016 to persuade the policymakers of the need for onshore wind technology in the energy mix. In a letter to the Prime Minister, Possible mentioned, "onshore energy wind is vital to our aim of achieving our climate target at least cost and the inspiring vision of a before-2050 net-zero greenhouse gas emissions target" (Possible, 2020). The group succeeded in gaining the support of 1639 people who persuaded their local elected MPs in 2019 to back onshore wind. Here, the net-zero target was significant in persuading the policymakers to resume their support for onshore wind

[105] Possible is non-profit charity that was founded in 2009 and has operated under the name « 10 :10 climate action » that called on businesses to cut 10% of carbon emissions by 2010. The campaign attracted the support of 110,000 individuals, 4000 businesses, 1700 schools,1600 organisations. It was also supported by the Guardian, Kings' College London, Science Museum, Royal Mail, Tottenham Hotspur Football Club, Adidas, and Methodist Church of Great Britain.

in the electricity sector. In this context, it was used as a discursive tactic (see Boer and Duyvendak 2015; McCammon *et al.,* 2007; Koopsmans and Olzak, 2004) to moderate the success of the campaign. In other words, through the 'strategic framing' (see Scheufele, 2004) of net-zero, the target was communicated in the media, between activists, local people, elected MPs to gain visibility and get the message to travel further and to attract attention to their cause. In this regard, the net-zero was exploited as an effective discursive opportunity to highlight the issue of onshore wind subsidy. The Policy Manager at the STA, Cameron Witten (2020) commented in an interview:

> I think it [net-zero carbon emissions cut by 2050] gives, not just for trade associations but NGOs and other sorts of organisations in the climate space, a lot of leverage in conversations with the government because it is legally binding and this is something that they have signed up to the extent that we are able to show through data, through research, that specific policies are necessary to hit those targets (…) policies are actually staying in a way that hitting those targets, I think it goes a long way towards helping to make the case (…) it does help in sort of starting point for a lot of the conversations (my italics).

The campaign attracted 150 MPs, of which 36 were from the Conservative Party, including 6 MPs who initially signed the anti-wind letter (Possible, 2020). The campaign accused the MPs who had sent the letter to the Prime Minister in 2012, of circulating misinformation and trying to control the policy area with their climate scepticism (Possible, 2020). More than 30 organisations and 37,000 individuals signed a petition in favour of onshore wind (Possible, 2020). This lobby used direct tactics such as face to face meetings, phones, and emails to convince MPs to support onshore wind energy and get it back on the agenda.

Further, alongside net-zero opportunity, the elections were also exploited to influence the onshore wind policy area. According to Possible (2020, para. 16),

> Once the snap election was announced at the end of 2019, we knew we needed to use the opportunity to influence manifestos. After all, it was an election manifesto that cemented these blocks on the wind, so an election manifesto could loosen them.

In March 2020, the Johnson government announced that onshore wind would resume by 2021. The government's U-turn came following the decision to cut emissions by net-zero by 2050 (see chapter 6) and public support for renewable technologies, including onshore wind. The auction process over the new projects will take place in 2021. The projects would have to comply with the consent of local communities to qualify for the auction process. The process was also looking to reflect the demands of the public. Alok Sharma (quoted in BEIS, 2020i) claimed: "The government will do this in a way that

works for everyone, listening to local communities and giving them an effective voice in decisions that affect them".

Overall, the policy area reflected the participation of different groups seeking to affect the policy. Environmental NGOs and businesses were on one side of the policy, seeking onshore wind subsidies. Local residents were on the other side of the policy area, opposing and pressing their MPs to block the onshore wind. The policy outcomes were fundamentally reached under the neo-pluralist conditions. First, elections played a major role in changing the policy as the political parties sought votes and re-election. Second, the popularity of the issue reflected a Possible campaign in getting onshore wind back on the agenda. According to Possible (2020, para. 7),

> First off, in autumn 2016, those of us who love onshore wind made sure the government knew about it. Our petition calling on the government to bring back financial support for onshore wind was signed by thousands of Possible supporters straight off the bat. (…) Our declaration did not convince the government to bring the finding back. We needed more people to care enough about this issue to make a noise about it (my italics).

The former MP, Norman Baker (2020), also reflected on this issue, arguing in an interview:

> Government has to act and do something, and it is risky to do nothing; it is often that, as a result of the pressure the government acts. The government and civil servants are not specialists and require people from outside to attract their attention of somethings are not dealing with.

In summary, the wind energy policy area had two concerns; on the one hand, the government supported the continuity of offshore wind in the energy mix. On the other hand, onshore wind was blocked from renewable energy subsidies during the Cameron government. The block resulted from inside pressure in the government generated by backbenchers. However, in 2020, the renewable energy industries and environmental groups contributed to reversing this policy by generating public support and pressure, bringing about policy change.

9.3. Conclusion

Consideration for renewable energy increased following the establishment of the CCA in 2008 and the EU directives in 2009. Since 2010, the Coalition government and successive Conservative governments maintained continuity and change in the policies for renewable energy. This was partly shaped by the pressure of local residents, environmental groups and the renewable energy industries. Policy change in renewable introduced CfD for renewables to start operating for new projects in 2017,

and cut subsidies for onshore wind and solar PV in 2015. This policy change was also marked by the involvement of interest groups to influence policies. Their approach was significant in terms of changing policies in onshore wind and solar power. Hence, the government's role and the groups' influence were informed by a neo-pluralist dimension. Environmental and business groups generated public support, they exploited net-zero target, and elections to achieve policy change. Given the policy events that characterised the renewable energy sector, it is worth exploring the similarities and differences that can be found in the electricity sector, which I discuss in chapter 10 below.

10. **Chapter 10**: The four case studies: A comparative analysis

In the second part of this thesis, I explored four different cases, notably climate change and fossil fuels, nuclear power and renewables, and I identified policy continuity and change in each policy area. Analysis of the four case studies drew on the theoretical framework of multiple-elitism and neo-pluralism to investigate interest groups' mobilisation and their impact on the government's policy choices. In so doing, I attempted to look at the concepts provided by both theories to explore their viability to explain the policy outcomes of the coalition and the successive Conservative governments since 2010.

While empirical chapters 6, 7, 8 and 9 explored climate change policies, fossil fuels, nuclear power and renewables, this chapter will seek to compare the four cases. The chapter attempts to determine which policy area experienced greater or lesser policy continuity and change. It will also compare the theoretical framework by exploring how and why these policy outcomes were achieved. In this vein, the chapter will identify similarities and differences in terms of which theory or a combination of aspects of both theories can best explain each policy area.

As we will see below, whilst policy continuity and change has been notable since 2010 across the four cases, climate change, fossil fuels and renewables experienced greater changes than nuclear power. Nuclear power showed greater continuity since 2010, despite the conflict of interests in the area. Our theoretical framework provided several explanations of these policy outcomes. In this regard, a combination of both multiple-elitism and neo-pluralism is evident in fossil fuels and nuclear power, whereas the renewable policy area was best understood through neo-pluralism.

In order to explain our findings in detail, this chapter starts with exploring climate policies across the four case studies, investigating continuity and change since 2010. It will later move on to describe and explain which theory can best describe the four sectors. Finally, it will attempt to explore the theories to look at how can we develop our theoretical framework of multiple-elitism and neo-pluralism.

10.1. Climate change and energy policies in the four cases

As noted in chapter 2, climate change had an important bearing on the energy sector, as the production and consumption of fossil fuels is considered to be responsible for greenhouse gas emissions. This consideration can thus be viewed as a problem and a solution to climate change. The energy sector, on the one hand, causes climate change due to the heavy reliance on fossil fuels such as oil, coal, and gas. The sector, on the other hand, can provide remedies through designing policies that limit the use of fossil fuels and encourage alternative sources of energy. This includes the transition to a low-carbon energy sector through the enactment of policies that favour nuclear power and renewables such as solar and wind energy (see chapter 8 and 9). During an interview with the E3G Chairman and policy adviser, Tom Burk (2019):

> Avoiding dangerous climate change effectively means you stop burning fossil fuels by the middle of the century, it is what it means otherwise we will pass 2°C rise in temperature, it is the goal of the international process (…) we develop climate policy by looking at the science and climate change and trying to work out what the implications of that were for an energy policy (my italics).

Under the Labour administration, the Coalition and successive Conservative governments, energy policies focused mainly on affordability, reliability and carbon content. This informed policies on fossil fuels, renewables and nuclear power. The policies aimed at improving the energy sector to meet the national and supranational targets of emissions' reduction set under the Climate Change Act 2008 and the EU binding target 2009. At the heart of the policies was the electricity sector because it was easier to decarbonise. A senior lawyer at the environmental charity, ClientEarth, Karla Hill (2020) claimed in an interview:

> The electricity sector was seen as the one that it would be achievable and more straightforward to decarbonise than transport or land use. So, for most of the decades, the focus of the policy measures was really about how to decarbonise energy and I think primarily electricity.

In 2008, the Climate Change Act set the foundation for reducing emissions through five-yearly carbon budgets. The Act committed to 80% of emissions' reduction by 2050 (see chapter 6). This target was amended in 2019 under the May government, to include net-zero by 2050. At the supranational level, in 2009, the UK committed to reducing 20% of greenhouse emissions by 2020 (see chapter 9). This target was pushed by the EU under the scheme, Climate Change and Energy Package. The targets required policies on technologies that would contribute to reducing greenhouse emissions. This informed the policies that began under the Labour administration and continued under the Coalition and the successive Conservative governments. Here, I should raise the question: has continuity been greater in one sector than in others?

In order to answer the question, let us consider the energy sectors that were discussed in the case studies. Broadly speaking, a comparison of the cases tells us that fossil fuels, climate change policy and renewables experienced greater policy changes than nuclear power. With regards to climate change policy, Climate Change Act 2008 was amendment in 2019 to achieve net-zero target by 2050. This policy marked the emergence of climate change as a priority issue in 2019 and emphasised the continuity of CCA carbon budgets to achieve the net-zero target by 2050. In terms of fossil fuels, as seen in chapter 6, following the implementation of the Climate Change Act in 2008, gas was considered alongside coal, oil and biomass to operate under the Carbon Capture Storage technology. In 2009, the Labour government clarified that all fossil fuel power stations over 300 MW would demonstrate Carbon Capture

Readiness (CCR)[106](Smith, 2011, p 11). The government added that the new coal-fired stations would not be permitted to operate unless at least 300 MW of proposed capacity demonstrated CCS installation (Smith, 2011, p 11).

This provision was continued in 2010. The Coalition government accepted the provision in the Overarching National Policy Statement for Energy (EN-1) and the National Policy Statement for Fossil Fuel Electricity Generating Infrastructure (EN-2) produced in 2011. The former clarified, "All commercial scale (at or over 300 MW) combustion power stations (including gas, coal, oil or biomass) have to be constructed Carbon Ready (CCR), new coal-fired stations are required to demonstrate CCS on at least 300 MW" (DECC, 2011f, p 32). The latter statement reiterated, "Coal-fired generating stations of less than 300 MW capacity are required to show that the proposed generating stations will be able to capture, transport, and store CO2 from their whole capacity" (DECC, 2011g, p 9).

Carbon Capture and Storage technology was reinforced in the Energy Act 2013, which added a new provision called the Emission Performance Standard (EPS). The EPS required the new coal-fired stations to operate under Carbon Capture Storage (CCS). Here, as seen in chapter 6, the EPS provided an annual limit equivalent to 450g of CO2 per kilowatt-hour of electricity generated by the unabated coal-fired station until the end of 2044 (DECC, 2014g, p10). The Act also grandfathered (see chapter 6) the gas plants under the EPS. This means that the CCS was removed from unabated gas plants until 2045. However, this provision was criticised by environmental groups as it allowed gas-fired stations to operate without CCS. The environmental groups questioned the role of fossil fuels in the energy mix and asked whether the government had provided the right conditions for the Climate Change Act to achieve its target. The debate intensified as the Energy Bill failed to mention a clear target of decarbonisation by 2030, which coincided with the Coalition government's support for shale gas in the energy mix.

Shale gas was justified by the need to address the energy security issue, create job opportunities, and increase investment (see chapter 7). The former Chief Executive of Environmental Agency (EA) (2008-2015), Paul Leinster (2020), clarified in an interview "I think one of the reasons why people were looking at fracking and the use of shale gas was from an energy security point of view". In this vein, the Coalition government and the successive Conservative governments under Cameron and May introduced a series of policies to promote the technology. As such, in 2012, the government established the OUGO, which sits within the Department of Climate Change and Energy's Development Unit. The Unit is responsible for licensing oil and gas exploration and production (BEIS, 2019f). Further, in 2013, the government reduced the tax portion of the company's income from onshore shale gas production, from 62% to 30% to encourage investment in the technology (see chapter 7). Later in 2015, the

[106] CCR deals with the technical and economic feasibility of capturing, transporting and storing CO2 emissions. These assessments inform whether the expected power station will be fitted into the Carbon Capture and Storage (CCS) (See DECC, 2009d).

Conservative government under the premiership of Cameron introduced the Infrastructure Act. Under section 43 of the Act, fracking was allowed at least 300 metres below the land level surface without land owners' consent (*Infrastructure Act 2015*).

Although Northern Ireland, Scotland and Wales banned fracking in 2015, shale gas technology remained a key technology in England under the May government. The government allowed the energy company, Cuadrilla, to start drilling at Preston New Road in Lancashire, in 2016. However, local campaigning groups and social movement organisations protested against the technology (see chapter 7). Shale gas was perceived to be causing earthquakes and water contamination. In 2019, the Johnson government temporarily suspended fracking in England based on a report by the Oil and Gas Authority (OGA). The report found that it was not possible to accurately predict the probability or magnitude of earthquakes linked to fracking operations (BEIS, 2019g). The government also confirmed that it would not be taking forward proposed planning reforms for shale gas development, consultations for which were held in 2018 (BEIS, 2019g).

If developments in fossil fuel policy can be understood in terms of notable changes, the renewable energy sector also experienced clear policy changes. As seen in chapter 2, renewable energy was operated under the Fossil Fuels Obligation (NFFO), which was later replaced by the Renewable Obligation (RO) in 2002 under the Blair government. The RO was the support mechanism for large scale projects. This scheme ensured electricity generation from renewables. Alongside the RO, the Feed-in-Tariffs was introduced in the Energy Act 2008, which would provide support to small scale projects (see chapter 8). Under the Coalition government, the Renewable Obligations and the Feed-in-Tariffs continued to operate for the existing generations until 2037. This was confirmed in the Renewable Obligation Amendment Order 2010 (see chapter 9).

However, following the establishment of the Electricity Market Reform in 2012, there was a radical policy change in the sector by the Coalition government and the successive Conservative governments. As seen in chapter 6, the Electricity Market Reform introduced the Contracts for Difference (CfD) as a new scheme to encourage investment in electricity generation via the strike price. In this vein, from 2014, the CfD would become the main mechanism for new renewable generation. Hence, the Renewable Obligation scheme would be closed for new applicants on 31 March 2017. This decision was confirmed in the Renewable Obligation Closure Order 2014. According to the DECC (2014h, p5),

> One key aspect of Electricity Market Reform (EMR) is the transition from the Renewables Obligation (RO), the current main support mechanism for large-scale renewable electricity generation, to the Contracts for Difference (CfD), the new support mechanism for low-carbon electricity generation.

Moreover, the other scheme for small scale renewable electricity generations, Feed-in-Tariffs, also showed policy transition. In 2018, the government passed the Feed-in-Tariffs (Closure, etc.) Order 2018 to announce the closure of FiTs from 1 April 2019 for new applicants.

More specifically, the policy changes in the renewable energy sector targeted specific technologies, which led to conflict of interests. As seen in chapter 8, the government announced a FiT reduction in solar PV by 87%. This meant that businesses would lose thousands of jobs. The rate proposed by the government was later amended to 64% following protests by environmental groups and renewable energy companies, including a court case where the DECC's decision was considered unlawful (see chapter 9). In terms of onshore wind policies, the Coalition government ended subsidies for new RO onshore wind projects in 2016, a year earlier than planned. The then Secretary for Energy and Climate Change, Amber Rudd (2015) claimed,

> By closing the RO to onshore wind early, we are ensuring to meet our renewable electricity objectives, while managing the impacts on consumer bills and ensuring that other renewables technologies continue to develop and reduce their costs.

Further, onshore wind was also blocked from CfD auctions as the government decided to focus only on Pot 2 technologies, that is, the less established technologies such as offshore wind and biomass (see chapter 9). Onshore wind was banned from the RO and CfD schemes, as funding for subsidies came from levies added to households' fuel bills (Wintour and Vaughan, 2015). There was also pressure from local community groups who opposed the technology. Although wind energy was generally supported by the public, it faced opposition at the local level during the planning stage (see chapter 8). There were various reasons for a divide between the support for the technology and the opposition to planning applications. It seemed there was a discord between the collective rationality of public good as expressed in surveys and the self-interest of some about developing a wind farm in their local areas (see Bell, Gray and Haggett, 2007). The latter is known as the "Not In My Back Yard" or the Nimby response (Bell, Gray and Haggett, 2007, 465). In other words, UK residents support wind farms as a way to fight climate change and as a source of renewable energy, but refuse the construction within their areas. The Nimby response describes the extreme objection to the project by local residents, as they expressed concerns related to the project's risks, which seemed to be a selfish response (Michaud, Carlisle and Smith, 2008).

Further, onshore wind was also opposed by 101 backbench MPs, who sent a letter to the then Prime Minister David Cameron, expressing their opposition to the technology. Since then, there have been numerous calls from environmental groups and the wind industry to get onshore wind back on the agenda. In 2019, the Climate Change Act was amended, outlining a new target for achieving net-zero greenhouse emissions by 2050. This fundamentally helped campaigners to frame the discussion on onshore wind to persuade politicians to bring the technology back on the agenda. As seen in chapter 8,

under the Johnson administration, the government lifted the block on the onshore wind to achieve the net-zero greenhouse emissions target by 2050.

Whilst fossil fuels and renewables experienced policy changes in the post-2010 period, we should note that policies in shale gas and onshore wind affected one another. As discussed earlier, the Coalition government provided tax breaks to encourage shale gas technology in 2013. This policy coincided with halting subsides for onshore wind. Perhaps the Coalition government prioritised shale gas because the Tories argued against onshore wind, and key advisors and appointments favoured shale gas (see chapter 7) because renewables would be expensive for consumers. According to the BEIS (2019m, para. 2),

> While we have seen very positive developments in renewable energy in recent years, the electricity it generates cannot be used by the vast majority of households in the UK (85%) who use gas cookers and gas heaters.

The energy security issue also emphasised the use of shale gas in the energy mix as it is predicted that by 2035, around 73% of gas will be met from imports (BEIS, 2019m, para. 3). The BEIS (2019m, para. 4) argued "The UK's shale gas resource, as a home-grown supply, could add to the diversity of our gas supplies and help to support our energy security". Further, electricity generation from onshore wind made up around 5% in 2014, supported with £800 million in subsidies (Rudd, 2015). From the government's point of view, this would affect other less mature technologies such as offshore wind, which would lose support (Rudd, 2015). As the Coalition and May governments favoured shale gas over onshore wind, nuclear power was also privileged in the energy sector.

Given that fossil fuels and renewables experienced policy changes under the Coalition and the successive Conservative governments, nuclear power exhibited greater continuity compared to the other two sectors. Initially, the nuclear industry was supported by the Labour government due to the issue of energy security and greenhouse emissions' reduction targets (see chapter 2). The Labour government had set the main procedures for nuclear deployment in the Energy Act in 2008. The Act introduced the Funded Decommissioning Programme (FDP) to ensure that nuclear operators would have secured financing arrangements to meet the full costs of decommissioning and waste management. The FDP would be approved by the Department of Energy and Climate Change (DECC) before nuclear construction took place. In 2011, the FDP was approved under the Coalition government, which designed the details of the FDP regime. The FDP was divided into two parts, the Decommissioning and Waste Management Plan (DWMP) and the Funding Arrangements Plan (FAP). The former would include all details of processes such as technical matters and costs (DECC, 2011h, p12). The latter would deal with how to meet the estimated costs identified in the DWMP (DECC, 2011h, p 13). Further, the Labour government introduced the Office of Nuclear Regulation (ONR) in the Energy Act 2008. The

ONR was approved in the Energy Act 2013, to facilitate the process of nuclear power construction. This sought to ensure the safety of nuclear installations in England, Wales and Scotland, and to minimise the risks of radiation (*Energy Act 2013*, p 66).

Continuity in the nuclear power programme was also strengthened with the life extension of existing nuclear power stations that took place between 2012 and 2016. As seen in chapter 8, in 2012, the Office of Nuclear Regulation (ONR) permitted EDF to extend Hinkley Point and Hunterson for seven years (See chapter 8). In 2014, the ONR approved EDF's 5-year and 10-year extensions for Hartlepool and for Dungeness respectively (Farrell, 2016). In 2016, EDF announced a 5-year life extension for Heysham I and a 7-year extension for Heysham II and Torness (Farrell, 2016).

Whilst policy continuity characterised the nuclear power sector, policy changes also were notable, as seen in chapter 8. These changes were implemented to facilitate the continuation and deployment of the new nuclear power programme. Minor changes were made to planning and site selection. In the planning regime, the Labour government introduced the Planning Act 2008, which established the Infrastructure Planning Commission (IPC) to take the responsibility for planning a particular development. Following the enactment of the Localism Act 2011, the IPC was abolished under the coalition government to become the Planning Inspectorate (PINS). In terms of site selection, the coalition government approved eight of the ten sites proposed by the Labour government in 2008 (see chapter 8).

The government's support for nuclear power was crystallised by the provision of new schemes that could facilitate investment in the technology. As such, Hinkley Point C was provided with a £92.50 MWh strike price and a £2 billion grantee scheme loan (see chapter 8). Further, the government consulted on other policies to improve investment in the technology. In 2018, the government launched a consultation on the expansion of new nuclear power stations between 2026-2035, with over 1 GW of single reactor capacity (BEIS, 2018b). Then, between 2019-2020, the government consulted on the new funding model of nuclear power, the Regulated Asset Base model (RAB). This new model would allow investors to take ownership of the assets and the costs of the operation, and then pass the costs to consumers' bills (See chapter 8).

As can be seen, fossil fuels and renewables experienced a greater change than nuclear power. Shale gas was supported by the Coalition, the Cameron and May government. However, under the Johnson administration, the technology was halted temporarily in 2019. Renewables started to operate under the new mechanism, the CfD, which would support the operation of new projects from 2017. In this vein, Solar PV and Onshore wind experienced a radical change in terms of subsidisation of the technologies. Meanwhile, nuclear power experienced a greater continuity than the other sectors. While continuity and change has characterised the four cases, we should note that conflicting interests of supporters and opponents should be highlighted with reference to the theoretical framework.

10.2. The four cases from multiple-elitist and neo-pluralist perspectives

Thus far, we have seen that the case studies underwent continuity and change in terms of policies and decisions enacted by the Coalition and the successive Conservative governments. The policies in the four policy areas reflected the decisions that were originally inherited from the Labour government and later either continued or changed under the Coalition and the Conservative governments. However, the interaction between different participants in the policy process was also significant. It is worth noting that lobbying pressure either supported or opposed policy continuity or change since 2010. This has also reflected mobilisation of participants and types of strategies and tactics adopted in the lobbying process.

As seen in the four cases, there were mixed views about the technologies that should operate in the energy mix. These views were expressed by the government, business groups and environmental groups leading to policy outcomes that either supported or opposed their interests. Theories of the policy process can explain how the groups were able to articulate their interests and why such policy outcomes were achieved. Multiple-elitism expresses a cynical view of the democratic system. The theory recognises the existence of small groups of elites in policy areas, who exchange benefits among themselves at the expense of unrepresented individuals such as consumers, taxpayers, and the general public (McFarland, 1998, p 9). This can take a form of a sub-government, which often includes government committees. Neo-pluralism, however, assumes the existence of an issue-area elite, especially in environmental policies, where corporations take a privileged position leading to continuous battles with environmental groups (McFarland, 1998, p 9).

To compare the cases, I review the themes drawn from each theory. As these were already highlighted in chapter 4, here, I will focus on the main themes that emerged in the analysis of the four cases. These four major themes are connected to the theories of multiple-elitism and neo-pluralism. The themes are as follow: A) **Reforms and regulations in multiple-elitism and neo-pluralism**: Multiple elitism expects the absence of reforms and regulations that are against the interests of elite groups. In other words, reforms are blocked by elites when they do not serve their special interests. Meanwhile, in neo-pluralism, regulations and reforms are the result of a competition of interests between different groups. Under this view, major reforms occur in high politics related to public and media awareness of an issue. Neo-pluralism also expects reforms to follow elections, as political parties are not neutral and respond to public demands in the elections. B) **Business groups' privileged position**: Both theories identify that business groups are in a privileged position to influence policies due to their resources. Multiple-elitism explains that the tax breaks and reforms provided for businesses can lead to economic decay. Meanwhile, neo-pluralism finds that the government relies on businesses as they provide employment and contribute to economic development. In a neo-pluralist system, the powerful position of business groups is often checked by organised groups of citizens. C) **Information circulation**: Multiple-elitism believes that small organised elite groups in the sub-government can block the spread of information to the general public. Neo-pluralism, however, finds that information circulation between groups is

important to check elites. D) **Organisation of groups / countervailing power in multiple-elitism and neo-pluralism**. On this issue, multiple-elitism argues that the wider public is an unorganised and unrepresented group, whereas neo-pluralism finds that several organised groups are found in policy areas. Here the countervailing power can be exercised through social movements, issue networks, and coalitions between producer groups and environmental NGOs or producer groups against other producer groups.

Now let us explore the above themes across the four cases in terms of similarities and differences, to investigate which theory is best suited to make sense of developments in the different sectors. We will begin with the first theme from above.

A) **Reforms and regulations in multiple-elitism and neo-pluralism.** Across the four cases, reforms and regulations were significant to ensure the security of supply, affordability and greenhouse emissions reduction. According to the DECC (2011i, p 3), "By moving to a more efficient, low-carbon and sustainable economy, the UK will become less reliant on imported fossil fuels and less exposed to high and more volatile energy prices in the future". To do so, the Coalition and the successive Conservative governments supported the Climate Change Act 2008 and legislated the Fourth Carbon Budget (2023-27) in 2011 and the Fifth Carbon Budget (2028-32) in 2016. An additional move was the CCA amendment in 2019, which introduced a new target of achieving a net-zero greenhouse emissions reduction by 2050 at the 1990 level.

Since 2010, the reforms and the regulations displayed features of both multiple-elitism and neo-pluralism, with climate change, fossil fuels and nuclear power showing more multiple-elitist features than renewables. In climate change policy area, gas-fired power plants would continue their CO2 emissions until 2045, as they will be grandfathered under the new mechanism, Emissions Performance Standard (EPS) via the Electricity Market Reform (EMR), in the Energy Act 2013 (see chapter 6). As seen in chapter 6, this decision served the private interests of gas and oil companies, which had eight meetings with the Chancellor in 2012. This coincided with a falling public concern over climate change, which was less salient following the economic crisis of 2008, which contributed to increased attention towards fossil fuels (see chapter 6).

Reforms serving the private interests of energy companies became visible in the shale gas policy area. As seen earlier, these interests were served by policies in favour of fracking; most notably, the establishment of the OUGO in 2012, the provision of tax breaks in 2013, the right to drill 300 metres without the consent of the landowners, and excluding the landowners' liability for any loss or damage associated with the operations in the Infrastructure Act 2015 (see chapter 7). Although the government claimed that its interest in fracking was based on achieving affordable and low carbon electricity, key players in the government had a special interest in fracking technology, most notably the then Chancellor

Osborne, the government's senior adviser, Lord Browne, and the Head of the Environment Agency (EA), Sir Philip Davis (see chapter 7).

Like fossil fuels, nuclear power showed multiple-elitist features. Despite the opposition of local communities and environmental groups, the government and business groups supported new nuclear power. Among the policies that encouraged nuclear power is Hinkley Point C's strike price of £92.50 MWh, which would burden consumers' bills in the future (see chapter 8). Further, the government has granted £2 billion loans for EDF under the Infrastructure (Financial) Assistance Act 2012. The reforms also included consultations on the new model, the Regulated Asset Based (RAB) model, to help the nuclear power industry fund the nuclear builds.

Whilst reforms in fossil fuels and nuclear power reflected ideas within multiple-elitism, other policy changes were characterised by a neo-pluralist understanding of high politics and elections. Reforms in high politics were visible in the amendment of the CCA in 2019, solar PV and onshore wind. Climate protests led by Extinction Rebellion attracted public and media attention. In this regard, concern for climate change increased significantly in 2019, reflecting the willingness of business groups, environmental NGOs and policy-makers to legislate a net-zero target (see chapter 6). In the solar PV policy area, business groups and environmental NGOs pushed for a reduced FiT rate (see chapter 9). Policy reforms, in this case, followed a court case launched in 2012. As a result, the FiT rate was reduced from 87% to 64%; further, between 2016 and 2019, the environmental charity Possible led a campaign that included politicians, local communities, businesses and environmental NGOs to get onshore wind back onto the agenda. The campaign was successful in achieving its goals under the Johnson administration. Overall, these reforms reflected a neo-pluralist system with battles between business groups, environmental NGOs and the government.

In terms of elections, elected officials emerged as important players in influencing policy. This is more clearly illustrated in the policies pertaining to shale gas and onshore wind than the policies of nuclear power. Neo-pluralism describes political parties as organisations competing for office (Burstein, 1998, p 46). The policy space is an arena of struggle amongst those ambitious for office (Burstein 1998, p 46), and as discussed in section 4.5, they take account of the public's concerns and seek to influence policy. Equally important is that the elected officials tend to respond to the demands of their constituents to satisfy voters, win office or be re-elected (Burstein, 1998, p 51). As seen in chapter 7, shale gas turned into a major topic during the 2019 general elections. The Labour Party, the Liberal Democrats and the Green Party pledged to ban fracking in their manifestos. Following the general elections, the Johnson government announced an indefinite suspension of the technology (see chapter 7).

Moreover, in terms of onshore wind, tariff support to the sector was halted as some backbench MPs represented their constituents by writing a letter to David Cameron to stop subsidising the technology. This issue was also reflected in the then Prime Minister Cameron's speech during the 2015 elections,

that onshore wind would not be getting public support (see chapter 9). During an interview with the former Chief Executive of the Environmental Agency (2008-2015), Paul Leinster (2020) concludes,

> What the government is interested in is to get elected. So, if they see that the political situation is moving in a way that a certain section of the population is going to vote, then they need to take that into account.

B) **Business groups' privileged position**. As we have seen, both theories offer an interpretation of the privileged position of business groups. Multiple-elitism is more cynical of this position, arguing that business elites' resources and special relations are reflected in the formation of sub-government. Neo-pluralism provides another view, that business groups are significant for the welfare of society, and therefore they are provided with reforms and privileges to serve their interests. This stems from their ability to create investment, employment, welfare enabling them to become groups with dominant interests (Baggott, 1955, p 39).

Across our four cases, the government played a leading role in delivering policies to achieve a low carbon energy sector. However, business groups were significantly involved in the process. James Diggle (2020), the Head of Energy and Climate Change in CBI, clarified in an interview that:

> We look at the various manifestoes and what the government is trying to achieve. We see the government leading in terms of giving the first idea in terms of its directions bringing new policies out, but it is very much business that involves shaping how those are brought about. The government launches consultation and publishes white papers and business engage in the whole kind of process.

Generally, business groups are perceived to have an important role in low-carbon energy investment. The Director of Strategy and Corporate Affairs at EDF, Paul Spence (2019), commented in an interview:

> The reason they [business groups] affect policy is that the UK, Europe and most of the world rely on industry and business to deliver the policies that set under climate change whether to design builds and sell electric vehicles, whether to build nuclear power stations whether to build and invest in renewable, wind farms and solar panels. All of that requires industry to be innovating to develop the products to sell the products and have the people able to install the products (my italics).

Across the four cases, the privileged position of business groups was more visible in climate change, fossil fuels and nuclear power policy areas than in the renewables sectors. This position reflected a combination of features from multiple-elitism and neo-pluralism. The multiple-elitist view allows us to understand how the role of natural gas was solidified in the Energy Bill 2012, which permitted gas fuel

to operate until 2045. This decision was supported by then Chancellor Osborne (2011), who claimed that, "If we burden them [businesses] with endless social and environmental goals, then not only will we not achieve those goals, but businesses will fail" (my italics). Shale gas and nuclear power policies reflected reforms that were against the general interest of the public. For example, Hinkley Point C's strike price and shale gas tax breaks enabled fracking companies to drill without the permission of landowners as per sections 43 and 44 of the Infrastructure Act 2015. These concessions were criticised by environmental NGOs and local groups who protested against the policies that encouraged the expansion of nuclear power and shale gas technologies.

Although the reforms relating to fossil fuels and nuclear power support a multiple-elitist view, neo-pluralism explains that businesses contribute to economic development is also accurate. Shale gas and nuclear power were encouraged to increase investment and create jobs (see chapters 7 and 8), and therefore businesses were privileged in these policy areas. An Associate Fellow in the Energy, Environment and Resources Department at the international affairs think tank, Chatham House, Walt Paterson (2020), claimed in an interview that: "They [business groups] are very experienced project managers, their projects frequently last for decades. They have much longer horizon and perspective than most elected democratic governments" (my italics). A Liberal Democrat politician, Norman Baker (2020), further clarified in an interview that:

> Business influence in the government has always been very important because we have to make sure that the business doesn't collapse. So, the role of the government, in my view, is to set timelines for which business to operate, and incentivise by making money.

Businesses also seek to protect their business model. It is mentioned by another member of the Chatham House think tank that:

> When I was responsible for carbon market policy, they used to say we want something clear, stable and transparent; and by the way, we are a special case. If they get a product, they want the standard to match their products and they base their incentives on their sales. Their people quite often want to get a competitive advantage for their company, but sometimes, they want just to understand government policy and how it affects them (Anonymous, 2020, interview).

As can be seen, our findings of the cases, fossil fuels, climate change, nuclear power and renewables, show that the theories of multiple-elitism and neo-pluralism can explain policies in the sectors; on the one hand, they helped us understand policy reforms in fossil fuels and nuclear power. On the other hand, they clarified why businesses tend to influence policies. In this regard, while both theories seemed to be adequate in fossil fuels and nuclear power reflecting the concepts of policy reforms and business

privileged position, it is worth noting that neo-pluralism seems more relevant in explaining policy reforms in the amendment of the CCA, onshore wind and solar PV policies. Now, let us explore the other concepts, information circulation, and countervailing power across the four cases.

C) **Information circulation** is another feature visible across the policy areas, and it is significant to our theories; for example, in nuclear power and renewables, information about the policies was made public. The government established the Nuclear Industrial Council (NIC) and the Nuclear Non-Governmental Organisation forums to discuss policies and decisions in nuclear power. Those discussions included the Hinkley strike price, the costs of plans on decommissioning, waste disposal, and management (see chapter 8); in short, all information on nuclear power costs was made public as the Liberal Democrat side of the Coalition government have been the driving force behind information circulation. During an interview with the then Secretary of Energy and Climate Change, Ed Davey, (2020), he clarified that the Liberal Democrats within the Coalition government pushed the nuclear industry to be more transparent about the costs of nuclear projects. Davey (2020) reflected:

> We spend about a billion pounds in nuclear decommissioning and nuclear management costs clearing up for electricity that was generated several decades ago. In other words, the nuclear industry over a few decades ago is making us pay now that is an immoral policy; it is one of the reasons why nuclear industries are hiding their true costs. Therefore, the Liberal-Democrats within the government forced the nuclear industry to be more transparent about its true costs.

In this context, not only did information about nuclear power reveal the costs of nuclear builds, but it also mentioned the harmful effects of nuclear power radiation to enhance public understanding of the technology. The government introduced the Public Understanding of Nuclear Power (PUNE) scheme in 2014 to improve people's knowledge about nuclear power (see chapter 8). Similarly, for solar PV, information about the FiT cut was circulated by the government in the Impact Assessment published in 2012.

We should note that information in shale gas technology was circulated by opponents of the technology and supporters, as reports by some organisations were biased towards promoting the technology, despite the Committee on Climate Change report, "Reducing the UK's Carbon Footprint", published in 2013, against fracking. Other reports, however, encouraged the government to push for fracking. They are published by institutions such as the Geo-Science Laboratory at Oxford University, the British Geological Survey and the Natural Environment Research Council (NERC) and Arup. Those institutions were sponsored by oil companies. These reports were also made public. For neo-pluralism, this information sharing would curtail the elites' control of a policy area by allowing groups with opposing interests to check the elites. According to McFarland (2004, p 50), "This [information

circulation] is an important instance of countervailing power, for a basic strategy of a policy area elite to restrict public information about that policy" (my italics).

D) **Groups' organisation / countervailing power**: Although fossil fuels and nuclear power demonstrated the privileged position of businesses, environmental NGOs had a strong presence in all four cases. Environmental NGOs represented the public's concerns and generated public pressure through their strategies and tactics. They defined their goals, the issues they wanted to advocate for, and the techniques to organise and obtain effective outcomes. A senior lawyer at the environmental charity ClientEarth, Karla Hill (2020), argued in an interview:

> ENGOs have a certain sort of moral authority and public interest voice, they also can campaign publicly (…) I think, they have a different voice and different way of influencing [compared to business groups] having said that, the UK has a pretty developed ENGO sector and some quite well established and organised and funded environmental organisations (my italics).

The Head of Politics at Greenpeace, Rebecca Newsom (2020), added in an interview:

> Fossil fuels still dominate the system and look at how much money they have and how many meetings they have to do lobbying. That is starting to change and that is helped by the power of people who are arguing for climate change.

The presence of countervailing power in four cases contradicted the outlook of multiple-elitism, which argues that the public is unorganised. The public is manipulated by elites, who creates political forms that give the impression that problems are being solved or certain policies are being followed (McFarland, 2004, p 36). By contrast, neo-pluralism explains that groups can organise through social movements, a coalition of groups or issue networks, where groups can check elites in policy areas. Across the four cases, people articulated their interests through social movements. They organised campaigns and protests to support the amendment of CCA and oppose policies that were against the interests of the general public. Those campaigns and protests are indirect strategies to achieve policy outcomes. Those strategies differed from the strategies of businesses. Businesses usually adopt direct strategies to influence policy. As we have seen, while they submitted reports and had closed doors meetings with the government in nuclear and shale gas policy area, anti-nuclear groups and anti-fracking groups organised petitions, called their members to send emails and letters to their local MPs, and held protests to block the interest in nuclear power and shale gas (see chapter 7 and 8). Public pressure, in this context, was significant in challenging the power of business groups. Walt Patterson (2019) of the Chatham House think tank commented in an interview:

> If BP, Shell and Exxon Mobil are subjected to social and political pressure, then the possibility for them to change their business plan is obvious; especially if they get serious about fire-free electricity which both BP and Shell want to. They are busy trying to electrify their business

The concept of the coalition was visible in renewables. Here environmental NGOs and business groups, notably renewable energy companies, had similar interest in advocating for Solar PV expansion. These groups launched the campaign "Cut don't kill", and a court case was filed by Friends of the Earth and renewable energy companies such as Solar Century and Home Sun. A significant outcome of their strategy was the FiT cut from 87% to 64% (see chapter 9).

Further, the countervailing power occurred in other forms such as issue networks. As discussed in chapter 4, an issue network is a more open mechanism than a sub-government. It describes communication, circulation of information, and actors excluded from the sub-government. Issue networks include policy activists, interest groups, legislators, scientists, journalists and others. They are the countervailing power to check producer groups; they appeared in the nuclear power policy area than the other three cases. At the Non-Governmental Organisation Forum, the environmental NGOs discussed safety issues of nuclear power, and they demanded public engagement in site selection, reviewed the Hinkley Point C deal and evaluated the consultation of Hinkley Point C (see chapter 8). In this sense, they checked the business groups' operation and articulated their opposition to nuclear power (see DECC, 2011c; DECC, 2011d; DECC, 2013g; BEIS, 2018d).

Overall, policy change in climate change and fossil fuels, nuclear power and renewables revealed the interaction between different actors seeking influence in the policies. The cases revealed either a multiple-elitist perspective or a neo-pluralist one. On reviewing the four cases, a combination of multiple-elitist and neo-pluralist features were apparent in climate change, fossil fuels and nuclear power. Fossil fuels and nuclear power also demonstrated multiple-elitist features, with their policies serving the special interests in these technologies and going against the general public's interests. Meanwhile, neo-pluralist features of the countervailing power were evident through social movements and issue networks. Policy on renewables, however, was more reflective of neo-pluralism. Here, the policy area included a coalition of business groups and environmental NGOs seeking to influence policy in solar PV. In the onshore wind policy area, elections played a significant role in achieving policy outcomes. In this sense, politicians were policy advocates siding with public demand for votes. Now, let us investigate multiple-elitism and neo-pluralism as two theories that occur together in the energy policy processes.

10.3. Policy areas that exhibit characteristics of Neo-pluralism and Multiple-elitism

We have explored four cases using two theories of policy process: multiple-elitism and neo-pluralism. The four case studies underwent policy continuity and change showing aspects of multiple-elitism and neo-pluralism. At the first glance, we have seen that the four cases showed concepts related to multiple-elitism and neo-pluralism. Those concepts helped us identify whether the policy areas describe a closed system of multiple-elitism or a relatively open system of neo-pluralism. Those concepts emphasise the multiple-elitist sub-government and the neo-pluralist system of an issue network. Here, to understand how these systems appeared in our cases, we had to explore concepts such as policy change and reforms in the four sectors, privileged position of business groups, information circulation, and the presence of the countervailing power. Based on the concepts provided by our theories the analysis of the four cases showed evidence of either a combination of multiple-elitism and neo-pluralism or the presence of a neo-pluralist system in the policy areas. In this context, a combination of multiple-elitism and neo-pluralism is evident in climate change, fossil fuels, and nuclear power case studies; the renewables case study demonstrates a neo-pluralist system.

Let us review our four cases in these terms, beginning with climate change policy. As seen, following the implementation of the CCA 2008, public attention and media coverage towards climate change decreased due to the economic crisis of 2008. Environmental NGOs did not carry campaigns on climate change as they faced problems surrounding income and funding (see chapter 6). Climate policies were interrupted with Tory MPs' scepticism about climate change and concerns over the continuation of fossil fuels in the energy mix appeared in the Energy Bill 2012. Consequently, during the application of the Fourth Carbon Budget, the Coalition government implemented a new scheme called the Emissions Performance Standard, which allows unabated natural gas and coal-fired stations to emit a limit of 450g of CO2 emissions per kilowatt-hour of electricity generated until 2045 (see above). This new scheme was introduced in the Energy Bill 2012. The Bill did not include a target for emissions reduction by 2030 under the Fifth Carbon Budget, which led environmental NGOs to accuse Chancellor Osborne of undermining green policies. Also, Chancellor Osborne had closed meetings with fossil fuels companies, excluding representatives from the renewables industry, and handing out £250m of taxpayers' money to steel, cement, chemicals and other industries to protect them from EU ETS (see chapter 6). Hence, the decline in climate priority following CCA 2008 and the privileged position of the fossil fuels industry in the climate policies are evidence of multiple-elitism. In this policy area, neo-pluralism also appeared in the amendment of the Climate Change Act 2019. It occurred after the political parties, business groups, and environmental NGOs supported the government decision to amend the Climate Change Act 2008. Groups had different interests including a net-zero target by 2050, 2030 or 2025 (see chapter 6). Here, businesses supported the government and called for a net-zero target by 2050, environmental NGOs such as WWF and Extinction Rebellion supported net-zero target by 2025 and Labour Party promised to achieve a net-zero target by 2030 during the 2019 elections, which resulted in the

Conservative Party victory. This welter of several groups with different interests, coupled with public attention to climate change and media coverage, is evidence of neo-pluralism.

In a similar vein to climate change policy, this combination of both multiple-elitism and neo-pluralism is found in the fossil fuels policy area. As natural gas and coal were significant in the Energy Bill 2012 following the implementation of CCA in 2008, the Conservative government encouraged shale gas in the energy mix because it provides long-term investment and employment and helps reduce carbon emissions. We have seen the government's support for shale gas in creating the Office of Unconventional Gas and Oil (OUGO), providing tax benefits in 2013 to energy companies, and passing the Infrastructure Act 2015 to improve the development of unconventional gas and oil in the UK (see chapter 7). Elites in the government supported shale gas, which was against the general interest, and significantly helped fracking in the face of public opposition. Those features indicate the multiple-elitist system of sub-government. Features of neo-pluralism appeared in the presence of the countervailing power through social movements and information circulation through reports submitted by the Committee on Climate Change that discussed the lifecycle emissions associated with methane release during fracking (see chapter 7).

While the climate change and fossil fuels cases demonstrated a combination of multiple-elitism and neo-pluralism, our evidence in nuclear power case study suggest that this combination of both theories is also evident. In the nuclear power policy area, the government encouraged a new nuclear power programme because it would keep the lights on, reduce electricity costs and carbon emissions (see chapter 8). Policy reforms in nuclear power demonstrated a privileged position of business groups by providing financial loans and strike price to EDF to continue the Hinkley Point C project. Those policy reforms were against the public and environmental NGOs, who opposed the government's decisions in the policy areas. Their views did not affect the government's policies in nuclear power, and the government continued its support of the new nuclear power programme.

The data in the nuclear power case study demonstrated a combination of both systems, multiple-elitist system sub-government and the neo-pluralist system issue network. Although the concept of the privileged position of business interest groups appeared in this case study, the data showed us the interaction between the business groups and the government in closed meetings in the Nuclear Industry Council (NIC). Environmental NGOs were absent at the NIC. Features of the issue network appeared in the interaction between the government and environmental NGOs in the nuclear non-governmental forum. Here, information circulation played a significant part in showing features of the issue network, for example, the government circulated information from NIC to the nuclear non-governmental forum and the public. Information at the nuclear non-governmental forum included the Hinkley Point C deal, nuclear power plants safety and waste management with the government. Environmental NGOs were

also present as a countervailing power in social movements calling the government to block nuclear power.

In contrast to these three cases, this combination of both systems did not appear in renewables. Indeed, our renewables case study showed exclusively neo-pluralist features with a welter of groups interacting in an issue network. Our analysis showed that solar PV and onshore wind included business groups, government's officials and environmental NGOs pushing their interests in the policy areas. In the solar PV policy area, the government's officials were advocating policy reforms in cutting FiT, which was against the interest of renewable energy companies and environmental NGOs. Both business groups and environmental NGOs colluded to oppose the FiT cut. They succeeded to change the FiT cut from 87% to 64%.

Onshore wind also demonstrated the existence of welter of groups informing the interest of the backbench MPs and local groups to block onshore wind opposing businesses and environmental NGOs interests who advocated for onshore wind expansion. Backbench MPs reflected the local communities' views of blocking onshore wind from RO and CfDs in 2015. This interest was significantly opposed by environmental NGOs and businesses, who colluded in the Possible campaign in 2019 and achieved policy reforms under the Johnson government. The new government announced its willingness to include onshore wind in the CfDs to help the government achieve the net-zero target by 2050.

While our study highlighted a combination of multiple-elitism and neo-pluralism in climate change, fossil fuels and nuclear power, the academic literature of the policy process showed that energy policy processes move towards either a multiple-elitist system informed by sub-government or a neo-pluralist system of issue network. The sub-government includes a few interest groups exchanging information and benefits with bureaucrats and controlling policy reforms to serve their interests. Some studies found this system in energy and environmental policy processes such as Baumgartner and Jones (1991); Cox, Johnstone and Stirling (2016); and Hyden (2002) (see section 4.5 above). Other studies found evidence of open systems in their analysis of energy and environment policy, notably the neo-pluralist conception of issue network and advocacy coalition. They identified the presence of a welter of different groups interacting with each other and exchanging information to interrupt the influence of big corporations in the policy process of energy and environment. This is found for instance in Godwin, Ainsworth and Godwin, (2012); Ingold, Fischer and Cairney (2017); Pierce (2016) and Sabatier and Brasher (1993) (see more details in section 4.5). We also mentioned that some studies explored a closed coalition of sub-government and policy communities in the energy policy processes operating along with issue networks and social movements to block sub-governments' influence such as Costain and Lester (1998); Dudley and Richardson (1996); Pellow (2001); Toke (2010). Those studies did not highlight the combination of two systems found in the policy processes.

In contrast to many of these studies, our evidence in the four case studies shows that things are more complicated; I summarise the above explanation of the four cases in Table 10.1 below. The Table clarifies that our cases demonstrate a combination of multiple-elitism and neo-pluralism in climate change, fossil fuels and nuclear power case studies. Meanwhile, the renewable energy case study is informed by neo-pluralism. That combination of both systems in three cases requires consideration as it problematises key presuppositions within the existing literature of multiple-elitism and neo-pluralism (see Table 10.1. below for a summary the theoretical findings in each case), not least, that one system or another tends to prevail.

Table 10. 1 :Summarised evidence of multiple-elitism and neo-pluralism in the case studies

Cases studies	Our evidence	Theoretical framework(s)
Climate Change	*Multiple-elitism*: Decline in climate priority after CCA implementation in 2008. Fossil fuels consideration after the implementation of CCA 2008. Closed door meetings and government support of fossil fuels in the Energy Bill 2012. No emissions reduction target by 2030 in the Energy Bill 2012. *Neo-pluralism*: Business groups support net-zero target by 2050 by submitting report and an open letter. Environmental NGOs generate social movements led by Extinction Rebellion to advocate for net-zero target by 2025. Political Parties promise net zero target by 2050	Combination of neo-pluralism– and multiple-elitism.

	(Conservatives), 2030 (Labour Party), and by 2045 (Lib-Dems). Rising public concern on climate issues and media coverage.	
Fossil fuels (shale gas)	*Multiple-elitism*: Natural gas and coal consideration after the implementation of CCA 2008. Closed door meetings and government support of fossil fuels in the Energy Act 2013. Shale gas interest advocated by elites inside the government. Electing ministers sponsored by oil companies. Tax benefits to oil and gas companies in 2013. Creating OUGO and implementation of the Infrastructure Act 2015 to strengthen interest in shale gas. *Neo-pluralism*: Social movements against shale gas during the decade. Policy change that blocked shale gas after 2019 elections,	Combination of multiple-elitism and neo-pluralism.
Nuclear power	*Multiple-elitism*: Privileged position of nuclear power. Strike price and financial loans to EDF.	

	Businesses interaction with the government in closed door meetings at NIC. *Neo-pluralism*: Environmental NGOs generate social movements. Environmental NGOs interaction at the nuclear non-governmental forum. Information circulated about nuclear power to the public and the environmental NGOs	Combination of multiple-elitism and neo-pluralism.
Renewables	*Multiple-elitism:* *No features of sub-government.* *Neo-pluralism*: Government's officials, environmental NGOs and businesses advocating for policy change in the FiT cut for solar PV. Businesses and environmental NGOs collude to influence policy of FiT cut in 2012. Local communities and backbench MPs successed to block onshore wind from getting subsidies in 2015. Possible campaign reflects a coalition of environmental NGOs, businesses and ministers to implement policy reforms in onshore wind. Policy reforms were achieved following the election of 2019.	Neo-pluralism

The Table summarises our finding in the four cases to clarify which theoretical framework best describe our case studies.

As explained in Table 10.1, the policy areas of climate change, fossil fuels, and nuclear power suggest that there are features that exemplify both multiple-elitism and neo-pluralism; meanwhile, renewables operate along the neo-pluralism line. This idea raises the question: what does it mean to have a policy area that has aspects of both multiple-elitism and neo-pluralism?

The combination of multiple-elitism and neo-pluralism occurred in different instances in our cases. In the climate change policy area, policies were stable at specific time. Notably, following the implementation of CCA 2008, we saw a decline in climate change as a priority issue among the public and media coverage. As discussed above, the Energy Bill did not contain a decarbonisation target by 2030. In other words, it did not discuss the application of the Fifth Carbon Budget; instead, the Bill emphasised the role of fossil fuels in the energy mix stating that unabated coal-fired and gas plants would emit a limit of 450g of CO2 emissions by 2045 under the Emissions Performance Standard scheme (see chapter 6). However, climate change turned into a top priority issue in 2019 with increased public concern and media coverage, campaigns led by Extinction Rebellion, business interest in climate change, and elections that partly contributed to the amendment of CCA.

Similarly, the interest in fossil fuels continued as the role of shale gas started with the newly elected Coalition government 'going all out of shale' (Watts, 2014). This interest was visible in the Infrastructure Act 2015 to benefit the shale gas industry and allow the expansion of fracking. Until 2019 the shale gas policy area marked a change and revealed concerns about the effects of fracking on the environment. This change in policy occurred following scientific research led by the Oil and Gas Authority (OGA), claiming that it was not possible to predict the size of tremors caused by fracking exploration leading the new government under Johnson's premiership to suspend fracking.

In both cases we can see periods of considerable policy stability followed by periods of change. The changes in policy areas resulted from scientific research, elections and increased public concerns about climate change triggered by social movements and media coverage. According to Baumgartner and Jones (1991, p 1046),

> Public and elite understandings of public policy problems may change over time. Often, these changes are the result of new scientific discoveries or research; other times changes come from dramatic events or subtle influences.

Table 10.2 summarises our findings considering the three cases. It clarifies that climate change and fossil fuels were adequate under a combination of multiple-elitism and neo-pluralism, where multiple-elitism transitioned to neo-pluralism in both cases.

Table 10. 2 : Multiple-elitism and neo-pluralism in transition and as simultaneous.

Case studies	Multiple-elitism and neo-pluralism	Description	Features
Climate change	Combination of multiple-elitism and neo-pluralism	Multiple-elitism transition to neo-pluralism.	From routine to high politics.
Fossil fuels	Combination of multiple-elitism and neo-pluralism.	Multiple-elitism transition to neo-pluralism.	From routine to high politics
Nuclear power	Combination of multiple-elitism and neo-pluralism.	Simultaneous multiple-elitism and neo-pluralism.	Simultaneous multiple-elitism and neo-pluralism

Table 10.2 summarises our understanding of the three cases where combination of both theories of multiple-elitism and neo-pluralism occurred and reflected a transition from routine to high politics in climate change and fossil fuels. Nuclear power revealed that the theories occurred simultaneously in the policy area.

As explained in Table 10.2 multiple-elitism occurred in fossil fuels and climate change case studies, but it was interrupted by neo-pluralism as significant policy reforms were induced by social movements, public opinion, and business groups support. Here, multiple-elitism reflects routine politics, while neo-pluralism describes high politics. As seen in chapter 4, routine politics occurs when the public loses interest in an issue, government officials move to other issues and the activity of citizen groups declines. It is also characterised by the influence of business groups that yields public policies to benefit producer interests, such as tax breaks and subsidies, at the expense of the more general interests (McFarland, 2004, p 84). Routine politics occurred following the implementation of the Climate Change Act 2008, as public and media attention to climate change declined and the application of the Fourth Carbon Budget was surrounded with interest in encouraging unabated gas and coal plants to emit CO2 emissions by 2045. Routine politics is also relevant in shale gas policy area as the government encouraged unconventional oil and gas exploration undermining the interest of the public, which was against the expansion of unconventional fossil fuels.

However, routine politics transitioned into high politics in both cases. Notably in 2019 with the amendment of the CCA, and with the temporary suspension of shale gas. In both cases these shifts followed significant public protest, media coverage, and interest groups support. High politics, in this vein, is described as policy reforms that occur to benefit the general interest because the public, media and politicians get involved in the policy process to block the dominance of private interest of elites and producer groups.

Although routine and high politics seemed relevant in understanding the combination of multiple-elitism and neo-pluralism in climate change and fossil fuels case studies, nuclear power revealed that both theories occurred simultaneously in the policy process (see Table 10.2). Let us review the concepts that appeared in the case study from Table 5.1 perspective. In terms of dynamics of interest groups interaction, the nuclear power policy area included both sub-government and issue network features. The sub-government features appeared in business groups interacting with the government at the NIC, excluding the environmental NGOs from the meetings. Whereas the issue network characteristics appeared in the presence of environmental NGOs at the nuclear non-governmental meetings. The members of the forums discussed safety concerns, the Hinkley Point C deal, nuclear power waste, decommissioning, and public engagement in the process. Hence, characteristics of both theories present, with the sub-government system of multiple-elitism and issue network of neo-pluralism.

Further, benefit of policy reforms is another concept that appeared in the nuclear power case study. It reveals that policy reforms served the nuclear power interest. Policy reforms provided subsidies for the nuclear industry, such as the financial loans to EDF and a strike price for Hinkley Point C of £92.50/MWh (see chapter 8). Hinkley Point C turned nuclear power into the most expensive option as it is expected to cost £18 billion. Nuclear power appeared as a privileged technology undermining the effects of the strike price on future consumers' bills and providing nuclear power special treatment over renewables (see chapter 8). This is in line with the presuppositions of multiple-elite theory.

Information circulation is also a concept that appeared in the case study; we expected elites to block information in multiple-elitism or circulate information to the public in neo-pluralism. Although the nuclear power interest included policies that supported the technology, information about nuclear power was circulated to the public. As seen in chapter 8, the government ensured information communication with the public under the Public Understanding of Nuclear Energy (PUNE) scheme, led by Professor Andrew Sherry. Under the scheme information about nuclear waste, safety, and price would be shared with the public (see chapter 8). Information was also shared with environmental NGOs at the nuclear non-governmental forum. Thus, we considered those features under the concept of information circulation, which indicated neo-pluralism.

The interest in nuclear power resulted in social movements to block the new nuclear power programme. The data in nuclear power policy area clarified that despite the formation of sub-government in the policy area between the nuclear industry, and the government, environmental NGOs were continuously protesting the technology. Therefore, public were well organised as environmental NGOs organised campaigns and movements, where they informed the public about nuclear safety, nuclear waste and costs, and helped in forming alliances and networks to oppose the technology. we put this feature under the concept of public organisation, which is in line with neo-pluralism.

In terms of the autonomy of government concept, we found that the government supported the technology out of the twin concerns of energy security and decarbonising the electricity sector (see chapter 8). The presence of environmental NGOs as a countervailing power did not achieve policies to block nuclear power in the energy mix. We have clarified that this consideration led to the concept of autonomy of government as it used the nuclear industry to achieve its interest. This concept reveals neo-pluralism theory.

Here, the data showed that both the multiple-elitism theory and neo-pluralism existed simultaneously rather than sequentially, as seen in climate change and fossil fuels that revealed routine and high politics at different points in time. Table 10.3 below shows that the concepts discussed in the case study reveal a combination of multiple-elitism and neo-pluralism as both aspects of the theories are present with a slight emphasis on neo-pluralism (see Table 10.3 below).

Table 10. 3 : Theoretical concepts in nuclear power case study.

Concepts	Dynamics of interest groups interaction.	Benefits of policy reforms.	Information circulation.	Public organisation.	Autonomy of government.
Theories of multiple-elitism and neo-pluralism in nuclear power case study.	Multiple-elitism/neo-pluralism.	Multiple-elitism.	Neo-pluralism.	Neo-pluralism.	Neo-pluralism.

The Table shows concepts that either revealed multiple-elitism or neo-pluralism in nuclear power.

In the nuclear power case study, our evidence shows simultaneous multiple-elitism and neo-pluralism as a feature to describe a situation where we find a combination of both theories occurring at the same time. This aspect seemed more relevant to indicate a combination of multiple-elitism and neo-pluralism rather than the policy cycle of routine and high politics found in the academic literature of policy process (see Baumgartner and Jones, 1991; Godwin Ainsworth and Godwin, 2012; McFarland, 2004; Wilson, 1980). Thus, both multiple-elitism and neo-pluralism seemed relevant in explaining nuclear policy process. They reveal a feature of simultaneous multiple-elitism and neo-pluralism.

Returning to the question posed in this section, the four cases were characterised by a combination of multiple-elitism and neo-pluralism, evident in climate change, fossil fuels, and nuclear power. This combination showed that policy processes in climate change and fossil fuels were going from routine to

high politics. Routine politics (thus, multiple elitism) characterised interests in fossil fuels since 2010, while high politics (thus, neo-pluralism) described the amendment of CCA and the temporary suspension of shale gas in 2019. Nuclear power demonstrates simultaneous multiple-elitism and neo-pluralism in the policy area. The data showed that both multiple-elitism and neo-pluralism existed as the same time rather than multiple-elitism transitioning into neo-pluralism in routine and high politics. As seen in Table 10.3 above, the concepts of multiple-elitism and neo-pluralism showed a combination between the two theories, emphasising neo-pluralism in information circulation, public organisation and autonomy of government. Hence, multiple-elitism and neo-pluralism as simultaneous theories in the policy process describe policy reforms benefiting nuclear power as a privileged technology, closed meetings between the government and the nuclear industry at the NIC, social movements and meetings between environmental NGOs and the government. In the renewables case study, the presence of welter of several interest groups advocating for interests in solar PV and onshore wind reflected neo-pluralism. As we have seen, multiple-elitism and neo-pluralism provided useful explanations of the cases, but it is worth exploring why would different policy areas follow different policy processes.

10.4. Multiple-elitism and neo-pluralism in the policy processes of climate change and energy since 2010.

As seen above, the case studies discussed in the thesis have significantly revealed features of multiple-elitism and neo-pluralism. Climate change, fossil fuels, and nuclear power case studies included characteristics of a combination of multiple-elitism and neo-pluralism, while renewables' case study describes a neo-pluralist system. This combination of multiple-elitism and neo-pluralism demonstrates a transition from routine to high politics in climate change and fossil fuels case studies. This transition revealed periods of policy stability indicating routine politics and periods of policy change that indicated high politics. The nuclear power case study showed characteristics of multiple-elitism and neo-pluralism operated together simultaneously.

Our explanations of the cases revealed multiple-elitism and neo-pluralism as two systems operating in the climate change and energy policy processes raises the idea that the UK climate change and energy policies since 2010 cannot be explained by one theory alone. Despite our presuppositions that the case studies would reveal features of *either* multiple-elitism *or* neo-pluralism, our evidence showed a combination of multiple-elitism and neo-pluralism in climate change, fossil fuels and nuclear power. In this vein, we found that UK climate change and energy policies since 2010 demonstrate a combination of multiple-elitism and neo-pluralism in climate change, fossil fuels and nuclear power, and a neo-pluralist system in renewables. Our finding would raise the question: why do different policy areas follow different policy-making processes?

Our evidence showed that each policy area includes several groups that influence policy. Interest groups encompassing businesses and trade associations advocate decarbonisation of the electricity

sector and encourage natural gas, shale gas and nuclear power in the energy mix, which was against environmental NGOs views of electricity decarbonisation. Our cases revealed that environmental NGOs formed social movements to oppose shale gas and nuclear power. In climate change and renewables policy areas, environmental NGOs colluded with businesses to push for reforms in the sectors. We put these features under the concept of interest groups dynamics. Therefore, we had to apply the concepts of both theories to check if they interacted in a closed system of sub-government or an open system of an issue network. We had to understand this dynamic in four ways: First, we saw closed meetings between the government and businesses excluding the countervailing power. This feature significantly appeared in fossil fuels and nuclear power sectors (see Chapters 6 and 8). Second, we expected that information circulation is either blocked or circulated to the public. The former is a multiple-elitist feature, and the latter is a neo-pluralist one. As our evidence showed that information was circulated to the public in shale gas, nuclear power and renewables we concluded that it is a neo-pluralist feature. Third, the countervailing power was present in an issue network, social movements, and a coalition between businesses and environmental NGOs. Those features were revealed in all the cases where the countervailing power existed to advocate policy change in the policy areas of climate change, shale gas, nuclear power, solar PV and onshore wind. Fourth, we investigated policy reforms across the four sectors. Our analysis revealed that policy reforms in fossil fuels and nuclear power supported businesses to improve investment in the sectors. Policy change benefiting the general interest was achieved in the amendment of CCA, onshore wind and shale gas notably following the 2015 and 2019 elections. Elections were significant events that helped environmental NGOs and the public raise their concerns and achieve their goals.

Policy areas clearly revealed complicated dynamics of interest groups, different forms of countervailing power, and policy change, which demonstrates it was worth applying both theories and studying the energy sector on a case-by-case basis. Our cases also demonstrate the inability to generalise one theory to all the cases as policy areas revealed different policy-making processes that span both theories. On the one hand, multiple-elitism seemed adequate in understanding the continuity of fossil fuels and nuclear power and their privileged position in the energy mix. On the other hand, neo-pluralism helped us understand the welter of several groups in policy areas and the collusion of environmental NGOs and businesses in climate change and renewables case studies. It also seemed adequate in explaining social movements and issue networks in the policy processes.

The application of both theories of multiple-elitism and neo-pluralism to multiple case studies is a unique approach in the analysis of energy and climate change policy, and sets it apart from the existing academic literature. As seen in chapter 4, some studies in the academic literature attempted to explore specific concepts associated with the theories or apply a single concept to explore the policy processes (see for example, Baumgartner and Jones, 1991; Fudge, Peters and Woodman, 2016; Godwin, Ainsworth, and Godwin, 2012; Hamm, 1986; Hyden, 2002; Sayer and Kaufman, 1960), yet none have

applied multiple theories to multiple cases to see what can be learned. Overall, our study demonstrates that the generalisation of the findings is too ambitious; thus, the least we can say to conclude is that climate change and energy policies since 2010 revealed a combination of multiple-elitism and neo-pluralism in climate change policies, fossil fuels, and nuclear power; renewables showed a neo-pluralist system. The four cases identified several policy-making processes demonstrating complicated dynamics of interest groups, presence of social movements, and policy reforms, which resulted in examining both theories in the case studies and applying five different concepts stated in Table 5.1 to describe and analyse the policy processes of climate change and energy since 2010. Now it is worth investigating the gaps that need to be addressed by these theories.

10.5. Theoretical development

As seen earlier, the theories of the policy process provide explanations of the policy dynamics and outcomes in terms of how they were achieved and why. Through multiple-elitism we gain insight into how elites can capture a policy area and through neo-pluralism we understand the role of a welter of different interest groups. Although the theories served our general aim of exploring and explaining the issues of continuity and change, other issues need to be emphasised by the theories as these played an important role in the four case studies. These issues are linked to the context of the policy agenda, where policies are shaped by the international institutional regime. Other issues are related to group mobilisation, in which groups' strategies and tactics play an important role in achieving policy outcomes. Overall, context surrounding decision-making and interest groups' strategies and tactics are less emphasised in the theories of multiple-elitism and neo-pluralism and therefore this needs to be addressed, I discuss both ideas in two separate sections below.

Context of the policy agenda:

Although the UK government introduced significant policies to decarbonise the electricity sector, the international and the supra-national levels played an important role in shaping the climate debate at the national level. As seen in chapter 2, climate change policies were entirely linked to the international negotiations at the Kyoto Protocol in 1997, which called on the developed countries to reduce 5% of six greenhouse emissions by 2012, below 1990 levels (see chapter 2). Under this commitment, the UK aimed to reduce 12.5% of greenhouse emissions in the first Kyoto-commitment period (2008-2012). This target reflected a binding commitment of the EU members to achieve 8% of greenhouse emissions' reduction by 2012 (see chapter 2). Later, in 2009, the UK under the Labour government, adopted the EU Climate Change and Energy Package (20-20-20 target) and committed to increasing the renewable share in the energy mix, to achieve 15% of electricity generation from renewables by 2020 (see chapter 1). In 2015, the Paris Agreement urged the countries of the world to introduce climate policies to keep the Earth's temperature below 1.5°C. This led the UK to amend the Climate Change Act to include a new target of reducing 100% of greenhouse emissions by 2050.

Under this consideration, the theory of institutionalism better explains how climate change was shaped by international and supra-national institutions. This theory clarifies that institutions are important in shaping and influencing the power, behaviour and policy preferences of the decision-makers (Bell, 2002, p 365). Hence, laws, customs and practices established in institutional settings can shape the behaviour of individuals (Bell, 2002, p 365). According to March and Olson (2006, p7), "Political actors organise themselves and act in accordance with rules and practices which are socially constructed, publicly known, anticipated, and accepted". Institutions, in this sense, are collections of structures, rules, and procedures that play a role in political life (March and Olsen, 2006, p 4). March and Olsen (1989, quoted in March and Olsen, 2006, p 7) see that "The members of an institution are expected to obey and, be the guardian of its constitutive principle and standards". This would restrict the possibility of the expression of self-interest in social or political relations.

The theory explains that institutions provide the opportunity for people to make their voices heard. As such, consultations, complaint systems, and public meetings help citizens to articulate their demands to their representatives or decision-makers (Lowndes and Roberts, 2013, p 4). This also includes social movements, technological revolution, and formation of new interest groups, marketisation, privatisation and multi-sector partnership involving public, private and civil society actors who can contribute to challenging the political influence of the public sector (Lowndes and Roberts, 2013, p 5). Lowndes and Roberts (2013, p 5) clarify that "At the present time, many of our familiar political institutions [political parties, state bureaucracies] are responding to demands for change" (original italics).

The theory further clarifies that the political influence of state bureaucracies and institutions have also been challenged by a complex system of multi-governance such as the European Union or the UN. According to Lowndes and Roberts (2013, p 6):

> Politicians and civil servants find themselves operating in an ever more complex system of multi-level governance, in which they are constrained by transnational institutional frameworks - e.g. the European Union and also global agreements on climate change and trade.

In this regard, the context across our case studies revealed climate change to be one of the dominant issues that shaped the behaviour of political institutions in introducing policies to decarbonise the energy sector. These policies were aided by the international and the supra-national regime such as the UNFCCC and the EU, which advocated for pursuing policies on climate change. Perhaps the most prominent EU contribution to the UK climate policies is the EU Energy and Climate Change Package. This scheme encouraged electricity generation and consumption from renewables. As seen earlier, the UK introduced policies such as the FiT and later the CfD to achieve 15% of electricity generation from

renewables. These schemes encouraged investment in renewable energy technologies, especially offshore wind. According to a participant from the international affairs think tank, Chatham House,

> The UK government wasn't happy having those targets imposed on it by the EU but, it's probably the best thing that happened. It drove a changing direction and now the UK is one of the leaders of offshore wind technology (Anonymous, 2020, interview).

The EU Energy and Climate Change Package also helped in raising concerns about climate change. The Political and Regulatory Affairs Director at E.ON, Sara Vaughan (2020) commented in an interview:

> There was a deal that Tony Blair did in 2007 which was the 20-20-20 renewables targets; the requirement was to get a certain percentage of subjects' burden sharing of our total energy from renewables. (…) The renewables target drove us to look at how we could replace a large amount of generation that we were already doing through fossil fuels, through renewables instead (my italics).

Our theoretical framework does not explain the state structure, the evolution of the political institutions and the norms and rules that can lead to policy change. McFarland (2004, p 154) clarifies,

> The neo-pluralist theory is not so useful to scholars who want to understand the "political development of state structures" and "legal institutions" (…) The neo-pluralist paradigm is based on the notion of studying processes of policy-making events rather than studying the evolution of political structures (my italics).

Although the theoretical framework considers government institutions, interest groups dynamic, and public, it needs more emphasis on the context surrounding these aspects. Here, the theories of multiple-elitism and neo-pluralism would be well served by some of the insights of institutionalism such as the consideration of the influence of the international and the supra-national institutions on national policies to further guide the analysis.

Groups' mobilisation:

As we have seen across the four case studies, groups' strategies and tactics played an important role in articulating their interests and achieving their goals. This was visible in the amendment of the CCA in 2019, and in nuclear power, shale gas, solar PV and onshore wind policy areas. Business groups adopted mostly direct strategies and tactics, whilst environmental NGOs generally relied on indirect strategies and tactics to seek policy change. In this regard, the four case studies showed the presence of countervailing power in meetings, campaigns, protests to attract media and public awareness of the

issues. Here the countervailing power was significant in checking policies and to create a political response to what it perceived (Burk, 2019, interview). This to some extent raises new issues in the political agenda and therefore challenges the power of multiple-elites. According to McFarland (2004, p 130):

> If the countervailing power is not organised, the event streams become frozen or at least do not move very far because events are controlled by the dominant coalition of the multiple-elite theory. Such a coalition will act to repress change by keeping other actors from participating in the policy area and by repressing the expression of a new problem or solution constructions through intimidation or hegemonic domination.

Further, the expression of business groups and environmental NGOs' preferences about policies makes us focus on their organisation and strategic approach to achieving their goals. To some extent, neo-pluralism do not provide details in this regard. Although neo-pluralism explains the rise of the countervailing power from social movements and issue networks, it does not provide us with a detailed account of their strategies and tactics. Such details would highlight how the countervailing lobby based on social movements emerges, what opportunities the groups provide, and how they organise. For McFarland (1998, p 11), one must look to social movement theory to answer these questions. The notion of countervailing power based on social movement requires the social movement theory to explain tactics and strategies, political opportunity, and the groups' organisation in terms of coalitions, alliances and networks. In this regard, we should note that multiple-elitism would not benefit from social movement theory as it excludes the assumption that the public can be organised and would therefore activate a countervailing power to challenge elites' control. The theory links these assumptions to the logic of collective action and elites' manipulation of rules and information (see chapter 4).

Strategies and tactics play an important role in planning social movements. Strategies refer to the general behaviour to achieve political interests (Brown, 2012, p 93). Meanwhile, tactics inform the strategies of the movement; these consist of a range of possibilities available to the movement (Stone 2011, p 143). They are a group's specific activity to achieve a political goal (Brown, 2012, p 93). This can differ from one group to another depending on the structure of the organisation, its culture and often the tools that the law allows (Kollman, 1998, p 34). Tactics often include talking to the press, convincing members to write letters to lawmakers, forcing groups to choose a side in electoral competition, campaigns, petitions, demonstrations, holding or sponsoring conferences, and protesting.

Social movements theorists also developed the concept of political opportunities. The concept refers to the political environment that influences the movement. It identifies the favourable conditions to launch a movement. It is defined as the extent of openness of the polity, division among elites, the availability of influential allies and the shift of political alignment (Staggenborg, 2016, p 21). The main

concern of the political opportunity researchers is to understand which aspects of the external world affect the social movements and how the movements are affected (Meyer and Minkoff, 2004, p 1459). This is referred to as the "structure of political opportunity" (Meyer and Minkoff, 2004, p 1459). It examines the possibilities and variables found in the political system for social movements. For Nulman (2015, p 87) it looks at

> the separation of powers, the strength of the executive branch of the government, the type of the electoral system, the availability of citizen-initiated referenda, and the length of the electoral cycle (among others) to see if they play a role in determining the level of mobilisation and outcomes of a social movement (original italics).

Political opportunity can be an important aspect of the likelihood of achieving policy outcomes. It also provides instances of whether the government listens to interest groups, or cares about the media coverage of an issue. According to the Head of Politics at Greenpeace, Rebecca Newsom, "The nature of the government is to know the degree to which they care about scandals in media vs just ignore them" (Newsom, 2020 interview). The former Green Party MP, Jean Lambert (2020), added in an interview: "It depends on who the government is and how to open their doors to listen to ENGOs". Here social movement theory can play an important role in defining the nature of the countervailing power and the process of its emergence. This theory could significantly inform neo-pluralism.

To summarise, although neo-pluralism and multiple-elitism present a detailed interpretation of political events, they need more emphasis on understanding supra-national and international institutional influence on national policies. Neo-pluralism also supports social movement theory as it believes that it can be a source of the emergence of the countervailing power to check elites. However, one must rely on social movement theory to explain the emergence of this kind of countervailing power in terms of goal, tactics, and organisation.

10.6. Conclusion

Overall, climate change and energy are interrelated due to the burning of fossil fuels in industrial processes. Energy policy in this regard plays an important role in fighting climate change in terms of setting rules and procedures for energy companies to develop a low-carbon economy. As we have seen, the four cases offered interpretations of the political events and the decisions that occurred since 2010, under the Coalition and the successive Conservative governments. The analysis uncovered the similarities and differences in terms of the continuity and change of climate change policies, political events and the interaction of actors in pushing for interests. Climate change, fossil fuels and renewable energy areas, for instance, showed greater change in policies than nuclear power, which has mainly continued since the Labour government. In terms of power and interest, each of the policy areas demonstrated themes related to multiple-elitism and/or neo-pluralism. In this regard, climate change,

fossil fuels and nuclear power displayed a combination of multiple-elitist and neo-pluralist characteristics, while development in renewables policy predominantly reflected neo-pluralist dynamics.

11. **Chapter 11**: Concluding discussion

This thesis examines the issue of climate change and energy policies in the UK. Specifically, it tackles energy policies that have been implemented since 2010. This covers policies related to the electricity sector, in particular climate change and fossil fuels, nuclear power and renewables. The period is characterised by numerous decisions about low-carbon energy, which aimed to achieve greenhouse emissions' targets outlined in the Kyoto Protocol 1997 and the Climate Change Act 2008 and 2019. These policies shaped climate concerns across the Conservative administrations on the one hand and informed the contemporary political history of climate change in the UK on the other.

As climate change was a significant issue on the political agenda, one should investigate the energy area to examine the sectors influenced by climate change. Hence, I develop an understanding of what policies have been implemented since 2010. By exploring this, my thoughts aimed to further examine the policy process in terms of whether it was marked by continuity or change. This naturally moved the discussion to pose the question of *how* energy and climate change policies have been continued or changed since the successive Labour governments (1997-2010). In so doing, it was also important to investigate the policy process to clarify *why* this trend has occurred in this period. Looking in particular at the decisions pertaining to the energy sector, it seemed evident to highlight the issue of political interest. In this vein, I sought to understand the lobbying process that centred around agenda-setting and policy formation. To put it simply, I aimed to investigate power and influence, which have been highlighted by research studies around public policy.

Influence and power are important elements in the study of the policy decision-making process. These issues can be explained through contemporary theories of the policy process, namely neo-pluralism and multiple-elitism. Both theories provide interpretations of the ways in which different actors may or may not influence a policy. The theories focus on interest groups mobilisation in the policy area, government institutions, public opinion, information circulation and policy reforms to understand the influence of different interests on policy outcomes. The influence of different actors can be gauged by the groups' resources, the level of salience of an issue, their strategies and tactics, and the opportunities available to them. The theories to some extent differ from one another in their description of the decision-making process and the actors involved in it. As seen, multiple-elitism expects the exclusion of citizen action groups from the policy process and the co-optation of a policy area by business groups, which affects economic growth. Meanwhile, neo-pluralism provides the possibility of the entry of several actors with their strategic resources in the policy process.

A significant point in this thesis is that the research questions were not answered collectively in a single empirical study; this is mainly because climate change shaped several policy areas, notably fossil fuels, nuclear power and renewables. Further, regarding the pluralist procedure of case study, this approach also seemed evident to explore in-depth climate change policies in the UK. As seen, a multiple-

case study approach was the approach adopted in this research because it helped me explore effectively four case studies. It allowed me to look in-depth at policies surrounding the four cases, climate change and fossil fuels, nuclear power and renewables, to have a broader examination of climate change and energy policies since 2010. This approach allowed me to explore the similarities and difference between the cases, which is a central focus to my research. Here, I could identify which theoretical framework could best describe climate change policies in the UK since 2010. The cases tackled policies on climate change, fossil fuels, nuclear power and renewables. Significant decisions were taken during the Labour administration, such as the Climate Change Act in 2008, and later under the successive Conservative governments, which expanded and changed the policies inherited from the previous government. The reforms enacted in the four policy areas of climate change, fossil fuels, nuclear power and renewables secured the UK as a leader in climate change policies. Indeed, the business and the environmental groups were involved in these policy areas. Their presence identified calls that supported or opposed low-carbon technologies. The four cases were explored to understand energy and climate change on the one hand and to examine public policy in this area on the other.

11.1. Findings

The findings presented in the four case studies – climate change, fossil fuels, nuclear power and renewables – emerged through a theoretically informed analysis. As seen in chapter 3, studies on climate change and energy since 2010 tended to lack theoretical analysis to explain policy outcomes. I sought to address this gap by exploring policy outcomes and examining interest groups' dynamic, government institutions, the role of public opinion and information in the policy process. These aspects occurred as central themes highlighted in the theories of neo-pluralism and multiple-elitism. I first draw attention to continuity and change, which later helped me explore policy trends and the actors influencing these trends. In the four cases, I attempted to identify the main actors operating in each policy area, the interests and the policy outcomes. The theories see these groups as dominant in determining policy outcomes. Multiple-elitism has a cynical view that business groups can dominate the political system to the extent that they control government agencies and capture a policy area. Neo-pluralism believes that business groups are checked by their rivals with different interests or citizen action groups. I examined continuity and change in climate change and energy policies to determine whether business groups or the countervailing power were dominant. The four cases showed different instances of producer groups' privileged position and the role of the countervailing power in changing policy directions. Let us briefly review our findings in the four case studies.

11.1.1. Case one: Climate change

The case showed that the CCA 2008 continued under the Coalition government. However, there were amendments in terms of the details of the policies, such as the adapted Electricity Market Reforms 2012. As seen in chapter 6, the application of the Fourth Carbon Budget under the Climate Change Act 2008 faced uncertainty in terms of the policies implemented to achieve the target of reducing 51% of

greenhouse emissions between 2023-2027. This problem is linked to the proposal of the Emission Performance Standard, which required natural gas to operate until 2045 without Carbon Capture Storage. This decision provoked criticisms, especially following the passage of the Energy Bill in 2012, which contained no target for emissions reduction by 2030. In this respect, natural gas appeared to play a significant role in the energy mix, which upset the environmental NGOs, who accused the then Chancellor Osborne of being pressured by the big oil companies such as BP and Shell. This period also indicated a change in climate change policies with the amendment of CCA 2008 in 2019, which significantly turned political attention to climate change after the consideration of fossil fuels in policy agenda. As seen in chapter 10, the climate change case study revealed a combination of multiple-elitism and neo-pluralism.

11.1.2. Case two: fossil fuels

Policies on natural gas were linked to support for fracking technology under the Coalition government, the Cameron post-coalition and the May governments. This support created another debate about the impact of fracking on climate change as it requires the burning of more natural gas and releases fugitive methane that emits CO2. There was also uncertainty about whether the USA's ostensibly positive experience with fracking should be exported to the UK. Moreover, the environmental groups were concerned about the impact of fracking on the environment as it was considered to be a source of earthquakes and water contamination.

Theoretically, fossil fuels case study revealed features of both multiple-elitism and neo-pluralism. In this vein, fossil fuel companies seemed privileged due to the tax breaks for shale gas production to help expand fracking technology (see chapter 7). Another concession was that drilling up to 300 metres below the surface no longer required the consent of the landowners due to legislation under the Infrastructure Act 2015. Nevertheless, environmental activists articulated their concerns in campaigns through a network of movements to oppose shale gas constructions. They were a countervailing power that checked policies on shale gas. It was only in 2019 that shale gas was phased out by the Johnson government, as a response to safety concerns and as public support for fracking fell during the period. This outcome seemed theoretically relevant, as the theoretical framework of neo-pluralism expects policy changes during elections, in response to the public and to attract votes (see chapter 7).

11.1.3. Case three: nuclear power

Continuity describes the case of nuclear power presented in chapter 8. This continuity was evident because nuclear power was supported under the successive Labour governments and later under the successive Conservative governments. The nuclear power revival, or 'nuclear renaissance', came on the agenda as a proposed solution to deal with the security of supply and to fight climate change. Nuclear power was an attractive technology as it has low carbon emissions. It was supported to generate

investment, employment and economic growth. Further, the revival of nuclear power was encouraged by the issue of old nuclear power stations reaching the end of their lives.

The case showed increasing concerns about the effects of nuclear power on national security and safety. This appeared with Hinkley Point C, which was a partnership between the French company EDF and CGN, the Chinese government-owned company. In terms of safety concerns, the Fukushima disaster in 2011 activated opposition to the technology. Environmental groups presented their interests via campaigns, petitions, and letters. They formed an issue network between bureaucrats, environmental groups and businesses that informed policy formation in this area. Conflicting ideas came to light with environmental groups opposing nuclear technology and businesses supporting the government to facilitate investment in nuclear power. This conflict seemed relevant as neo-pluralism expects the countervailing power in the policy area to check producer groups. Although the environmental groups articulated their preferences and circulated information with the public, nuclear power continued to play a role in the energy mix as it was supported by the government and businesses. Here, the case study indicated that communication between the government and businesses reflected a degree of the multiple-elitist system of sub-government. At the Nuclear Industry Council (NIC) forum, nuclear policies were discussed between business groups and the government excluding environmental NGOs from the meetings (see chapter 8). Further, the case study revealed the privileged position of EDF, with support provided to Hinkley Point C through the £92.50/MWh strike price, which would put a burden on consumers' bills in the future. We concluded in chapter 8, that this case study was informed by features of multiple-elitism and neo-pluralism.

11.1.4. Case four: Renewables

Renewable energy policy marked continuity in terms of the mechanisms inherited from the Labour government, such as the Renewable Obligations (RO) in 2002 and the Feed-in-Tariffs (FiT) included in the Energy Act 2008. There was also a radical change following the establishment of the EMR (see chapter 9). Looking at the policy area, by 2011, the viability of the RO and FiT mechanisms seemed challenging because the EU's 20% target of electricity generation from renewables and the issue of falling prices of the installations could lead to increased electricity prices. The Coalition government began to revise the role of the RO and the FiT in facilitating the operation of renewable energy technology. This revision took the form of the Electricity Market Mechanism, which was seen as a better method to encourage investment in renewables. Both mechanisms were replaced by the Contracts for Difference (CfD) scheme, which closed the RO and FiT for new solar and onshore wind projects between 2015 and 2016. The change hit the onshore wind and solar energy areas. To some extent, local communities played a role in blocking the expansion of these technologies in their local areas.

This case study is mostly informed by neo-pluralism. Here, environmental NGOs who supported solar and onshore wind cooperated with businesses. In solar technology, they formed a countervailing

power, where both of them opposed the government decision of cutting subsidies for solar PV operating in the FiT mechanism. They used several tactics, amongst them a successful court case, where they managed to change subsidies cut for solar energy under the FiT. However, looking at onshore wind, local communities succeeded in translating their opposition into policy change. As seen in chapter 9, some backbench MPs contributed to this change with a letter representing their local communities' interests, which urged David Cameron to end subsidies to onshore wind technology. During his election campaign in 2015, he gave in to their requests. However, the battle did not end, as net-zero was legislated in the Climate Change Act in 2019 under the May government. This revealed a political opportunity for environmental NGOs, notably the campaign launched by the environmental charity, Possible, which launched a campaign with politicians, businesses, local communities, and environmental NGOs to achieve the target. The campaign revealed the support for the technology, specifically as the new target under the CCA 2019 required greater efforts to reduce greenhouse emissions

11.1.5. Similarities and differences across the four case studies

Chapter 10 explored similarities and differences that could be highlighted across the four cases. Policies on climate change, fossil fuels and renewables were marked by greater changes than nuclear power. This can be seen in the inclusion of the new provision of the Emission Performance Standard for natural gas in the Energy Bill 2012, the CCA amendment and the temporary suspension of shale gas in 2019. Meanwhile, renewables revealed policy changes in the decision to close the RO and FiT schemes and use CfD instead. Further, specific technologies were closed from the RO and CfD, such as solar PV and onshore wind under the Cameron post-coalition and May governments. Nuclear power, however, was more stable than the other sectors because the government's ideology was to make nuclear power a prominent part of the future energy mix (see chapter 8). In terms of the theoretical framework, policies on climate change, fossil fuels and nuclear power showed a combination of multiple-elitist and neo-pluralist features, whereas renewables reflected mainly neo-pluralist assumptions. In fossil fuels and nuclear power, the energy companies enjoyed a privileged position and the reforms served their special interests. However, the four cases showed the presence of countervailing power in three different forms. A coalition between the business and environmental groups was found in renewables. Social movements played the role of countervailing power in fossil fuels, particularly in the shale gas policy area. Meanwhile, nuclear power showed both groups opposing each other through issue networks and protests.

11.2. Expanding the theoretical framework

As seen in chapter 10, the data showed a combination of multiple-elitism and neo-pluralism in policy processes of climate change, fossil fuels, and nuclear power. This combination differed from one case to another as both theories demonstrate routine and high politics in climate change and fossil fuels. Nuclear power describes multiple-elitism and neo-pluralism occurring simultaneously. We could not generalise the findings as the cases showed complicated interest groups dynamism, presence of social

movements, and policy reforms. Thus, a general theory cannot explain those policy processes unless we explore them on a case-by-case basis. Concerning the limitations of our theories, climate change partly informed the context of our four case studies. The international and the supra-national regimes led by the UNFCCC and the EU advocated for this issue. In this regard, the UK sought to introduce policies to provide energy supply at affordable prices and reduce greenhouse emissions. The policies also aimed to achieve 12.5% of greenhouse emissions' reduction under the EU binding target (see chapter 2). Here, multiple-elitism and neo-pluralism emphasis on the context surrounding policy areas is limited. Therefore, it is worth integrating some insights from institutionalism to help understand the influence of the international institutional regime of climate change on national policies. Further, while neo-pluralism seemed to support countervailing power more than multiple-elitism, social movement theory could give insights into groups' tactics, organisation and resources to reach their goals. In this vein, multiple-elitism could not be served with social movement theory as it rejects the assumption that the countervailing power could exist to challenge elites' dominance (see chapter 4). Although neo-pluralism brings the idea of countervailing power in the policy process, details on groups' mobilisation were not addressed in the theory. Hence, social movement theory offered a way to understand how local communities and environmental NGOs organise to influence policy. In this vein, future research can significantly improve the analysis of the policy process by highlighting the link between social movements and neo-pluralism.

11.3. Policy recommendations

This research examines contemporary climate change and energy policies in the UK to shed light on fossil fuels, nuclear power and renewables. Throughout the case studies, climate change challenged the government to introduce energy policies that reflected the need to not only achieve energy supply at affordable prices but also to reduce greenhouse emissions. Here, we should raise the question: what can we learn from climate and energy policies in the UK since 2010? The Conservative administrations continued to support market competition as a way to achieve energy policy goals. This was evident in the Electricity Market Reform (EMR), which would provide clean and affordable energy and attract investment. According to the DECC (2012i, p 4):

> The policy change is to meet our three objectives (energy security, decarbonisation and affordability) by encouraging huge investment in the electricity infrastructure, in the face of pervasive uncertainty. (…) We believe electricity market reform does just that. We believe if we are to see the investment we need everything from renewables, new nuclear power, CCS and unabated gas (my italics).

The policies aimed to pursue a diverse mix of energy generation to minimise costs to consumers and taxpayers to address the security of supply and climate change (DECC, 2012i). Certainly, the

Climate Change Act outlined the framework towards greenhouse emissions reduction by 2050 through its five carbon budgets. However, although this was a notable step in tackling climate change at home, the decisions on the continuity of natural gas in the energy mix without CCS until 2045, supporting shale gas, cutting FiT for solar PV and blocking onshore wind from the RO and CfD lead us to question whether the government had introduced strong policies to fight climate change.

As seen in chapter 3, the academic literature explored energy policies since 2010 and reached significant conclusions about the government's decisions on climate change. For example, Carter and Clements (2015) saw that the Conservative Party's aim to achieve a green government was weakened because the energy policies reduced investment in renewables and encouraged investment in shale gas. This was evident as some backbench MPs opposed the expansion of onshore wind at the same time as the government supported shale gas technology and also unabated natural gas. The DECC (2012i, p 5) clarified that "Gas will continue to play an important role in the electricity sector providing vital flexibility to support increasing amounts of a low-carbon generation". However, Nyberg, Wright and Kirk (2018) found that the privileged actors in the fossil fuels policy area tend to dominate the policy-making process and therefore maintain the status quo for the continuity of the use of fossil fuels. This could be true as the theory of multiple-elitism showed that fossil fuel companies were privileged in energy policies. Energy companies were expected to keep the light on and to provide economic growth and employment. Further, the electricity sector is still dependent on traditional forms of energy such as oil and gas. As seen in chapter 6, fossil fuel companies had closed door meetings with the government, and key players inside the coalition government advocated for fracking. Nonetheless, the consideration of fossil fuels in climate policies was also linked to the absence of countervailing power, which led to a decline in concern for the climate. This decline became apparent following the implementation of the CCA 2008, which coincided with the economic crisis of 2008. As the public and media shifted attention to the crisis, climate change was less salient during the period (see chapter 6).

Johnson *et al.* (2017) also concluded that the renewable policy area is informed by destructive policies, as the government pulled out support for solar PV and onshore wind. Meanwhile, creative policies characterised fracking and nuclear power (Johnson *et al.*, 2017). Certainly, this view reflects some policy contradictions in the renewable policy area. Although the government introduced the EMR in 2012 to facilitate investment in low-carbon technologies, solar PV and onshore wind were blocked from receiving subsidies. Environmental NGOs and the renewable industry considered this to be an unfair policy in renewables.

Further, for nuclear power, Peoples (2014) noted that public engagement in the policy area was only symbolic due to continuous government support for the technology (see chapter 3). This partly reflects our theoretical framework, which showed that the nuclear power policy area included features of multiple-elitism. In this context, although the government ensured public engagement in the policy

area in terms of information provision and knowledge about the technology, local communities and environmental NGOs' opposition to the technology was not considered. As seen in chapter 8, the citizen action groups engaged in discussing nuclear policies and the technologies' impact on health and the environment at the Nuclear Non-Governmental Organisation forum. However, significant calls were made both inside and outside the forum to the government to withdraw support for the technology. This opposition did not influence policies on nuclear power as the government continued to support the technology.

Given these policy issues, one might think that the government needs to improve its approach towards introducing more regulations to tackle climate change. At the very least, the government could frame climate change as a central strategic issue. Here, the government would need to create an economy that is resilient to changes in the market and that anticipates the future requirements of the low-carbon energy sector. Further, the government needs to prioritise the net-zero target and adapt present and future energy policies to be compatible with the target. A carbon tax can be a solution to reduce greenhouse emissions. Burke, Byrnes and Fankhauser (2019, p 4) find that "neither the UK's 2050 target under the Climate Change Act 2008, nor its actual emissions performance, is consistent with achieving net-zero". They suggest that carbon pricing is one of the key components of achieving a net-zero target. This can be achieved by setting a carbon price that starts at £50 per tonne of carbon dioxide (tCO2) in 2020 reaching £75 per tCO2 in 2030 and £160 per tCO2 in 2050 (Burkes, Byrnes and Fankhauser ,2019, p 5). This would increase public revenues by around £20 billion in early 2030, before falling gradually as emissions reduce to net-zero (Burkes, Byrnes and Fankhauser, 2019, p 5). However, the net-zero target needs more complementary policies to achieve the target. In this regard, Shahbaz *et al.* (2020, p 11) conclude that the government needs to revisit energy policies because they have been leading to significant environmental degradation. Their study suggest that the government should give more emphasis to renewable energy to achieve the net-zero target. Moreover, financial activities and development should focus on improving environmental quality. Further, Shahbaz *et al.* (2020, p 12) note that R&D expenditure should be encouraged because it is important to improve the environment. In this regard, the government needs to allocate resources for research and development to facilitate the task of cutting emissions to net-zero and to design appropriate mechanisms to help achieve the target. Although these policy suggestions are important in emphasising environmental priorities, influence in the decision-making process should also be addressed.

Whilst policies around the decarbonisation of the electricity sector have been more market-driven, businesses have had a larger influence than environmental NGOs. The government relied on industry to deliver policies towards low-carbon energy. However, despite the powerful position of business, the presence of social movement organisations and local campaign groups were also significant. Here, our theoretical framework, neo-pluralism showed the importance of the countervailing power in challenging the influence of elites on policies. As explained by neo-pluralism, social movement organisations and

local campaign groups were important in checking policies and keeping people's minds focused on climate change, especially after Brexit. In this vein, Brexit was expected to lead to an economic downturn which would potentially decrease the priority of climate change for the government (see Farstad, Carter and Burns, 2018; Hepburn and Teytelboym, 2017). It is also predicted that the UK would no longer follow the EU binding environmental and energy legislation, which has already contributed to 40% of the UK emissions' reduction since 1990 (Farstad, Carter and Burns, 2018, p 293). Hence, social movement organisations and local campaign groups play an increasingly important role in addressing these issues through drawing public attention to climate change and calling for climate policies that address Brexit. A collaboration of different groups is key. Alongside the government, different groups such as social movement organisations, scientists, NGOs and businesses can work together to find solutions to the issue of climate change instead of an interest group pushing for its preferences. Public engagement is also significant in allowing people to have a voice in policy areas to avoid resistance (Spence, 2020 interview). Overall, the presence of different groups in the policy process is significant because they are important elements in society (Baker, 2020, interview). In this regard, the government can work to understand their views in formulating policy (Baker, 2020, interview).

Similar policy recommendations were also notable in the academic literature, which to some extent supported a pluralistic model based on research and collaboration rather than elite-driven policies. For example, Hammond and Grady (2017) believe that collaboration in the shale gas policy area is important to achieve policies that are socially and environmentally appropriate. These policies should be based on analysis rather than advocacy (see chapter 3). Jenkins, McCauley and Warren (2017) see that transparency in the decision-making process and collaboration between private and public sectors could provide all individuals with safe, secure and affordable energy (see Jenkins, McCauley and Warren, 2017). Further, Barnet *et al.* (2012) conclude that public engagement in the renewable energy area is significant to achieve public support for the policies. For them, public engagement can be achieved by providing information on policies and programmes and addressing public concerns. We have seen that the government has given local communities the power in planning consents in the renewable energy area. For example, the expansion of onshore wind was opposed by local communities blocking several projects in the wind energy field (see chapter 9). NIMBYism appeared as an issue in climate policies. Here the academic literature concludes that local opposition is still heavily influenced by the NIMBY model (see Burningham, Barnett and Walker, 2015; Devine-Wright, 2011).

Finally, our policy recommendation in this thesis is to tackle climate change with a real sense of urgency. The policies that have been introduced since 2010 in the electricity sector have not been strong enough to be compatible with the net-zero target. In this regard, investment, leadership, and partnership are significant to develop solutions to climate change. In other words, a pluralist model of the decision-making process could serve this aim. Here, the government, the industry, academia and NGOs can work together to innovate and develop carbon solutions. At the same time, the government can work to

provide financial mechanisms and investments to create energy policies for a green economy. These policies could also be adapted to the net-zero target.

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Appendices

Appendix A: The interview guide

1. What is your background?
- Social class
- Education
2. What is your role in the area of climate change and energy policy?
3. Could you list policy issues in relation to climate change and energy that are most important to your firm/organisation?
4. In your opinion, what is the relationship between climate change and energy policies?
5. What factors are most influential in shaping climate change and energy policies? Why?
    - Lobby groups.
    - Institutions.
    - Business groups' impact on climate change and energy policies.
    - Government role.
    - Public opinion.
    - Social and political realities/development e.g. (energy security).
    - International (e.g. UN) or regional (e.g. EU) policy.

    Why ?
6. What influence do interest groups have on policy?
7. What are the issues that have dominated the lobbying process?
8. What is the impact of international/regional policy on the lobbying process?
9. Do interest groups have equal access to government?
    - Citizen groups vs business groups' role in policy implementation.
10. In what ways do interest groups influence policy?
    - Agenda-setting.
    - Policy formation.
    - Decision-making.
    - Implementation.
    - Evaluation.

11. How do interest groups influence climate change and energy policies in the UK?
    - Expertise and technical information.
    - Financial resources.
    - Strategies (citizen groups lobbying strategies vs business groups strategies).
    - Small policy changes vs larger and radical policy changes.
12. Do you think that the interest groups' participation is important in climate change and climate change and energy policy?
13. When are interest groups most likely to influence decisions in climate change and energy policy?
14. The policy issues must compete for a place on the agenda, to your mind, have interest groups' participation contributed in turning climate change into a political issue on the political platform?
    - If so/not, why?
15. Do some groups have more influence than others in shaping climate change and energy policies in the government?
    - Business groups, citizen groups, non-governmental organizations, environmental groups, health associations, trade associations, etc.
    - Why?
16. How businesses influence climate change and energy policy?
    - Creating network/sub-government.
    - Lobbying for the private interest.
    - Using financial resources and expertise.
17. Do recent energy regulations and climate change policies reflect the interest of the powerful businesses and policy leaders?
    - If so/not, why?
18. Do your organization lobby for the benefits of its members?
    - Can you explain your answer?

19. Do you think that climate change problems are better solved by policy regulations or some other means, e.g. broader changes in the society?
20. Do you observe any policies in climate change and energy areas that are limited to businesses, trade associations, or inter-governmental lobby?
21. Are you satisfied with the governmental regulations in energy and climate change?
    - Can you explain your answer?
22. How do you evaluate the governmental policies towards climate change ad energy?

23. Do you think that climate change policies need more public attention and interest groups participation to reach a successful policy outcome?
    - Can you explain your answer?

Appendix B: Interviews

Participant	**Date of the interview**	**Organisation**
Anonymous	20 March 2020	Policy Connect
Anonymous	18 December 2019	Chatham House
Anonymous	13 August 2020	Climate Advisers Trust
Barbara Vest	9 July 2020	Energy UK
Cameron Witten	27 August 2020	Solar Trade Association
Chaitanya Kumar	15 November 2019	Green Alliance
Chris Davis	4 December 2019	Former Conservative MP
Emma Bridge	4 August 2020	Community Energy England
ED Davey	4 March 2020	Former Secretary of State of Energy and Climate Change (2012-2015).
Fiona Harvey	7 November 2019	The Guardian
Hugh Mc Neal	10 February 2020	Renewable UK
James Diggle	20 January 2020	Confederation of British Industry (CBI)
Jean Lambert	16 January 2020	Green Party
Julia King	29 October 2019	Environment and Climate Change Committee.
Karla Hill	14 February 2020	ClientEarth.
Mark Ruskell	4 March 2020	Scottish Green Member of the Scottish Parliament.
Natalie Bennett	27 July 2020	British politician and journalist.
Norman Baker	29 November 2019	Liberal-Democrat MP.
Paul Leinster	29 January 2020	Environment Agency.
Paul Spence	3 October 2019	EDF
Peter Lilley	15 January 2020	Former Conservative MP.
Rebecca Newsom	21 January 2020	Greenpeace.
Robin Teverson	4 February 2020	Former member of the European Parliament.
Richard Hall	13 July 2020	Citizens Advice
Sara Vaughan	16 October 2019	E.ON
Tim Johnson	23 January 2020	Aviation Environment Federation.
Tom Burk	27 September 2019	Third Generation Environmentalism (E3G).
Tony Day	11 February 2020	Energy Research Consultant.
Walt Patterson	7 January 2020	Chatham House.
William Blyth	27 January 2020	Chatham House.

Appendix C: Policy documents of continuity and change in chapter 6

The Environment Audit Committee –Seventh Report Carbon Budgets.

DECC (2011) The Carbon Budget Order 2011

The Fourth Carbon Budget: Reducing emissions through the 2020s.

BEIS (2016) Carbon Budget Order 2016

Energy prices and bills- impacts of meeting carbon budgets.

Chapter 3: The cost-effective path to the 2050 target.

Advice on the Fifth Carbon Budget.

Research briefing: Net zero in the UK.

Electricity Market Reform: Policy review.

Developing onshore shale gas and oil-facts about 'Fracking'.

Building Our Industrial Strategy Green Paper.

Appendix D: Policy documents of continuity and change in chapter 8.

Meeting the Energy Challenge: Energy Review Report 2006.

Energy White Paper on Energy 2007- Meeting the Energy Challenge.

Meeting the Energy Challenge: A white on Nuclear Power January 2008.

National Policy Statement for Nuclear Power Generation (EN-6) Volume I of II.

Planning our electricity future: A white paper for secure, affordable and low-carbon electricity.

Building Our Industrial Strategy Green Paper.

Hinkley Point C.

Industrial Strategy: Nuclear Sector Deal.

Consultation on the siting criteria for new National Policy Statement for nuclear power with single reactor capacity over 1 gigawatt beyond 2025.

RAB model for nuclear power: Consultation on RAB model for new nuclear projects.

New Nuclear Power.

Appendix E: Policy documents of continuity and change in chapter 9

DECC 2010 “Explanatory Memorandum to the Renewables Obligation (Amendment) Order”

DECC 2012 “Feed-in-tariffs Scheme Government Response to Consultation on Comprehensive Review Phase 1-Tariffs for Solar PV”,

DECC 2013 “UK Renewable Energy Roadmap Update”

DECC 2015 “Onshore Wind: Closure of Renewable Obligation on 31st March 2016, DECC 2015 “Ending Subsidies to Onshore Wind”

DECC 2015 “Ending Subsidies to Onshore Wind”

DECC 2015 “Government Amendments to the Energy Bill 2015: Onshore Wind”

BEIS 2016 “Early Closure of Renewable Obligation”

BEIS 2016 “Onshore Wind: Closure of Renewable Obligation”

Energy Act (2016). *Onshore Wind Power: Closure of renewable obligation*

Electricity Generation: Consultation on the proposed amendment to the scheme 2020.

Energy Act 2016 “Chapter 5: Onshore wind power: Closure of Renewable Obligation”