

Being Red and Green

A policy arrangement analysis of the drivers of energy policy at Nottingham City Council

Katrina Bull

Masters Thesis for the Environment and Society Studies Programme

Nijmegen School of Management

Radboud University

April 2024

1 Colophon

Title: Being Red and Green. A policy arrangement analysis of the drivers of energy policy at Nottingham City Council.

Author: Katrina E.M Bull

Student Number: s1030493

Institution: Radboud University

Thesis Supervisor: Dr.M. Kaufmann

Location: Nijmegen

Date: April 2024

Masters Thesis in completion of the Master's programme in Environment and Society Studies, (specialisation Local Environmental Change and Sustainable Cities) in the Department of Human Geography, Spatial Planning and Environment.

Radboud Universiteit



2 Contents

1	COLOPHON	2
3	SUMMARY	5
4	ACKNOWLEDGEMENT	6
5	INTRODUCTION	7
5.1	BACKGROUND	7
5.2	PROBLEM STATEMENT	10
5.3	RESEARCH AIM	12
5.4	RESEARCH QUESTIONS	14
5.5	SCIENTIFIC & SOCIETAL RELEVANCE	15
5.6	THESIS STRUCTURE	17
6	LITERATURE REVIEW	19
6.1	EMPIRICAL ISSUES	19
6.2	THEORETICAL ISSUES	24
7	THEORETICAL FRAMEWORK	27
7.1	POLICY ARRANGEMENTS APPROACH (PAA)	27
7.2	APPLICATION TO NOTTINGHAM	31
7.3	ADVOCACY COALITION FRAMEWORK (ACF)	35
7.4	MEIJERINK'S FIVE LEADERSHIP FUNCTIONS	38
7.5	OPERATIONALISATION OF THE THEORETICAL CONCEPTS	41
7.6	CONCEPTUAL MODEL	45
8	METHODOLOGY	48
8.1	RESEARCH STRATEGY	48
8.2	ONTOLOGICAL AND EPISTEMOLOGICAL CONSIDERATIONS	49
8.3	CASE SELECTION	50
8.4	RESEARCH METHODS & DATA COLLECTION	52
8.5	DATA ANALYSIS	55
8.6	VALIDITY, RELIABILITY AND ETHICAL CONSIDERATIONS	57
9	FINDINGS	59
9.1	POLICY ARRANGEMENT - FORMAL & INFORMAL RULES	59
9.2	POLICY ARRANGEMENT - ACTORS	70
9.3	POLICY ARRANGEMENT -RESOURCES	76
9.4	POLICY ARRANGEMENT -DISCOURSE	79

9.5	LEADERSHIP FUNCTIONS	81
10	DISCUSSION OF FINDINGS & REFLECTION	86
10.1	ACTORS	86
10.2	RESOURCES	87
10.3	RULES	88
10.4	DISCOURSE	89
10.5	CONCLUSION	93
10.6	REFLECTIONS AND LIMITATIONS	97
10.7	AREAS FOR FURTHER RESEARCH	98
10.8	POLICY RECOMMENDATIONS	99
11	REFERENCES	101
12	APPENDICES	117

3 Summary

This thesis is an exploration of the drivers behind the carbon-neutral energy policy choices of Nottingham City Council – one of the few cities in the world to be on target to be carbon-neutral in 2028.

It uses Nottingham as a single case study of a unique city in the UK context in that very few cities have set such challenging targets to become carbon neutral. It is therefore an intriguing example of what can be achieved and in searching for the drivers it can shed light on what may be needed by other similar cities in the UK seeking to also set or meet carbon neutral targets

The research joined three theoretical frameworks often used to delve into policy choices. Leroy and Art's Policy Arrangements Approach was chosen to bring out the essential elements of policy making, supported by Sabatier's Advocacy Coalition to tease out the influence of beliefs on actors within the city and by adding Meijerink and Stiller's Leadership Functions to bring an additional layer of questioning. These theories will be concentrating on the role of actors, actor coalitions and their beliefs, within the influencing factors of Nottingham's energy policy.

The overall conclusion of the thesis is that Nottingham has a history of rebellious, leaders and that this history weighs heavily on the city. The belief of *doing the right thing*, coupled with the discourse around poverty and a healthy amount of competitiveness means that city leaders design energy policy that will have a positive impact on residents' lives. It is because of poverty, not despite it that has Nottingham is 'green'. The national and local rules have a significant impact on policy choices but more because the policy makers are so "can-do" and seize every opportunity to innovate.

Nottingham has shown that a city can combine the issues of poverty and climate for a just transition – a city can be *red and green* at the same time.

4 Acknowledgement

I started this Master's degree when I was 45 years old. I enjoyed every minute of the learning process - much more than my first Bachelor's degree when I was 19. I was surrounded by serious, hardworking young people, who accepted my presence and not once was I made to feel strange or old. The facilities and quality of teaching at Radboud University were extremely high. Perhaps the reason I have taken too long to complete is because I do not want it to end.

Now I am a few days away from my 50th birthday -the trials of writing a thesis around the care of 4 children, getting an unexpected job halfway through the write-up of my thesis, buying a 1.7 ha farm, acquiring 4 horses to add to the 3 dogs –meant that the thesis took much longer to complete.

I have to thank my supervisor, Dr Maria Kaufmann – who deserves a medal for her patience. Her excellent advice and direction meant that I finally understood where I was going. I need to give thanks to Prof. Emeritus, Pieter Leroy who allowed me to join the ESS Master's degree programme after so long not in education. After proving to him during an interview that I could read, understand and argue using the essential reading of the course - he permitted me to start the course.

I also give thanks to my husband and four children – who have had to put up with my screaming from the office as I struggled with theoretical concepts and their application. And to my close friends, who have spent years gently cajoling me to finish. Once I realised how enjoyable the application of theoretical concepts was to actual real examples –(which makes research relevant to the rest of the world)– pieces of the puzzle became clear. That said – not everything is resolved in my mind but I guess that is why researchers continue to research, because after trying to answer one question – you are inevitably brought to another.

30th March 2024

5 Introduction

This chapter introduces the background to the study. The details of the research aim and questions, the problem statement and the methodological approach follow thereafter. Finally, the structure of the remainder of the thesis is described.

5.1 Background

Climate change is the global issue of our time. The Kyoto Agreement of 1997 leading from the 1992 United Nations Framework on Climate Change gave the world its first global targets. And yet there is now a growing acceptance that these global targets will not be reached (indeed, have not been reached) without the direct action of the cities that by in large, create and generate the damaging greenhouse gases that have led to climate change. Cities are critical in our response to the climate crisis, playing a “key role in mitigation” (Van der Heijden, 2018 p.81)

“Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming” (IPCC, 2023, p10)

Since the industrial revolution, carbon emissions have been rising consistently (Le Quéré, 2018); this rise in carbon emissions from human activity is having such an impact on the liveability of the Earth that climate scientists now believe the stable Holocene epoch of the last 12,000 years has ended and we now exist in a new era: the Anthropocene era: where the human is now the greatest influencer of the Earth’s system (Steffen et al, 2007, Head. M, 2022, Carrington. D, *The Guardian Newspaper*, 2016, Subramanian, 2019)

It will take an unprecedented global shift in thinking and acting to bring about the policies to avert the most damaging effects of climate change. Global carbon dioxide emissions need to be cut by 85% in the next 30 years (IE, 2017) if we are to minimize global rises in temperature. Meeting the commitments contained within the Paris Agreement (UN, 2015)- to limit the increase in global temperature to no more than 2°C above pre-industrial revolution levels means a drastic cut in carbon

dioxide emissions. Cutting energy demand has an important role to play - cities use by far the largest level of energy on the globe and are the largest producer of carbon emissions. "Cities consume over two-thirds of the world's energy and account for more than 70% of global CO2 emissions". (C40, 2023, p5);

United Nations Secretary-General speaking at the C40 conference in Copenhagen, on 11th October 2019 that cities were "where the climate battle will largely be won or lost.". (Guetterres, 2019, UNCC, 2020). The choices that cities make regarding housing, infrastructure, and mobility –all have an impact on the emissions of cities. And with urban living set to rise to 68% by 2050 (UN, 2018) – the influence of cities on emissions will only increase. All the more vital that cities respond to this. The plea of COP26 in Glasgow in 2022 to reach deeper cuts in emissions, will mean the need for much more decarbonisation in our cities. (World Bank, 2021).

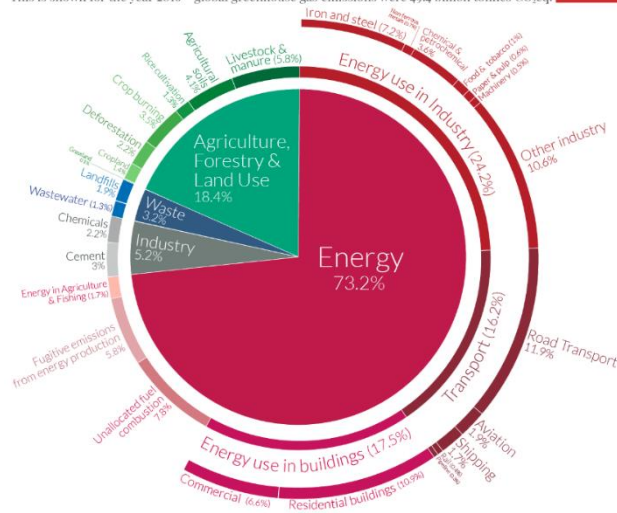
Cities are critical for achieving climate goals because they are the emitters of greenhouse gases (GHG): it is the emissions of cities that have allowed us to reach the current levels of carbon emissions and other greenhouse gases: (Short, J & Farmer, A., 2021). An estimated 70 % of global greenhouse gas emissions come from cities and urban areas - 75% of these emissions emanate from energy consumption: transport using fossil fuels – cars, ships, trains, and planes (C40, 2023). How we warm our homes, run our businesses or transport our food, products, or ourselves around our cities is an important component of GHG emissions –31% of global emissions come from heat and electricity use, 15% of total global greenhouse gas emissions come from transport -of which 39% are from passenger cars and 23% from heavy goods vehicles (World Resources Institute, 2022).

If 70% of global greenhouse gases come from our cities and urban areas and we know exactly which sectors these emissions come from (see Figure 1 below) - it seems logical that it is the city that needs to respond to the call to cut emissions.

Global greenhouse gas emissions by sector

This is shown for the year 2016 – global greenhouse gas emissions were 49.4 billion tonnes CO₂eq.

Our World
in Data



OurWorldInData.org – Research and data to make progress against the world's largest problems.
Source: Climate Watch, the World Resources Institute (2020). Licensed under CC-BY by the author Hannah Ritchie (2020).

Figure 1 Rose (2023)

Cities play a critical role in influencing carbon emissions globally and are then a big part of the solution to reducing emissions. This is particularly pertinent when one considers the lack of real global agreement or movement on how we as a world population will bring about the changes necessary to reduce carbon emissions and to avert the most damaging effects of climate change. The world's leaders began to seriously come together to discuss and try to limit global warming in the beginning of the 1990s, with the ratification of the UN Framework Convention on Climate Change – in 1992. This non-binding agreement was agreed by 197 countries. Significantly, countries agreed to meet yearly to monitor progress towards limiting greenhouse gases. We call these meetings *Conference of the Parties* or “COP”. These negotiations brought about fundamental global agreements – Kyoto, agreed in 1997 that countries would bring down emissions to 5% below the level in 1990 and Paris in 2016- “the most important climate agreement in history”(Klein, D. R. et al, (Eds.). (2017) p5). in 2016 where nearly every country agreed to prevent the global average temperature from “rising 2°C above preindustrial levels and pursuing efforts to keep it below 1.5°C (2.7°F). It also aims to reach global net-zero emissions”(Maisland, 2023)

Despite these numerous global agreements - agreed by hundreds of the world's leaders or their representatives - and we have now seen 26 annual meetings of the Conference of Parties, the last one being this year in Dubai -we are no further ahead with regard to greenhouse emissions than we were in 1990. Global agreements have failed to curb greenhouse gas emissions and they are indeed rising, not falling- meaning we are on track to break the agreements made in various global agreements (IPCC, 2023)

Failure of these agreements is often explained by the voluntary and uncoordinated nature of the agreements (Nordhaus, 2018). Global climate agreements have involved much diplomacy, but not an awful lot of results - "pledges were non-existent, not particularly ambitious or disingenuous"(Victor, D.G., Lumkowsky, M. & Dannenberg, A. 2022, p798).

5.2 Problem Statement

Failure of global agreements means that cities need to step up, for the world to have any hope of limiting the increase in global mean temperature. The C40 network of Mayors shows that networks of cities can come together to both respond to the climate crisis and offer solutions - tailored to what their city needs. Just over half of these cities have published a climate action plan,(CAP) detailing how their city will reduce greenhouse gas emissions, with more cities on the way - "(C40, 2023).

According to the C40, cities are well placed to respond to the climate crisis since they can often directly influence road networks, public transport, land use, and waste collection - they have direct decisions regarding their budget. Cities could reduce their emissions by as much as 90% (Elgendy. K, 2023) If activity at a city level is causing the majority of the greenhouse emissions - it could be that the cities are the ones with the answers to reducing emissions. Here the problem that cities need to respond to the climate crisis is presented in two parts.

Cities and the climate crisis

Literature regarding the climate crisis generally concludes that it is human-induced increases in greenhouse gases (of which carbon is one gas) that are causing the increase in global temperatures which is described as climate change (IPCC, 2023, Abass et al, 2022) or more lately, described as the *climate crisis* (Goodman, 2022, Lombardi, 2022)).

Since we are on track to live in an urban setting (C40, 2018), it is logical that cities respond to this crisis. It is generally accepted that we should act as a society to limit the impacts of climate change – limiting any increase in global temperature to below 1.5 degrees. The majority of the world’s scientists recognise that global warming is a human-induced phenomenon (Lynas. M, et al, 2021) and will lead to an increase in temperature and that increase will impact our functioning as a society (Abass. K, et al, 2022)

With over half the world’s population living in urban areas, our cities must respond – even if nationally the response to climate change is found wanting. Betsill & Bulkeley have dedicated over the last twenty years of research on the role of urban areas and climate policy. They state that national and global commitments will not be met without the involvement of cities (Betsill & Bulkeley, 2021). Other research points to cities being “increasingly critical climate actors in recent years.” (Hsu. A. et al, 2020). It seems logical that since the majority of the greenhouse gases are emitted at the city level, cities are then most able to adapt policies to respond.

There is even a growing body of research that put forward that this very global problem will not be resolved only in a global way and that “transnational”, (Roger et al, 2017) local, place-based initiatives, policies and actions are increasingly being successful in response to the climate crisis (Jordan et al, 2018). Bulkeley (2021, p269) states that cities are “an essential means to ‘bridge the gap’ between international ambitions to reach a 1.5 degree Celsius planet”

Many levels will need to respond to this crisis: global, national and city level (Ostrom, 2010). In fact – there are many benefits for a city to actively reduce its

carbon emissions – for example, through the provision of cleaner air, or there may well be other incentives or drivers for a city to reduce its emissions and result in changes to climate policy at a city level- such as the health benefits of many carbon-cutting policies. (Milner, 2020)

Carbon Neutral City

Given the importance of cities in responding to the climate crisis, it would be an interesting exploration if we could research a city which is setting carbon emissions targets and meeting those targets- exploring the tools used and the drivers of the policy.

Nottingham is such an example of a city setting carbon emissions targets – in that they have set a carbon-neutral city target by 2028. (NCC, 2020)

Definitions of carbon neutrality within research papers are limited (Huovila, A., et al, 2022) but there are a number of definitions that are accepted within several city networks – C40, which is an influential worldwide network of some of the world’s most influential mayors. (Davidson. K et al, 2019) Huovila et al’s extensive paper includes an academic and policy review and states that despite the term carbon neutral being flexible, a definition involves reducing emissions to the lowest level. “through certifiable processes” (2022,p6)

5.3 Research Aim

The research aims to gain an understanding of how energy policy is driven in the city of Nottingham in the United Kingdom. The aim is important in that energy policy choices in Nottingham are an unusual case, in that they have placed an urgent response to the climate crisis high on the agenda: they are the only city in the United Kingdom to have committed to becoming a carbon-neutral city before 2028 and amongst only a handful of cities worldwide to have set such an ambitious goal. (NCC, 2020). The aim is to explore the drivers in this city so that they may offer some learning to similar cities.

To clarify, carbon-neutral is defined by The Carbon Neutral Cities Alliance (CNCA) as having the ambition “to cut greenhouse gas emissions by 80–100% by 2050 or sooner”, compared to the baseline year of 1990 (Salvia, M, et al, 2021 p.2)

However - even more interesting, is that they have made this choice despite having severe problems as a city, with the UK's lowest average income per head of population, (33% lower than the UK average) and the lowest number of people in work amongst major UK cities, (ONS, 2019) and with 15% of the city's population suffering from energy poverty, [when households cannot afford to keep adequately warm because the costs of heating their home are higher than average and paying for those costs leave them below the poverty line (NCC,2018)] the city council has managed to place climate change high on the agenda – passing a motion of ‘climate emergency’ which was passed by the Full Council on Monday 21st January 2019 “in the light of the Intergovernmental Panel on Climate Change’s 2018 Special Report on “Global Warming of 1.5°C” this Council heeds the call for urgent action within the next 12 years to avoid a climate crisis. (NCC, 2019)

According to the United Kingdom’s Office for National Statistics, (ONS, 2023) Nottingham has the lowest level of Gross Domestic Household Income (GDHI) in the United Kingdom. “GDHI is the amount of money that all of the individuals in the household sector have available for spending or saving after they have paid direct and indirect taxes and received any direct benefits” (ONS,2023). The 2023 level of income after housing costs in Nottingham was £13,952 compared to the UK average of £21,440.

Nottingham has managed to avoid the scrutiny of researchers. A review of current or past research regarding Nottingham City Council or Nottingham brings up very little: when research is found, it often covers transport policy choices of the city (Dale et al, 2014, Ijson & Mulley, 2014) or the built environment (Future Challenges for Sustainable Development Within the Built Environment, 2017). All the more interesting therefore to explore this research question further – to provide insight for other cities across the globe that seem to struggle to set and achieve climate

goals using energy policy tools. Nottingham is a “front runner” in many areas of policy. (Cauvain. J, 2018, p247)

It is intriguing to come across a city with other challenges, such as high levels of inequality, yet places a response to the climate crisis high on the agenda: Nottingham is one of the most ambitious cities in the UK, having pledged carbon neutrality by 2028, which is described as “ambitious, innovative and forward-thinking yielding breath-taking results”(Williams. R, *The Guardian*, 2019) through strong leadership (Boyle. M, 2019).

This thesis seeks to explore the energy policy response of one city to the climate crisis. Through using a combination of comprehensive theories and frameworks, the thesis can show the motivations of one city in responding to the climate crisis.

5.4 Research Questions

There is a phrase common in local government, that people “*couldn't be green if they were in the red*”- meaning that if people were worrying about money or that they were already in debt, not well off, or in poverty – that they would not be able to think about sustainability or being “green”. In Nottingham, they have the combination of having considerable levels of poverty and yet placing sustainability and carbon emissions – very highly on their local authority agenda. So they could be said to be somehow combining *being in the red, with being green*.

It leads then to the question: *Which drivers influence the city of Nottingham's energy policy - which factors explain how they can marry their 'low income' status with their carbon neutral ambitions?*

Specifically, the research question can be split into 4 sub-questions to help answer the main question:

- i. In which policy arrangement does energy policy apply – specifically, how do actors, resources, rules and discourse influence the policy in Nottingham City Council?

- ii. How do [deep/core] policy beliefs influence the development of energy policy?
- iii. Which coalitions are present that may influence the development of energy policy?
- iv. Which leadership functions are particularly influencing energy policy?

5.5 Scientific & Societal Relevance

Scientific Relevance

There is limited research on the city of Nottingham in general and specifically the development of its energy policies with much of the research that exists concentrating on their transport policies.

This research will examine drivers of energy policy choices within the city, which will add a new dimension to research regarding the city- as this research has not been undertaken before. In a wider context, researching the drivers of policy change using the policy arrangement approach, leadership theory and belief systems also presents new insight into the decision-making within a city council. Although there is an increasing amount of research regarding the role and importance of cities in climate policy, (Furh. H, et al, 2018; Bansard, J.S. et al, 2017; Bulkeley, H. 2022), the drivers of energy policy in low cities have not often been examined. "As a community, we have been slow to take up the challenge of understanding the politics of urban climate change policy: the extent to which addressing climate change at the local level intersects with existing interests, institutions, and ideas about the city".(Hughes, S. 2017, p363)

Research into urban responses to climate policy has been in general, increasing (Hughes, 2018) But as Bulkeley pointed out back in 2010, the *politics* of many of the processes surrounding how and why policy is made has been neglected (Bulkeley, 2010). In 2022, this was still the case- with the number of papers published relating to cities and climate change still being a very small part of the overall climate

change research area and indeed the area of energy-related research in cities is even declining (Sun, Y-L, et al, 2022)

Also worth stating is that Meijerink and Stiller's framework (explained later) was drawn up only to explore climate *adaptation* and this research is borrowing the framework to use within a research paper within the field of climate *mitigation*. Meijerink has written in the past that it would be useful if the framework would be applied to new research so that we could ask which different structural or institutional factors are needed for leadership to 'flourish'. He also stated it would be interesting to research how the framework relates to 'different policy legacies'. (Meijerink and Stiller, 2013, p254). This paper presents one of those 'different policy legacies', in that the framework will be used in the context of mitigation and not adaptation, and that the framework will be combined with other helpful frameworks, since exploring leadership alone would not offer a complete enough picture for this piece of research.

Societal Relevance

Cities all over the world are facing the same dilemmas: their impact on the environment is significant – so how do they respond to this and how do they ensure that people do not get left behind in the discussions and debates around those responses? This research will present an exploration of energy policy choices within a city and in particular a city that is reducing its carbon emissions through its energy policy and so, other local governments can learn from the Nottingham case. Indeed, there is much to gain from climate policies, with movement around environmental policy being linked to increases in our well-being and quality of life. (Gardner et al, 2016)

Important, Nottingham is not a rich city and faces significant socio-economic problems – children in Nottingham are three times as likely as the UK average to live in an area with a high proportion of income-deprived households – “25,148 children (38.23%) living in Nottingham are considered to be living in poverty, once

you have taken into the costs of housing” (NCC,2018) and average disposable income per head of the population is the lowest in the UK. (Collinson, 2018).

Even after more than a decade of severe government cuts – the city continues to achieve environmental success (Winter & Le, 2020). As stated previously, Nottingham does not perform well in a socio-economic sense (Cauvain, 2018). This makes the approach to climate, through their energy policy interesting “exploring the achievements and challenges of the NCC’s approach can produce practical lessons for other local authorities with similar conditions and situations”(Winter & Le, 2020, p763).

This question is of significant relevance to society since the models and policies followed in Nottingham could be applied to other comparable cities – lessons could be learnt to be shared with other policymakers and or other non-governmental organisations within other cities. Lessons can be learnt from how and why cities, particularly lower-income cities, respond to the climate crisis.

Rose explains that lessons mean that conclusions can be made about policy areas and applied elsewhere, in a different setting. (Rose, 1991) Another local authority may want to learn from another ‘successful’ authority – and it is therefore important which conditions were important in achieving ‘success’ – and the assumption could then be, that if those conditions were to be present in another local authority – they too could have ‘success’ and see a reduction in carbon emissions and energy use.

5.6 Thesis Structure

The thesis aims to answer the research questions raised above. To do this, a comprehensive literature review is presented first, which helps to set the scene. This is followed by the integration of relevant literature into a theoretical framework. This is followed by a chapter on the research design used and the collection of data. The findings of the research are presented followed finally by a

chapter on conclusions and recommendations. An overview of all the literature references used is given at the end of the document.

6 Literature Review

Here an overview of previous research conducted on urban approaches to energy transitions, energy poverty and other related issues is given. The section is divided into empirical, conceptual and theoretical sections that have relevance to the research questions to allow for a clearer presentation of the literature.

6.1 Empirical Issues

A number of academics have been studying and observing the influence of cities within climate change literature. Particularly relevant research is presented here.

Urban Approaches to the Energy Transition

The literature around cities and the energy transition states that local-level decision-making is better able to respond to the climate crisis than national governments: that cities are closer to the people, and better able to respond to the climate crisis and put policies in place. (Bayulgen, O. 2020)

For instance, “cities can be described as an *organic form of government* and often express the aspirations of their citizens more succinctly and quicker than higher levels of government” (World Bank, 2010)

Researchers within this area state that production and consumption in key sectors need to be transformed.— areas such as energy, transport and agriculture need to be brought back within the planetary boundaries if we are to stand a chance of reversing the effects of climate change (IPCC 2007, Meadowcroft, 2009, Steffen et al, 2018). Logically, a city is more able to quickly respond to some of these issues: through a local transport policy; through energy use: most cities will be less able to influence energy production unless they can directly influence energy use through local policy choices: for example, using energy efficiency methods such as insulating homes.

There is an increasing voice amongst cities that they will act – many as a response to local desire amongst residents to respond to the issue of the climate crisis – this can be seen in an increasing number of cities signing up to an increasing number

of global climate networks across the globe committing to challenging climate targets: (Gordon & Johnson, 2018). As many as 10,000 cities have signed up to the Global Covenant of Mayors alliance or similar networks, to learn from each other (Albarus et al, 2023). Many cities across the world have made individual commitments to reduce their greenhouse gas emissions: “228 global cities, representing 436 million people set greenhouse gas reduction goals and targets” (C40/ARUP, 2017)

Bulkeley et al (2014) stated that cities have a critical role to play in the governance around climate policy and that the response should not be limited to national or international areas of governance. The IPCC (IPCC, 2022) also stresses the impact that cities have on global emissions and the importance of their contribution to cutting emissions. A C40 paper (a global network of nearly 100 mayors of the world’s leading cities) states that “Cities are at the centre of the world economy and decisions made in them have a significant impact on emissions beyond their boundaries”(C40/ARUP, Uni of Leeds, 2017)

There is also research that states that cities are intrinsic to resolving climate change because they are contributors to the problem, with most of the world's energy use and the attributed emissions coming from cities. (Albarus et al,2023)

It is stated that there should be almost an expectation that cities respond to the climate crisis since the majority of the emissions are created within cities. Bulkeley and Betsill (2003, 2006) state that because of greenhouse gas emissions coming from the activities within our cities, there is an increasing acknowledgement within research that the climate crisis is a city issue. More than half of the world’s population lives in a city and that is set to increase to 70% by 2050 (World Bank, 2010, Giles-Corti B et al, 2021) and over 80% of the world’s energy demands originate in a city (Zhifu.M, 2019). It is the activities of a city which have mostly led to the issues with climate change and it should therefore be the city that resolves those problems (Van der Heijden 2023)

However, research is not sufficiently answering the *how* question: just because energy demands are largest from cities with more than 50% of the world's carbon emissions largely resulting from city activities, this does not necessarily mean that a city will respond.

Energy & Poverty

The terms Energy Poverty and Fuel Poverty are used interchangeably in literature. Energy poverty has a slightly wider definition: "if they are unable to use household appliances and adequately heat and/or cool one's home to maintain decent living standards" (Champagne, 2024, p764). For this research, both terms will be used.

Fuel poverty first became a research 'interest' in the UK with Brenda Boardman's ground-breaking PhD which was published in the book *From Cold Homes to Affordable Warmth* (1991). She was one of the first academics in the UK interested in the existence of fuel poverty, - it is distinct from poverty in that income is only one and not the most important factor in a person or household experiencing it. In 1991 *fuel poverty* was defined as when a household could not "have adequate energy services (which includes heating and other sources of energy use) for 10% of income". (Boardman, 1991, p227). This was a historical figure, based on previous understandings of how much income the poorest sections of society spent on energy to be able to be 'warm'. (Boardman, 2010). Fuel poverty is specifically different to poverty in that it is the result of several factors: the overall quality of the built home, the energy efficiency of the home, rises in energy prices - and a low income. (Fitzpatrick, 2017). In this, the policy response to the existence of fuel poverty is different to those of poverty in general.

Fuel poverty continues to be relevant in that we exist in an era of increasing fuel prices, unlikely to decrease, unless we find cleaner and cheaper sources of fuel - couple this with the need to reduce the use of (finite) fossil fuels. The policy discussion is still relevant - how we protect the poorest from price increases and how can we ensure that households can keep warm and that our society can still see reductions in carbon emissions. (Fitzpatrick, 2015)

Fuel poverty research tends to concentrate on the issue of social justice, understandably as the issue involves the most vulnerable in society (Walker & Day, 2012, Gillard et al, 2017)) with some research focusing on the energy 'vulnerability'- - researching which income groups, age groups or socio-economic groups are more vulnerable to fuel poverty. The work of Snell et al (2015) shows that it is low-income families and older people that are more vulnerable to fuel poverty due to often living in low-quality housing and facing barriers to work, which in turn will affect their income. (Gillard et al, 2017). Snell's et al's work also stated that these more vulnerable groups are often less likely to be part of the policy process and policies do not then reflect their daily realities.

The issue of fuel poverty and climate is under-researched (Jessel et al, 2021) yet highly interesting since the existence of low-income households, high energy prices and the need to cut carbon emissions is the current state and likely to be for the foreseeable future (Fitzpatrick, 2015). Streimikiene et al also state that it is vital that research allows for the bringing forward of good policy answers for the challenges we face in terms of climate mitigation, that also "ensure energy poverty alleviation and the promotion of social justice"(2023, p2)

Much of the recent research around fuel poverty and climate centres on a term called "just transition", meaning that if we acknowledge that cities and their residents need to respond to the climate crisis, the risks and benefits of such a response need to be fairly distributed: "energy justice is centred around the notion that all individuals should have access to energy that is affordable, safe, sustainable and able to sustain a decent lifestyle"(Carley & Noninsky, 2020, p570). It has been often documented in the UK that fuel-poor households have to choose between heating or eating (Streimikiene et al, 2020). The literature stresses that this phenomenon highlights the necessity for fair policies ensuring that the policy response to the climate crisis delivers a response to the climate crisis but also ensures fairness "win-win policies in terms of social, health and environmental objectives may be achieved in the short-term, improving the public policies related

to environmental sustainability, Greenhouse gas mitigation, (GHG) access to clean energy”(Streimikiene et al, 2021)+

Research has pointed to the issue that despite fuel poverty being known for many decades now, the situation in the UK has worsened. As the UK sits in the middle of a cost of living crisis, it is estimated that using the 10% definition, 65% of all UK households were fuel-poor in April 2023 (Palmer & Terry, 2023). Addressing fuel poverty through the use of targeted energy policies (such as home insulation) is all the more relevant for cities such as Nottingham and cities with large numbers of lower-income groups that are seeking to marry reductions in carbon emissions with an equitable response.

Leadership Role of Cities

A strand running through the literature on the role of local government is the thought that local government must lead. Many hundreds of local mayors used their pressure to motivate global leaders around the formation of the Paris Agreement, it was the cities that set challenging targets and real ambitious commitment to the negotiating table (Gardner, 2016)

Van der Heijden’s work on sustainable cities asks the fundamental question: “How can we achieve cities that are environmentally and resource-sustainable and resilient to human-made and natural hazards?” (2014,p1) Throughout the book, there are useful examples of the sort of regulations or collaborations that have made that specific city ‘more sustainable’. However, Van der Heijden admits towards the end of the book that he is still not completely clear about the outcome and what makes a sustainable city. (Van der Heijden, 2014).

Leadership has been shown by cities in 2016 when 7100 cities across the world came together under the Global Covenant of Mayors, which grew from the EU Covenant of Mayors formed in 2009. (FT, 2016) This has now become a network of 10,725 cities and is growing, representing millions of people across the globe, to “accelerate, ambitious, measurable climate and energy initiatives that lead to a low-emission and climate-resilient future”. (Global Covenant of Mayors, 2021)

6.2 Theoretical Issues

Theories relevant to the research are presented in the following section.

Transition Theory

Transition theory may offer some enlightenment.- particularly the 'transition' discussion in seeking an answer to the actor role within transitions (Wittemayer et al, 2016).

"A transition can be defined as a gradual, continuous process of change where the structural character of a society (or a complex sub-system of society) transforms". (Rotmans et al, 2001,p16). A transition can cover energy supply, healthcare, farming, and a huge list of important societal areas. "Transitions come about when the dominant structures in society (regimes) are put under pressure by external changes in society, as well as endogenous innovation.'(Loorbach,2010, p166).

Transition management theory is a relatively new theory or framework brought forward by academics such as Loorbach and Rotmans and has been worked on since 2000. It promises to provide a framework "implementation of governance strategies and instruments" around transitions. The framework was developed from the opinion that a new sort of governance was required to help govern transitions and that neither the centralized, government-led approach nor the market-led approach was capable of dealing with the complexities of transitions. (Loorbach, 2010). The multi-level framework is based on complexity theory and provides 4 pillars of governance: strategic, tactical, operational and reflexive (Loorbach, 2007). A full description of the framework can be found in Loorbach's *Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework* (2010)

Transition management offers a complex framework where there is a general assumption that long-term thinking is not possible within government (Loorbach, 2010). This is counter to the experiences within Nottingham and although it offers a clear, (but complicated), neat framework that could be applied to the energy

transitions of Nottingham, it does not offer answers to the normative, messy nature of political decisions that other frameworks offer. Many researchers have examined historical transitions, hoping to be guided by the past as they enter the new energy transition (Geels 2002), and 'transition management' has become very popular (Rotmans et al. 2001), even used by the Dutch government, (NEEP4 2002).

However, those UK researchers who understand transition theory are not so enthusiastic about it. Shove and Walker ask serious questions about whether a transition can even be 'managed'. And whether that is even desirable. Shove and Walker (2007) argued for 'backing off from the nested, hierarchical multi-level model as the only model in town (2017, p366) Transition theory has also been accused of being too positive about the realities of moving away from the status quo and that they ignore the "political and power dimensions of transitions" (Meadowcroft, 2009, p334) So, following this advice, this thesis has *not* used the multi-level model to explore this case study.

Alternative theories

It was the literature presented by Bulkeley, drawing on Hoffmann which triggered the question of the thesis. She explains the change in urban governance around climate mitigation and why an explanation of the style of leadership is not enough, and we also need to look at motivations: "These motivations are clearly visible as actors seek to develop the "win-win" potential of responding to climate change, make claims that cities can act more quickly on this issue than national governments, stake claims for resources based on their potential to mitigate or adapt to climate change, and use the issue as a basis for political contestation with other levels of government" (Bulkeley, 2010, p234). +

Bring this together with the view in the literature that many cities lack the political will or the capabilities to move their energy policy (IPCC,2014). Having the capability or not to move energy policy will be explored using the frameworks below. This makes research on a city that does appear to set energy policy in response to the climate crisis all the more interesting.

Duncan Liefferink (2006) wrote very clearly that: “The definition of the policy is the definition of the policy issue at stake, the identification of actors taking part in policy making and implementation, and the written and unwritten rules governing their behaviour”. (Liefferink, 2006, p45)

Research does point to an increasing level of cities prioritising energy policies in response to the climate crisis but Chu et al reiterate that work around “meaningful and sustained innovative strategies for climate mitigation and adaptation is still in its infancy”. (Chu et al, 2018, p361) . It is therefore interesting to ask what we can learn from local, city-level policies or ideas on climate mitigation that do offer ‘meaningful and sustained strategies’. Especially since what we may learn is not only useful to help with incremental change or improvement but may help cities make the real transformation that is needed. (Moloney et al, 2018)

Leadership is clearly felt in cities all around the world: many cities are innovating and coming together to share ideas responding to climate science and taking policy decisions in response. (Gardner et al, 2006). There are expectations that local government has the role of ‘front-runner’ and at the “forefront of sustainability” (Meadowcroft, in Rotmans & Loorbach, 2010, p108, Loorbach.D, 2023, p1)). Wittemayer also states that “the role of local government is increasingly understood as moving from controlling and containing to facilitating and supporting” (2016, p45) and that “ fundamental changes in the roles of actors and their relations with others a vital element of any transition” (Wittemayer et al, 2016, p46).

7 Theoretical Framework

To explore the drivers of energy policy in Nottingham City Council, the theoretical concepts chosen to help explore the research question need to be presented and explained. We have a city, which has ambitious plans for carbon emissions reduction – and the lever explored is their energy policy. Exploring the drivers for this policy can help remove barriers for other cities to follow in their footsteps. The following pages will present how the research question will be answered.

There are several theories as listed by Liefferink (2006) that apply to an analysis of policy making. Saunders et al, state that all theories in research have to be conceptualised so that the theory can be researched and findings can be interpreted (Saunders, Lewis, & Thornhill, 2016). To examine the energy policy choices in the city of Nottingham, it is necessary then to adopt an analytical framework that pulls apart the policymaking process. “A framework supports multiple theories, which are narrower in scope and emphasize a smaller set of questions, variables, and relationships” (Sabatier, 2014,p189).

A number of frameworks – or parts thereof- are relevant for this research: these policy analysing frameworks below are chosen since they explore more deeply the motives for policy development without ignoring the politics of it all: “There is a politics to the very processes of abstraction involved in defining something to manage” (Shove and Walker, 2007). The following frameworks will allow this research to explore this very question in the city of Nottingham.

7.1 Policy Arrangements Approach (PAA)

With the increase in the importance of environmental issues since the 1990s and the importance of energy policy within the environmental/climate change field, comes a shift in decision-making away from only the niche ‘green’ departments within city councils towards a wider group of policy areas and decision-makers. Bas and Leroy saw over decades a change in environmental policies and saw this shift across country boundaries. Up until that time these policy changes were described as ‘strategic or instrumental in nature’ (Bas en Leroy, 2006, p4).

Therefore, there grew a need to explore the *political context* of these changes/shifts. And that need bore the 'Policy Arrangements Approach' (referred to as the PAA): "Our institutional dynamics' approach aims at a mid-position, doing justice to agencies and structures"(Arts en Leroy, 2006, p5). The PAA sought to "a. to make a connection between all kinds of everyday policy processes and long-term developments b. to do justice to the interaction between the impact of the strategic action of actors and structural developments and c. to do justice to broader social and political developments, influential in the environmental policy domain." (Arts & Leroy 2006, p96)

To truly understand how policy decisions are made (or are not made) and who enables/disables the decisions, it is useful to use a framework such as the *Policy Arrangements Approach* to help bring out the influencing factors of 'changes or stability' within energy policy. Leroy and Bas place their framework deliberately in the middle of the 'extremes' of the academic discussion over the factors influencing policy change or stability. They state they are of course influenced by the four corners of the debate: ideational-organisational or the discursive material.

The definition of policy arrangement is the 'temporary stabilisation of the content and organisation of a policy domain' (Van Tatenhoeve et al, 2000, p54). The PAA enables us to explore how each of the dimensions could be a factor in the energy policy choices in Nottingham. However, the four dimensions are quite broad and where there are felt to be gaps in the PAA, or where more explanation is needed - such as the role of actors in energy policy choices or the role of discourse- one can use parts of complementary frameworks such as the Advocacy Coalition Framework and leadership functions - this is explained further in the theoretical section. According to Wiering et al, (2017), there are four dimensions of a policy arrangement. (see fig.2)

Agency – the actors involved and the coalitions (groups of actors and their interactions) within a policy domain;

Power and resources - where do power and the resources lie within the area of research and who has it and how is it used?

Rules of the game – are there regulations (environmental regulation), informal (the political culture, “this is how we do things”) or formal rules (for instance, targets for the reduction of carbon emissions or targets for the reduction in fuel poverty) that need to be followed within the policy domain?

(Policy) Discourses – the discussion around the policy itself within the area of study – described specifically as "a specific ensemble of ideas, concepts, and categorisation that are produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities" (Van Tatenhove et al. 2000). Discourse **can include the opinions and the views (norms) of the actors involved** – in this case councillors or civil servants for instance or other actors involved in the development of energy policy. (Lieberink, 2006)

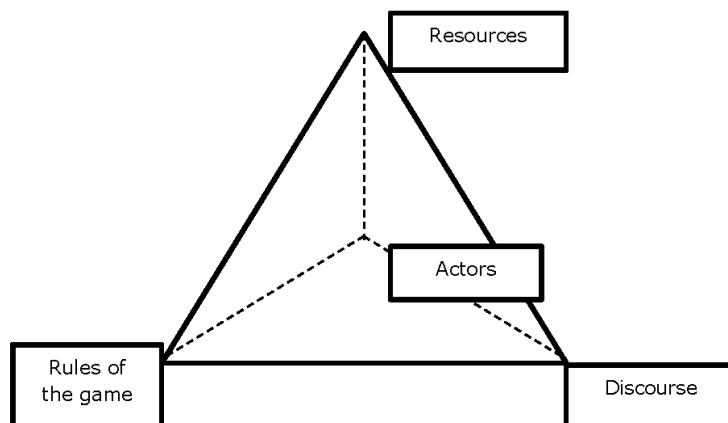


Figure 2 Operationalised concept of PAA (van Tatenhove & Leroy, 2005,p6)

There is a distinction between the *organisation* of the policy arrangement and the substance of an arrangement. The organisational aspect covers the structures of the policy arrangement: actors and coalitions, power and resources, and rules of the game and the *substance* covers areas such as the discourses, ideas, discussions

and concepts around the policy domain – the “content of the policy domain”. (Wiering et al, 2017).

This is a useful aspect of the PAA – it brings together several parts of policymaking for instance- in the case of Nottingham, the energy departments of a city council or city networks or it could include the national regulations around energy policy but there is of course much more than just the institutions when one follows the development of policy. People, ideas, conversations, ideologies – all play a part in policy development. The PAA brings both sides together, perfectly explained as “the PAA recognizes the importance of long-term structuration and stabilization processes in policy practices, leading to rather stable structures of rules (e.g. voting procedures) and resources (e.g. allocation of authority). At the same time it is recognised that policy actors, while being ‘forced’ to act within the boundaries of these structures of rules and resources, are able to change these as well” (Weiring and Arts, 2006,p4)

Liefferink (2006) adds that PAA gives a dynamic view of policy arrangements. The closeness of the dimensions means that analysis of the policy area can start from any of the dimensions – ‘from any corner’. Because the policy change is ‘dynamic’ the tetrahedron should be ‘moved around’ to visualise the other parts of the diagram. The beauty of the PAA is that it is not set in stone and the authors clearly state that the tetrahedron should not be a ‘straight-jacket’ and should be “practical

The structure of a policy arrangement can be analysed along the following four dimensions, the former three referring to the organisational, the latter one to the substantial aspects of policy:

- the *actors* and their *coalitions* involved in the policy domain;
- the division of *resources* between these actors, leading to differences in *power* and influence, where *power* refers to the mobilisation and deployment of the available resources, and influence to who determines policy outcomes and how;
- the *rules of the game* currently in operation, in terms of formal procedures of decision making and implementation as well as informal rules and ‘routines’ of interaction; and
- the current policy *discourses*, where discourses entail the views and narratives of the actors involved (norms, values, definitions of problems and approaches to solutions).

tools in a fairly elementary toolbox”(Liefferink, 2006, p66). Helpfully, Liefferink explains further:

So – if a more comprehensive toolbox is needed to analyse this research question, other tools (frameworks/theories) can be sought and added to the PAA. Therefore an additional layer will be added to the framework further exploring the nature of actors, coalitions and leadership functions. These frameworks were chosen as they incorporate all the important factors that decide how decisions are made at the local level: people (agency), regulation (rules of the game), money, (resources), beliefs and what is felt to be important (discourse),

7.2 Application to Nottingham

The dimensions of the PAA and their application to Nottingham are explained in this section.

Agency (Actors)

This dimension of the PAA includes the actors and actor coalitions within Nottingham. It relates to the key policy actors within the energy policy area. Who is involved in setting the agenda, which actors decide on policy and who implements policy? This discussion can include both formal and informal relationships. For instance – one can ask who *really* decides policy despite what is agreed formally.

This will include elected councillors, cabinet members, officers of the council, and Non-Governmental Organisations such as *Nottingham Energy Partnership* in Nottingham - what part do they play within the development of energy policy – in terms of influencing or even collaboration? The role of actors can be analysed using policy documents or “in the field”. (Arts and Leroy, 2006, p51)

The role of civil society can also of course play a part within the actor dimension – particularly since there has been a move away from traditional energy systems in favour of people-led/bottom-up policy development in the form of Energy Co-operatives but these will not form a part of this research given the restriction of time. There is already a significant level of research regarding the influence of energy cooperatives on energy policy.

Rules of the Game

It is possible that the 'rules of the game' influence a city council's development of energy policy. By the rules of the game, this in general refers to legislation from the national government, or the European Union, which in turn influences how a city council responds. It can refer to targets or goals laid down either by the national government or by a city council itself on its progress. Rules of the game can also include how a city council is monitored on progress – if at all – by itself or government (or indeed other bodies). This could include any Government-set target for reducing carbon emissions in the city. Or it could be a locally set goal to increase the number of energy-saving measures, or targets to reduce energy poverty.

In addition, Giddens states that rules can also be "organisational"(Giddens, 1984) – in that rules can also be unwritten, socially accepted, for example, it could be an expectation that policy will be discussed amongst councillors of the controlling party/ies early in the policy development process. This might not be written officially in any area of the local government decision-making process but it is an expectation that has grown over time.

Power & Resources

Giddens defines power as "Action depends upon the capability of the individual to 'make a difference' to a pre-existing state of affairs or course of events". (Giddens, 1984, p14). In addition to this definition he uses the definition of power from Bachrach and Baratz (in Giddens, 1984,p14) in that "They represent these as the capability of actors to enact decisions which they favour on the one hand and the 'mobilization of bias' that is built into institutions on the other". He adds though that we need to understand a duality of power in that it is influence and resource-based. This is obvious within the PAA – and no doubt why both power and resources fall under the same dimension. The framework is then less able to be criticised for its one-dimensional understanding of 'power. '

Questions within the research regarding power will focus on influence – who wields influence within the city council? Going hand-in-hand with power is resources: this can refer to funds available to develop policy options, to fund projects emanating from policy promises from actors. Are there national or local funds to enable energy policy development and projects? The distribution of resources – be this financial, where staffing is placed, where the knowledge or legal resources are placed and with what value. This may be able to shed some light on where the power lies within the city council. Weiring and Arts (2006) state that power, in order to be analysed, should be ‘operationalised’ into ‘influence’.

Discourse

Hajer states discourse as “an ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices” (Hajer, 2005, p175).

Discourse within the PAA “entails the views and narratives of the actors involved (norms, values, definitions of problems and approaches to solutions).”(Arts and Leroy, 2006, p47) and what Wiering and Arts (2006) state as “i.e. the storylines and paradigms used in the problem framing and the decision-making process;”

Looking at discourse through the lens of actors - ideas or views will have an impact on policy arrangements. Leroy and Arts stated that discourse within the PAA has two levels: general ideas about how society should be organized and secondly “concrete policy problem at stake e.g. about the character of the problem, its causes and its solutions”(Lieverink, 2006, p58) in this context: we have the climate crisis – one of the levers to locally react to this crisis is by using local energy policy, or there is an additional or another ‘policy problem’- for instance, fuel poverty which also has local levers that can be pulled by local government.

Foucault (1970) states in *The Order of Discourse* that social practices will in turn develop norms, values and rituals which means that discourse is at the heart of any policy development. He states that regulation, structures and hierarchies come

from social processes: that the interaction of not only national policy but also media, citizens, and political activity will shape policy discourse.

Through the framework, the discourses that are relevant to this discussion are explored. As Hajer suggests: Environmental arguments might seem factual and scientific, but they are much more meaningful than just factual.(Hajer & Versteeg,2005). In effect, the context in which energy policy can be discussed or understood is influenced by the discourse that goes before it or is currently present.

Although the PAA is comprehensive and could have offered much of an explanation of this case, just as discourse theory could offer some explanation – it does not quite fit well enough. Given the knowledge of the researcher and the understanding of the political nature of the city council, another complementary framework was sought. Discourse in itself does not delve deep enough. It is the *hearts and minds* of the actors which need to be explored, the intrinsic beliefs of actors present and not only the discourse. This extra layer can be provided by bringing in parts of the Advocacy Coalition Framework. It is not intended that the whole framework be used, this research will borrow only parts of the framework where it adds depth to the exploration.

7.3 Advocacy Coalition Framework (ACF)

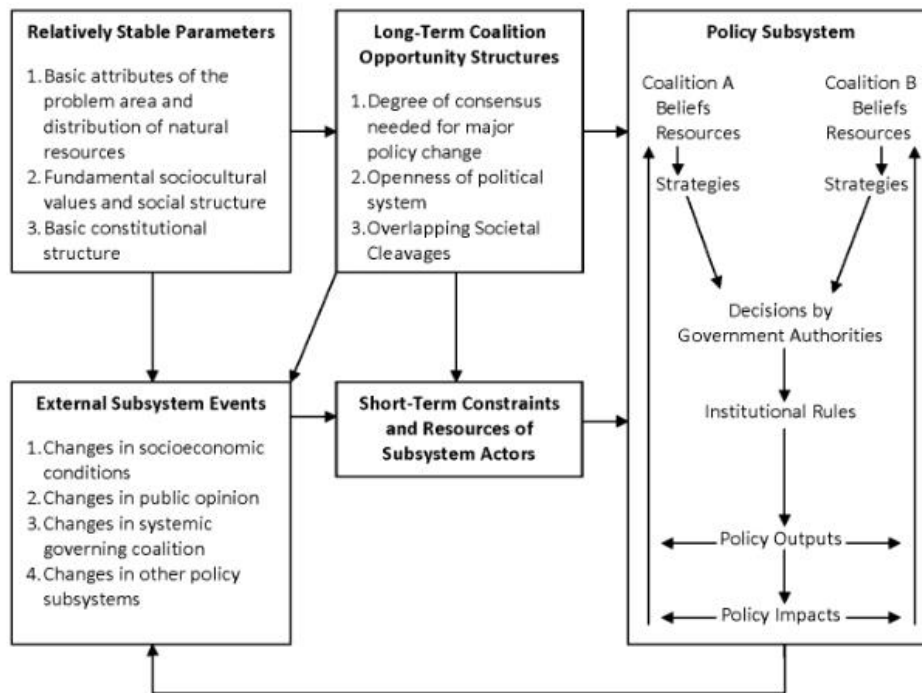


Figure 3 Advocacy Coalition Framework

Sabatier’s Advocacy Coalition Framework offers an extra layer of depth for this case study research (see Figure 3). Only parts of the framework will be used in this paper (beliefs) - as an add-on to the PAA’s actor dimension. Helpful in this research is that it will cover a period of at least 10 years, which includes the personal knowledge and experience of the researcher but in addition, thoughts, opinions or recollections- what some former councillor colleagues would call “institutional memory” and documents from more than 10 years ago as “scholars should take a time perspective of 10 years or more remains useful advice” (Wieble et al, 2011, p354)

It is “one of the most prominent and influential theories for analysing and explaining the policy process” (von Malmborg, 2023, p223) It is a very well-known and well-tested framework within the field of policy decisions. It is a way of looking at the energy policy within Nottingham, helping us explain decisions made in a very clear and focused way. It is to its testament that it has been used many times (Osei-Kojo et al, 2022) over the last 30 years to explain deeply complex

policymaking, how decision-makers form opinions, groupings, “coalitions” and how this influences the process of policy formation (Gabehart et al, 2022). It is an ideal add-on to the PAA, in this case, to help explain the actors' role further. It is interesting to explore how the existence of *beliefs or coalitions* within the actors of the city council influences their decision-making regarding the formulation of energy policy. It is quite acceptable that only parts of the ACF are used “Analysts have applied and will continue to apply the entire framework or just one or two of the theoretical foci in empirical applications”(Jenkins Smith et al, 2014, p188)

It can be argued that discourse within the PAA or Hajer’s discourse analysis could be used to further explore the role of language or discussion around energy policy in Nottingham, due to the possibility that discourse will “frame and/or influence the policy outcomes” (Berger et al, 2001,p62) – and that may well be evident in the course of the research. However, this research will not use Hajer’s theory. It is felt that elements of the ACF, in particular the belief systems will be a better addition to explore the drivers of the actors involved in formulating policy.

The ACF comprises three main concepts: advocacy coalitions, policy change, and policy-oriented learning. The framework allows us to treat those involved in policymaking as advocacy coalition members, having beliefs and coordinating actions. (Sabatier, 1998)

Cairney (2012) neatly describes the ACF in chapter 10 of Understanding Public Policy in that the ACF realise that people go into politics in order to turn their beliefs into actions. They form groupings with like-minded people “beliefs provide the glue to hold actors together” (2012, p1) It is this ‘glue’ which is the most interesting to find in Nottingham.

Specifically – it is the *core beliefs and policy beliefs* that offer the most interesting addition to the framework. Getting things done within a city council is rarely the work of one person. It is usually the work of many “actors sharing policy core beliefs”.(Sabatier, 2014,p195). Weible et al. (2016, p. 1), stated that coalition politics

happen when people or organisations “mobilize and coordinate with others who share their beliefs about what government should or should not do on an issue.”.

Although there has been some criticism of the ACF, (Jenkins-Smith, 2014, Hajer, 1995) these criticisms have been involving aspects of policy change, belief systems and external shocks. However, it has been chosen as a framework because it specifically attributes the belief systems of actors as having a critical role to play in policy decisions (Cairney, 2012, Weible & Sabatier, 2005). ACF focuses on actors and agency, giving it the potential to help analyse the political decision-making process and the beliefs of actors within the city council. Since there is no getting away from the fact that the political nature of the city council will have had a significant impact on the energy policy decisions – it makes sense to use a framework or several frameworks that together help to explore those political decisions and help show how relevant those beliefs or coalitions are.

And so, all the more useful that a part of the Advocacy Coalition Framework covers the formation of policy within *policy subsystems*, and these subsystems in turn have a group of actors that support and converge in a *coalition*, sharing similar priorities and belief systems. These coalitions can typically be politicians, civil servants, NGOs, journalists or even residents. The coalitions can also share resources. It is the policy subsystem which is very interesting to complement the PAA framework. More specifically, it is the policy beliefs within the policy subsystem which will be explored within this thesis – since it is the policy belief that concerns itself with how serious a problem is, and that will influence the response. (Weiring, et al, 1996)

This theory is interesting for this study since the collection of councillors or civil servants within one city council or within one group (political or policy area for instance) could be seen as a ‘coalition’. And their interactions and beliefs will be interesting to explore, to see to what extent they are influencing the policy choices.

Sabatier does state that until now, the hypothesis has proven very difficult to test since “studies found it difficult to isolate policy core beliefs from secondary

aspects". (Sabatier, 2014, p196) resulting in mixed support at best, with many examples of falsifications. Sabatier states that the framework needs to work on better ways of measuring belief systems. (Sabatier, 2014). One could argue that combining the PAA and the ACF contributes to this better measurement. It will be helpful then in this research to treat beliefs as one, instead of exploring the tiers of beliefs that Sabatier includes.

The exploration of the influence of any beliefs that Sabatier describes as "the fundamentally normative values and ontological axioms"(Jenkins Smith et al, 2014, p191) within this thesis will come from the semi-structured interviews and knowledge of the researcher. The ACF states that fundamentally, beliefs make policy "The ACF assumes that governmental programs are translations of policy-oriented beliefs and can be conceptualized and measured hierarchically like belief systems" (Sabatier, 2014).

Wiering et al (2017, p233) go as far as to state that "deep core beliefs of coalitions normally do not change. They tend to contribute to path dependency as long as external circumstances do not disturb the deep core and policy beliefs"

How far Nottingham is on a path of dependency, that is "preceding steps in a particular direction induce further movement in the same direction' (Pierson, 2000, p. 252 in Weiring, 2017) would be an interesting question but the restriction on time for this research means that that question will be left unanswered until a future researcher explores further.

7.4 Meijerink's Five Leadership Functions

Although actors and their environment -the legal environment, the funds available, and the political will - influence much of their decisions around policy, the two frameworks of PAA and ACF were not offering quite enough of a guide in seeking to explore answers to the thesis question. As an add-on to the actor dimension of the PAA, an additional framework has been found to further explore the role of *leadership*. Adding this framework enables the relevancy of leadership to be

explored more fully. It is the influence of leadership within a city council or the role of being seen to lead outside of the city that can have an important role in deciding whether to respond to a particular issue or not. It is relevant in this exploration to find a framework which adequately helps “specify the contribution” (Meijerink & Stiller, 2013, p253) that leadership has made in the energy policy choices in Nottingham. It is important to state that leadership is not the only relevant factor (Meijerink & Stiller 2013), hence this framework is seen as enhancing the other frameworks presented earlier in this section.

Meijerink en Stiller’s framework of Five Leadership functions (Meijerink & Stiller, 2012) exists since other frameworks in their opinion, did not address the influence of leadership enough “the leadership factor warrants special attention” (Meijerink & Stiller, 2012, p242), The framework describes the leadership functions needed to have successful climate adaptation policy (see figure 4) but these leadership functions can just as easily be relevant for climate mitigation policies such as energy policy. According to their framework, there are four main challenges which leadership needs to address:

1. Influence the policy process to get adaptation [insert here, mitigation instead of adaptation] policies accepted and implemented;
2. Enhance connectivity across different policy-making levels, sectors, and actors;
3. Enhance the capacity of society to learn in response to feedback from the natural system and to anticipate the long-term impacts of climate change;
4. Increase the adaptive capacity (adaptability) of governance networks concerned with climate adaptation [insert here, mitigation].

Table 2. Leadership functions, their locus, and associated tasks.

Leadership function	Locus of leadership	Leadership tasks
Political-administrative	positional leaders; (elected) politicians and/or public managers	decide on, communicate, and monitor the realization of a shared vision on climate adaptation; generate and allocate necessary resources for climate adaptation
Adaptive	complex adaptive system (CAS)	nonapplicable (adaptive function is emergent property of the CAS)
Enabling	positional leaders; key individuals (sponsors, boundary spanners, policy entrepreneurs, champions)	allow for and stimulate a variety of adaptation strategies and options; create a sense of urgency, eg. by setting deadlines; insert adaptive tension; foster interaction
Dissemination	positional leaders; key individuals (boundary spanners, policy entrepreneurs, champions)	insert newly developed ideas (within the CAS) into the network of positional leaders; get accepted newly developed ideas
Connective	positional leaders; key individuals (sponsors, boundary spanners, policy entrepreneurs, champions)	promote problems and mobilize actors to search for solutions; bring people together/agree on a collaborative strategy; stimulate multiple action options/working together/building trust and legitimacy; forge agreement/move to action/ implement strategies

Figure 4 Summary of the five leadership functions, the type of leader, the locus of leadership and the associated leadership tasks (Meijerink & Stiller, 2009).

Meijerink and Stiller summarise their findings, which are relevant to the discussion around leadership within climate mitigation – “the political-administrative function of leadership is still important” (Meijerink & Stiller, 2012, p253). Someone needs to make the decisions, based on ideas and be able to follow progress. Leaders need to be able to bring people together and form policy. Below the model of the framework is visible (figure 5).

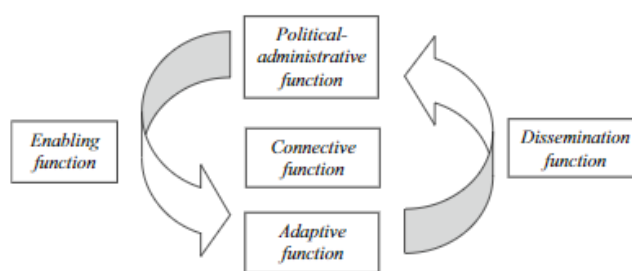


Figure 5 Model of leadership functions (Meijerink & Stiller, 2013)

The theoretical frameworks chosen to explain policy choices in Nottingham stem from the need to find out how policy choices are made and “why elected officials decide to “do something” in the first place.” (Beland 2005, p12).

Stiller and Meijerink stated that the framework benefits from the ability to analyse and check leadership within as they would state, climate adaptation – but these leadership functions are equally useful within climate mitigation. They state the need to further test the framework in other settings (Meijerink & Stiller, 2012). Nottingham provides a good empirical case for testing this framework

Policy-making decisions, particularly around the climate crisis are not simple questions, there is also not one answer. This then requires the use of a number of different tools, in this case, different parts of frameworks to explore the thesis question. Cairney describes this use as ‘complementary’ (Cairney, 2012). This is also asserted by Gabehart et al (2022) – research using the ACF should use other frameworks in order to ‘fulfil particular theoretical needs’ (Gabehart, 2022, p10)

7.5 Operationalisation of the Theoretical Concepts

Having found three frameworks which allow exploration of the case study of Nottingham, it is now necessary to define them into measurable variables and indicators to allow for an analysis of energy policy drivers in Nottingham. However, not all parts of the frameworks will need to be used in order to come to a satisfactory answer as has been explained in detail earlier in the thesis. It should be possible to use the frameworks (or parts of) to assess to which degree, any of the concepts and variables are present in Nottingham. As stated by Meijerink (2015), this means that tasks can be attributed to certain functions and through analysing interviews and documents, a link may be found.

The Policy Arrangements Approach is particularly useful because stresses the relationship between the dimensions, allowing for minimal loss of context, it allows us to define the policy, find the actors involved and look for the written and unwritten rules that they follow (Lieverink, 2006). However, because it is so broad as a framework, it will need to be operationalised further. In table 2. the operationalisation of all parts of the frameworks that will be used are presented.

For the PAA dimensions, the operationalisation is presented with the help of Weiring and Arts (2006). The policy arrangement is made up of the rules, actors, resources and discourse surrounding the energy policy in Nottingham. By operationalising the concepts we can search for the variables representing the concepts within the arrangement, by searching for the presence of 'indicators' – although as Weiring and Arts point out, we need to use this term in a very loose sense, since these indicators are more like observations than 'real' indicators – which are better described as “empirical assets which can be immediately observed” (Weiring and Arts, 2006, p328). However, by breaking down the concepts into variables and indicators, we can then empirically analyse energy policy to help answer the thesis question and sub-questions.

The deep/core policy beliefs element of the Advocacy Coalition Framework will be placed under the PAA's actors dimension, as an 'add-on'. Sabatier sees deep core beliefs, policy core beliefs and the secondary aspects of beliefs as a tiered hierarchy of beliefs, believing that deep core beliefs are an intrinsic set of beliefs – akin to a “deeply held personal philosophy”(Ripberger et al, 2014, p485), it is your perception of the world, they are not bound to a particular policy area; (Jenkins Smith, 2014) policy core beliefs are beliefs that are policy specific, they are influenced by a person's deep core beliefs (which can be described as your view of the world), they are the “normative commitments and understanding of causal linkages in a given policy subsystem” (Di Gregorio, 2017, p134) such as care for the environment versus economic growth or the importance of addressing inequality/poverty. The *secondary beliefs* are beliefs that are relevant to only parts of the policy subsystem and are policy-related.

For the purposes of this exploration, “*deep core beliefs, policy core beliefs* will be seen as one set of *beliefs*, for simplification of the analysis. Secondary, policy-related and less changeable beliefs will not be included. Both deep core and policy core beliefs involve normative values or commitments (Valman, 2016)- which is an important point. This is because in general, it is the *actor/s* normative values that

could have an influencing factor on the drivers of energy policy. Since there is an assumption that just like ordinary humans,

“beliefs and political incentives will have a major impact on which policies are implemented”(Olivier,H & Millner,H, 2016, p234). Beliefs are described by Valman (2018) which has helped operationalise the beliefs concepts.

The concept of leadership functions has already effectively been operationalised in *Fig. 4* by Meijerink and Stiller, which was the result of an extensive literature review. The operationalisation of the leadership functions has been further complemented by the work of Alderen et al (2020), where Meijerink and Stiller’s leadership functions formed a basis of the framework used in their case study analysis, along with a thorough literature review within their regional energy policy paper, so it does not necessarily need to be further explained here.

Table 1 Operationalisation of the dimensions

Concepts	Variables	Indicators
Rules of the Game	Formal rules	National framework National laws National Targets Local/Government targets/key performance indicators Procedures
	Informal (unwritten) laws or rules	Norms & Values (can also be in the form of a named person, persons or group) Expectations
Actors/Policy subsystem	Beliefs	Normative statements made Values held about causes Problem severity Policy Preferences
	Coalitions present	Existence of like-minded actors working together
	Political administrative	Positional leaders decide on, communicate and monitor the realisation of a shared vision for the city of Nottingham's energy policy Ensure resources are allocated for energy policy Positional leaders and key individuals allow for the development of different/new strategies to reach energy/climate goals in order to easily adapt
	Adaptive	Allowing various strategies to emerge Create a sense of urgency (deadlines, timetables) Positional leaders and/or key individuals insert newly developed ideas into the network of positional leaders

	Enabling	Newly developed ideas get accepted
	Dissemination	Positional leaders/key individuals promote problems and mobilize actors to search for solutions
	Connective	Bring people together/agree on a collaborative strategy
		Stimulate multiple action options/working together/building trust and legitimacy
Resources	Financial	Budget allocations of the city council (where are the resources placed) Financial awards (e.g governmental, private sector)
	Non-financial (e.g personnel, Knowledge)	Presence of expert group/s Number of personnel available within the policy area
Discourses	Norms Values Definitions of problems Approaches to solutions	Party political manifesto promises Council Plan – specific policies set Policy/Departmental Plans Committees Media presentation Key Performance Indicators

7.6 Conceptual Model

Here the frameworks will be brought together in an analytical framework to help answer the main thesis question. The variables and indicators (above) are not included within the concepts for the purposes of simplicity. It can be taken for granted that the variables will be contained within the concepts.

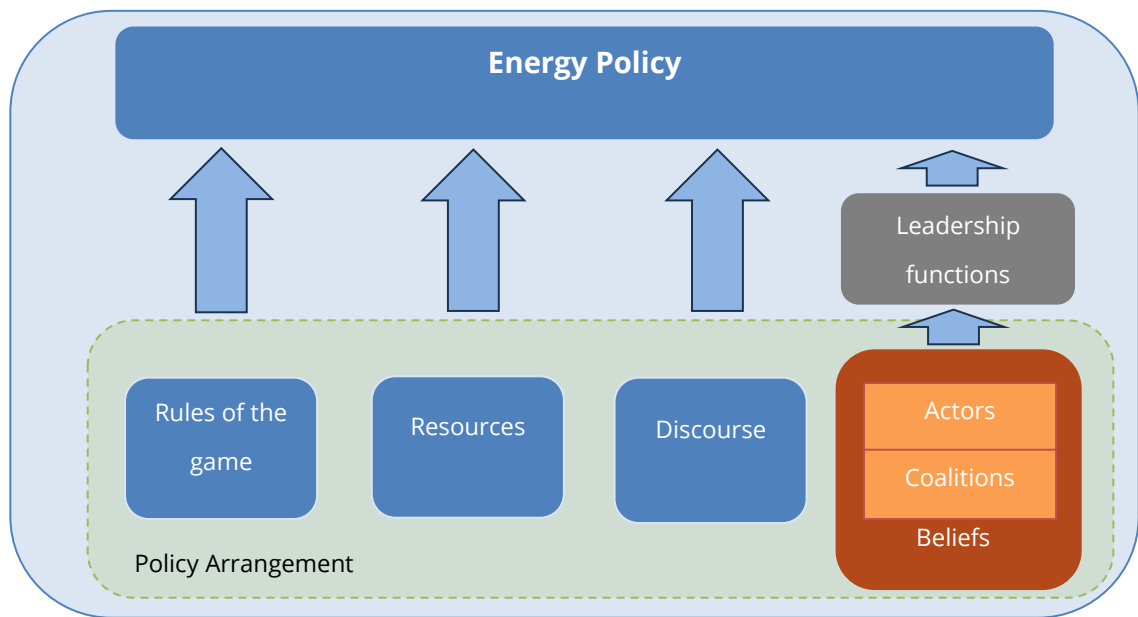


Figure 6 Conceptual model PAA + ACF + Leadership Functions

Within the model, the overall energy policy arrangement in Nottingham is represented by the light green rectangle. This contains all elements of the policy arrangement in this framework. Part of this policy arrangement – the rules, resources, actors and discourse are represented by the black dashed line – there is an assumption that these dimensions all influence policy formation directly, this influence is represented by the arrows towards the energy policy (wide blue rectangle). Using the conceptual model, we can further question the extent of influence of these dimensions. This ‘dashed’ part of the model relates to the first sub-question. However, influencing the actor dimensions directly, are the [deep/core policy] beliefs. This is represented by the red square which encompasses the actor - this relates to the second sub-question. This in turn affects the energy policy, hence an arrow from the actor/belief locus to energy policy. The third sub-question related to the presence of actor coalitions, represented by the orange rectangle – where actor and coalitions are together within one square, both encompassed by ‘beliefs’ as it is the sharing of beliefs that form a coalition. Finally, actors can perform a number of leadership functions according to the framework and so this is represented by the grey rectangle where the actor performs the leadership functions which in turn influence energy policy.

There is then an arrow representing the relationship from the actor to the leadership function and then an additional arrow from the leadership function to energy policy, showing the influence brought upon energy policy. With this design of the conceptual model, the influence of each dimension can be explored, with no assumptions at this point that anyone is more or less important than the other.

And so, aspects of the PAA, ACF and the Leadership Function framework are brought together. Actors have been merged into a *coalition* for the purposes of this paper since it is the existence of a coalition of actors which is being explored: not the existence of actors alone, since that is already assumed in this paper. Policy core beliefs and leadership functions form central elements of the actor's decision-making - (Di Gregorio, 2017).

8 Methodology

In this section the research strategy, the ontological and epistemological considerations, the case selection, along with the research method, data analysis, and other important considerations within the research will be presented.

8.1 Research Strategy

Using a qualitative study of Nottingham has meant that a deeper exploration was enabled: qualitative research can often mean a better understanding of the subject matter as it is seen through the eyes of the participants -in this case, through the interviews and relevant documents. This research question is particularly interested in the how and why. A criticism of quantitative research is that it can ignore the complexities – it is more aligned to the natural sciences and “cannot attribute meaning to events and to their environment, however, people do” (Bryman, 2012, p392)

Another part of the strategy was to employ an in-depth single explanatory case study research design. Case study research designs are used to study contemporary phenomena in real-life contexts (Yin, 2014,) Yin states that ‘how’ and ‘why’ questions are best fitted to case study research. Yin also states that personal experience and extensive field research can lead to a ‘winning combination’ (Yin,2014, p98). Although not at the level of participatory research, the personal experiences of the author of the thesis can add value to the exploration. The author of the thesis was Cabinet Member for Environment in Nottingham from 2000-2011.

By using an in-depth case study the thesis will provide intimate knowledge of the decisions of a variety of actors within the city – showing what is different about this particular case (Bryman, 2016). This could then be applied elsewhere. “Atypical or extreme cases often reveal more information because they activate more actors and more basic mechanisms in the situation studied” (Flyvbjerg,2006, p229). Interestingly, Beveridge’s conclusion, contained within the same work of Flyvbjerg was that more information is discovered in a case study than data from a large

study (Flyvbjerg, 2006) Dark & Shanks (2002) also stated that the single case study allows a better, richer understanding of a problem or area.

8.2 Ontological and Epistemological Considerations

Guba & Lincoln (1994), ask three different questions regarding a research strategy: the ontological question, the epistemological question and the methodological question. An ontological question is concerned with what the 'reality' is; what is real and what can we know about it? What is my reality does not have to be your reality (your truth) The existence of facts or objects. Beliefs will influence the research – the researcher and the researched have their own understanding of truth, which will be influenced by their own experiences. (Guba & Lincoln, 1994).

It is important that readers of this thesis can follow how or why a particular inference is made in relation to the data. This thesis makes the assumption that there is a reality, outside of our own thoughts, for example: there is a global increase in temperatures, there are measures that can be taken to reduce this, etc. and the position within the thesis is of a critical realist. It is not reality (truth) itself that can be observed – but the world is made up of events and these - through our own views and experiences- that we can observe. (Bhaskar, 1975)

The epistemological question focuses on “the relationship between the knower or would be- knower and what can be known?” (Guba & Lincoln, 1994,p108). In plain terms, this is the relationship between the researcher and what is being researched: can you know these facts or objects? With this in mind, this thesis is placed within the constructivist paradigm in that it begins with the understanding that the reality is the reality being *observed*. (Guba & Lincoln,1994). However, it must be stressed that it is the intention of the researcher that the research is a truthful account of reality.

The methodological question focuses on how we can “go about finding out whatever he or she believes can be known?” (Guba & Lincoln, 1994,p108). This influences the research, as the methodology is at the core of it. Green (2000)

would state that the participants in this research would all have their own points of view and that the point of the research is then to put the identification of these points of view into context.

8.3 Case Selection

Nottingham was chosen as a single case study because of the city's unique commitment to climate mitigation policies -represented in this thesis in its commitment to reduce carbon emissions and in particular, its energy policy choices. In Flyvberg's terms, it can be described as an 'in-depth case study, an extreme or deviant case'(Flyvbjerg, 2006, p230)

It is an interesting, unique example of a city appearing to set and reach challenging climate targets. It could be described as having a successful energy policy in climate terms since it is setting challenging energy policy that is also reducing the city's impact on the climate.. The city has ambitious climate neutrality targets – amongst the most ambitious targets in the world: committing to be carbon neutrality by 2028 (Carbon Neutral Nottingham, 2020), the city has projects underway that seek to reduce their cities' dependence on fossil fuel energy by widely investing in insulating homes -7000 social houses being insulated and 4000 receiving solar panels – and with over 5000 homes and 100 businesses also heated through energy from waste. (Drury.C. 2020). The city has signed several international and national commitments to reduce the city's impact on the climate: Nottingham was an early signatory of the EU Covenant of Mayors Declaration in 2009 (European Parliament, 2009) and the city has signed the national local government covenant detailing their commitment called the Nottingham Declaration (see later).

Nottingham has a long tradition of being innovative with the city's energy policy – innovation seen as far back as 1953 when Boots, a local company installed a coal-powered power station for its own use to ensure it has a local source of energy for its industrial uses.

In 1968 the Nottingham Corporation (as the city council was formerly known) chose incineration as a method of dealing with their waste - rather than burying refuse underground (a system called landfill) following a feasibility study into waste services in the city. The report showed that residual heat from the city's waste could be utilised efficiently to heat the then-proposed social housing areas in the south of the city (St. Ann's) and in addition, proposed businesses (Enviroenergy, 2021) The scheme then would have cost 5 million pounds and was the largest of its kind in the United Kingdom. This was a ground-breaking energy policy in those years - and the scheme moved to city council ownership in 1995.

The district heating system in Nottingham remains one of the largest in Europe: made up of 68km of piping delivering warm water heating to 5000 homes and over 100 businesses within the city. The district heating system is still an important part of Nottingham City's energy policy: producing locally generated energy for so many houses, from a low-carbon source (Inanakiev et al, 2017) The company running the district heating Enviroenergy is still wholly under the ownership of the city council within an arm's length structure.

Not only does Nottingham have a history of innovation and commitment around energy production but Nottingham also has a history of forward-thinking and ambitious policies as a council. As far back as 1989, when globally, society was still just recognising climate change - Nottingham committed to a 'Green Charter' which set out its environmental principles and promises of becoming 'greener' as a city.(NCC, 2007).

There are numerous examples of how Nottingham City Council stands out from other councils, (Council Plan, 2019-2023) or as Cauvain described in the literature review, Nottingham is a front-runner (Cauvain, 2018). Here is a list of where Nottingham could be seen as a policy front-runner:

- Highest bus/tram travel per head of population outside of London with a high customer satisfaction rate - "the city of Nottingham has a powerful

public transport system” (EPSRC Centre for Doctoral Training in Geospatial Systems, 2020).

- Only UK city council to implement workplace parking levy (a fee/tax on business car parking) - used to fund sustainable transport initiatives.
- One of the few councils to still retain its own municipal bus company
- Owning the largest fleet of fully electric buses outside of London
- Cleanest large city in England (Clean Britain Awards)
- Most energy self-sufficient city in the UK, producing 3% of the city's energy needs within the city (Regen Energy Awards 2006)

In 2009 the City Council set some ambitious 2020 targets for itself and the city to reduce carbon emissions from 2005 levels. These targets have all been met (Nottingham City Council, Energy Strategy 2010-2020, 2010)

- 44% reduction from its own operations (met)
- 26% reduction for the city (met)
- 20% of the city's energy demand to be met by sustainable sources (met)

The uniqueness of Nottingham makes it a very interesting case to study.

8.4 Research Methods & Data Collection

In any research, and in particular in this in-depth case study, there is no hypothesis to be proven but there is learning to be had. These are the elements of learning that will be used within this research: desk research, interviews and to some extent historical participant observation

Desk research – secondary data sources

To get a broader understanding of the context of energy policy within the city of Nottingham, various documents were sourced and read. This included council plans, regional plans, party political manifestos and relevant national plans. Local and national media articles where relevant were also very helpful in providing both background and pertinent information.

Table 2 Nottingham documents used

Year	Document Title	Publisher
1990	Nottingham Green Charter	NCC
2001	National Fuel Poverty Strategy	National Government
2008	Nottingham Air Quality Strategy Document	Nottingham Environmental Protection Group
2010	Nottingham Green Partnership Terms of Reference	NGP
2012	Nottingham Community Climate Change Strategy 2012-2020	NCC
2015	Nottingham Labour Party Manifesto	LP
2019	Nottingham Labour Party Manifesto	LP
2018	Nottingham Fuel Poverty Strategy	NCC
2019	Nottingham Council Plan 2019-2023	NCC
2020	Nottingham Carbon Neutral Action Plan	NCC

Interviews

Interviewees were selected for their knowledge of the energy policy subject – and their knowledge of Nottingham- they could be described as experts in this field within Nottingham. According to Littig, experts are individuals having “privileged access to specific knowledge or decision spheres capable of cooperating with the reconstruction of facts, networks, problems and decision-making processes” (2009, p54). They were selected for their intimate knowledge of decision-making and of the discussions within the policy-making area. Many also would have a good current and/or historical knowledge of decisions or personalities within the city council or other agencies and the discussions involved around energy policy decisions.

Ten in-depth semi-structured interviews were used, following the few same questions guided by the research question for each interviewee with the added flexibility of being able to ask follow-up questions, clearing up any ambiguity or allowing the interviewee the time to delve deeper into the subject or as May states

to “have more latitude to probe beyond the answers and thus enter into a dialogue with the interviewee” ((May 2011, p134).

The use of a conversational style would put the interviewee at ease and it may be more likely that the interviewee would be more relaxed and willing to explore possibly difficult or controversial opinions – such as discussing the presence of discourses and exploring different dimensions influencing energy policy. The interviews were not restricted by time, so without any prompting or questions, interviewees would give very helpful or useful explanations of the process of policy-making in Nottingham.

Table 3 List of Interviewees

Name	Position
Former Councillor Jon Collins	Former Leader of the City Council 2003-2019
Andy Vaughan	Director, Energy and Environment 2009-2020 Nottingham City Council
Councillor Sally Longford	Deputy Leader of the city council, and Cabinet Member for Environment - elected 2011 until present
Councillor Graham Chapman	Former Leader, and former Finance & Energy/Deputy Leader 1987 to present
Phil Angus	Chief Executive, Nottingham Energy Partnership (a city based energy NGO)
Ted Cattle	Former Chief Executive, Nottingham City Council 1990 - 2001
Former Councillor Brian Parbutt	Former Chair, Nottingham City Transport, former Leader of the City Council (2002) and councillor, 1995 -2019
Councillor Michael Edwards	Former Deputy Leader and councillor 1997 to present
Paul Flowers	Strategic Housing, Nottingham City Council (Fuel Poverty lead) 1997 - present
Wayne Bexton	Director, Carbon Reduction, Energy and Sustainability, Nottingham City Council 2015-present

Participant Observation- Historical Setting

Admittedly, this method is not necessarily the usual route for most researchers. *Participant observation* usually is defined as the researcher immersing themselves in the day-to-day activities of the setting being researched: observing and participating in the formal and informal conversations, discussions and debates. Murphy and Dingwall describe the participant observation method as ‘the gold standard’ amongst techniques for data collection. (2007)

This participation was carried out over a long period from 2000 until 2010. The researcher was not directly involved in environmental policy until 2006. Until then the researcher was an elected, local councillor and later also holding other positions of responsibility. The researcher was not directly responsible for energy policy.

However, the researcher was able to bring historical knowledge to the research through having been a participant in many discussions regarding energy policy at Nottingham City Council as an elected councillor and a councillor with responsibility for environmental policy – those discussions or discourses were both private and public.

One has to acknowledge that individual comments and discussions cannot be referred to specifically, as participation over 10 years would mean an encyclopaedic level of memory was needed by the researcher. It is the accumulation of participation in several discussions and debates over the years and interactions with a number of actors that will bring extraordinary insight into the research. They can be described as complimenting the other research methods, rather than being the overriding source of information.

8.5 Data Analysis

To make sense of the data – one must be able to analyse the data. A common method is the use of *coding*. “Coding is the starting point for most forms of qualitative data analysis” (Bryman, 2016). The conceptual model stated earlier in

the thesis is used as the overriding guide. Using the variables and indicators within the conceptual model (detailed earlier) as a theme or a group, units can be grouped into themes. In this case, the unit is a word, set of words or a phrase that was linked to the variables stated earlier in the thesis. It is the presence (or absence) of these words or sets of words within the primary or secondary data that will derive relevance or irrelevance: “the researcher should be on the lookout for themes or interconnections” (Denscombe, 2003, p272)

Since the thesis uses a conceptual model developed from the joining together of several useful frameworks, the data coding will be deductive. The conceptual model and the variables contained within it will be the guide to coding. The research does not limit the data analysis to only deductive – there were examples where important statements did not fit exactly into the themes or variables but it was useful to use an inductive method of coding to be able to include the data in the thesis. It is also recognised that coding can sometimes ‘fragment’ data and that some emphasis can then be lost: Bryman describes this as “losing the context of what is said” (Bryman, 2016, p584) and this can be a risk with interviews when the ‘social setting’ can be lost. However, being aware of this risk meant that the use of a *set of words* within the coding was chosen, not only just individual words, hoping that the context was not as easily lost.

As is recommended, a *codebook* was kept with a list of all codes used and definitions of codes (Creswell & Poth, 2018) After reading and re-reading the interviews numerous times, a grouping of words was attached to each indicator. Using a colour coding system, grouping of words or similar were highlighted in each interview. With this colour coding, a chart was made grouping the coloured words under headings. In this way, the codebook was a *code chart*.

The first stage was to read through all of the interviews and documents a number of times and loosely highlight a word or phrase that was of importance. These could be important because they are stated as important by the interviewee, or they are listed as important in the document, or they are repeated or referred to

on numerous occasions. These words or phrases will be linked to the variables listed earlier by using words or phrases that are close to the indicators listed. This method attempts to show the influences of the parts of the conceptual model. This coding exercise was completed for important policy documents and interviews. Each word or phrase was coded with a colour, this made the process of finding patterns and themes much easier. The colours were attached to the corresponding indicators. The presence of a word or a phrase which had been attached to an indicator would then show the presence of that variable.

A manual form of coding was chosen over a technical solution such as Atlas.ti or similar programme. This was mainly due to the unfamiliar nature of such programmes to the researcher and the methodical process of reading, re-reading, grouping, and colour coding meant that the researcher has a close, physical relationship to the data – as Maher et al (2018, p11) states: it “encourages a slower and more meaningful interaction with the data [and] greater freedom”

8.6 Validity, Reliability and Ethical Considerations

A researcher should strive to answer the research questions in a thorough and clear manner. The thesis has followed therefore a comprehensive conceptual model. The operationalisation of the theoretical concepts has led to a clear route to the data analysis and from there, the findings can be sought.

Ideally the process of ‘triangulation’ included in this thesis (the use of a number of different research methods, listed above) will increase the validity of the research since the research has not relied on one type of method or data: “resulting in greater confidence in the findings” (Bryman, 2016, p. 386). In addition, the internal validity of the research was sought by ensuring that the interviewees could review their interview transcript and make changes if needed. Since one cannot generalise based on one in-depth case study – it can be argued that the external validity is then compromised: however, this thesis sought to explore the uniqueness of this example and not necessarily to generalise.

Although repeating this research is unlikely to produce the same results, it is hoped that through the use of a thorough conceptual model, the stated interview questions, and variables leading to codes, using a codebook to describe the coding process and also a list of interviewees and their roles that the research could be repeated and would be reliable. Equally, the process could be followed using a different case study subject, e.g. another city.

Ethical Considerations

Nottingham City Council is a highly political environment and the research- in particular, the interviewees' answers could cause difficulty for the city council since both former and current councillors and/or employees were interviewed. It was paramount then that the purpose of the research was made clear to interviewees. Interviewees gave consent for their interview to be recorded and to be quoted.

The past experiences of the researcher weighed positively with interviews in that respect. Since the researcher was known to the interviewees, there was a level of trust and respect that may not have been shown to other unknown researchers. It is important that this familiarity to the researcher only be used in order to gain trust, for the process of interviewing to be a relaxed one, for the interviewee to remain open and for it not to influence the findings in any way.

9 Findings

Here the findings from the interviews and documents will be presented. The policy arrangement findings will be presented first, since beliefs are a part of the actor locus, beliefs will be explored under the 'actor' section. Leadership functions will be explored after the policy arrangement findings have been presented.

Several drivers appear to be present in Nottingham, allowing for the city to use energy policy to reach the goal of carbon carbon-neutral council. Using the conversations with interviewees and a document search, it is possible to ascertain the importance of those conditions by the presence of the indicators within documents or interviews, as was shown within the operationalisation chart (table 1).

9.1 Policy Arrangement - Formal & Informal Rules

Although local government in the United Kingdom has a degree of autonomy, the importance of inter/national legislation, indicators or frameworks cannot be underestimated. Those rules found to have some influence within energy policy are presented below, beginning with formal rules, local (formal) rules and ending with informal/unwritten rules.

Formal Rules

Below (Figure 7) is a timeline of the most significant formal 'rules' influencing Nottingham City Council's energy policy during the last 70 years, which were mentioned by interviewees. The following section details the formal rules found to influence policy.

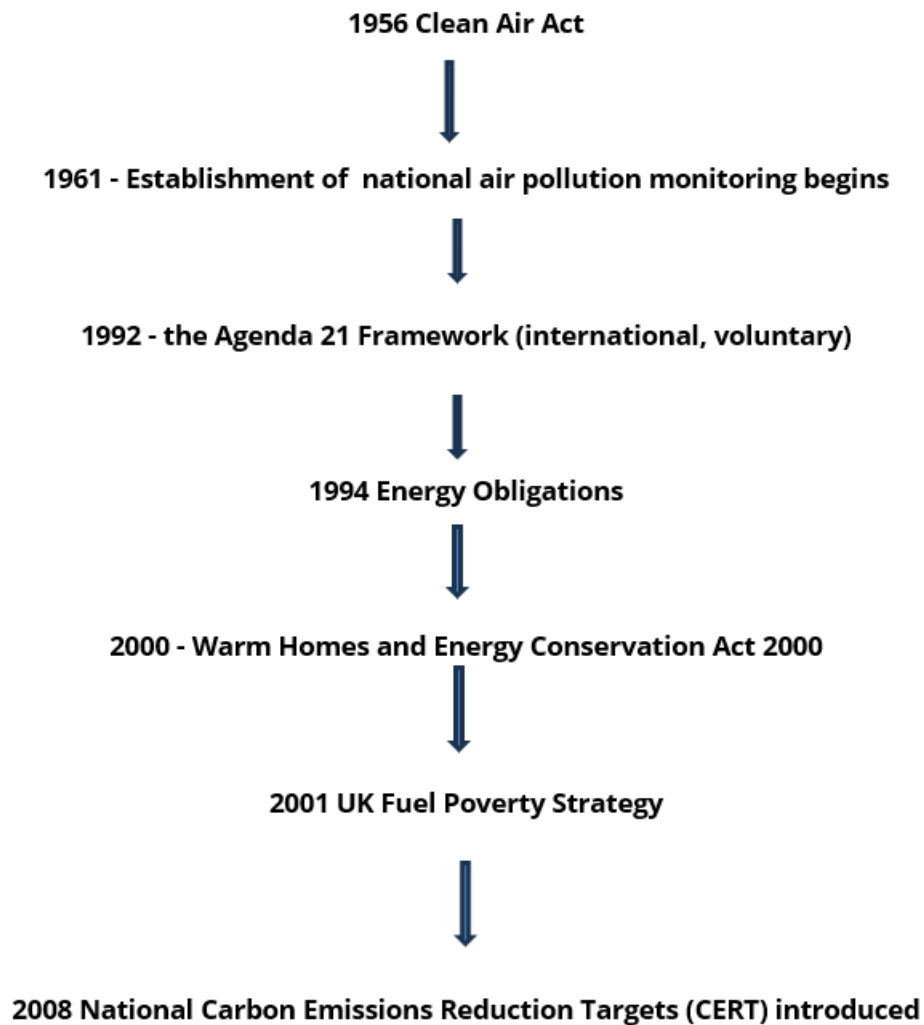


Figure 7 Timeline of important 'rules'

Clean Air and Pollution Rules

Introduced in 1956 after several serious smog incidents in the United Kingdom. It came as a result of the ability to measure the number of pollutants in the air and health statistics were also being measured. This was the first time that a link between pollutants in the air and health was being made. From already within the 1950s, the United Kingdom was the only country in the world monitoring air pollution – after having serious smog issues linked to deaths within the UK in the 1950s, the government brought in a new law in 1956 – the Clean Air Act. One leading former councillor was asked why he thought that Nottingham found energy policy important so long ago – the former councillor stated that “it would

have been driven by the air quality agenda at the time” Nottingham was a city run on coal – and this legislation would have given significant impetus to moving away from coalfired heating (as the original district heating scheme was) to a ‘cleaner’ form of fuel for the city district heating scheme and also heating homes in general. This was of course, a national law.

Establishment of national air pollution monitoring units

From 1961 the UK “established the world's first coordinated national air pollution monitoring network, called the National Survey”, (DEFRA, 2022) this monitored black smoke and sulphur dioxide in the air and cities were expected to monitor levels and release data. However, the presence of air pollution laws was listed by a only few interviewees as having an impact on the energy choices for the city, specifically in the past. This was an important factor in moving away from fossil fuels as they produced toxins into the city air, which were then monitored and reported on. However, cabinet member for Environment Cllr Longford did state that she was asked to take ‘clean air’ within her portfolio by the council leader, “the government was coming down on us like a ton of bricks...we had to have a plan”. This would have been around 2011, so this set of government rules was still relevant.

Monitoring air pollution was taken seriously by the city. Nottingham was reportedly one of the first cities in Europe to use technology to report on air pollution (interview, former Cllr Parbutt) and the figures were reported to the executive councillors regularly. It was understood that the solutions to climate change would also improve air quality.

The Agenda 21 Framework (international, voluntary)

This global framework was introduced by the United Nations in 1992. It was a non-binding plan to deal with a number of environmental issues at a global level and was embraced at the local level After a document search within the city council it was mentioned in a number of council meetings and amongst city council press

coverage. It has been stated by one of the interviewees (Phil Angus, NEP) as being an important driver for local environmental action within Nottingham – with Nottingham launching its own response to Agenda 21 called “Changing Times in Nottingham” which began in 1997 as a joint project between Nottingham City Council and Nottingham Green Partnership, which was the multi-sector sustainability forum set up in 1991 (for more information, refer to ‘actors’). Agenda 21 did much consultation with residents of the city with over 1500 local people involved in the consultation. It set out the “vision of a more sustainable future, a series of topic-based challenges that need to be met and a linked set of broad action plans, to help Nottingham become a more sustainable city”.(Minutes, Executive Resources Board, 2000). However, Agenda 21 was only mentioned by one interviewee as being an important factor and no other interviewee mentioned this framework.

Fuel Poverty Rules

Warm Homes and Energy Conservation Act - This act of law required the UK government “to publish and implement a strategy for reducing fuel poverty; to require the setting of targets for the implementation of that strategy; and for connected purposes”(Legislation, 2000). This led to the National Fuel Poverty Strategy in 2001. This became an Act of Parliament but even the law itself did not detail how fuel poverty targets could be measured (Hills, 2011).

Energy Savings Obligations (national, voluntary) Rules

“The Energy Company Obligation (ECO) is a government energy efficiency scheme in Great Britain to help reduce carbon emissions and tackle fuel poverty”. (OFGEM, 2022) .Two of the interviewees (Phil Angus, NEP and Paul Flowers, NCC) mentioned the introduction of Energy Obligations in 1994 (Savings Obligations) as a stimulus for change in the city. “I remember thinking at the time, OK, why are we taking advantage of this? Nobody seems to be doing very much on these obligations. So we could get some free sort of money out of it” (Angus,P. NEP).

Energy Obligations (Energy Company Obligations) was a fund extracted from the energy companies, whose fund was then used to insulate homes in the UK. The scheme was run by the energy companies themselves. The energy companies had to make funds available to insulate customers' homes but according to one interviewee (Flowers,P) they were not obliged to let their customers know of this fund. This is when Paul Flowers, working within the housing department in the role of Fuel Poverty officer (that there is an officer whose work is fixed on the monitoring of energy poverty is a statement itself) stated that he often applied for these funds for the customers, in the beginning the council was able to ring the energy company on behalf of the customer and apply for the insulation work, but the move to online has made it impossible to directly help the customers who might find it difficult to apply for funds. Instead, the city council officers and councillors took an active role in ensuring that residents in lower-income areas of the city knew about the fund to help insulate their homes by leafleting by schools, alerting parents in areas of lower-income families in this case (interview: Flowers.P)

In the first rounds of the 'obligations', in 1994 there were no compulsions on the energy companies to target fuel-poor or low-income customers; this was the case from 2002 onwards with the introduction of ECO1 (Rosenow, 2012).

Rosenow stated that the introduction of the Supplier Obligations, which has metaphorised into different forms of Energy Savings Obligations over the last 20 years "has become a high profile policy and is now the principal instrument to reduce carbon emissions in the UK housing stock and the second most important climate policy after the EU Emissions Trading Scheme"(Rosenow, 2012, p1).

2008 national Carbon Emissions Reduction Targets (CERT) were introduced - this was an alternative version of the previous obligations on energy companies to reduce carbon emissions by installing energy-saving measures (such as loft, wall, and floor insulation) into domestic homes. The energy companies were set targets on reducing emissions during the lifetime of the measure and they needed to report yearly on their emissions reductions.

Local Rules

Each election time saw the development of a Labour Party political manifesto (Figure 8) for the city council: promises that were made to the electorate. Since local government is subject to a 'first past the post' system of government, the party with the largest majority wins the election. Since 1998 the Labour Party has held the majority of city council seats. This effectively has meant that the promises held within the Labour Party manifesto can be made true, without any need for consultation or collaboration with any other party.

As former city council leader, Jon Collins stated - the party political manifesto of the Labour Party became a very detailed plan for the city council to monitor progress - which "from 2007 onwards, we actually had this process of having quite a detailed manifesto. And agreeing it as policy. And having it agreed it as policy. That becomes the plan. And then it's monitored". (Interview, Collins.J.)

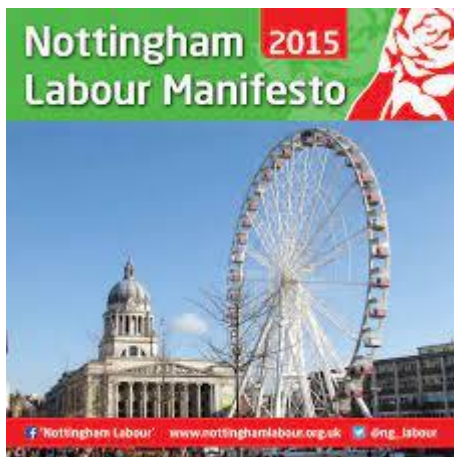


Figure 8 The Labour Party Manifesto – (set of election promises)was stated as an important influence on the development of energy policy in virtually every interview: including that of employees

Since the early 1990s, councillors and officers of the council (employees) could recall there being a strong 'green' element running through all of the manifestos. (Collins.J,, Parbutt.P, Edwards.M, Cattle,T; Chapman.G;). In fact, one senior, former chief executive of the city council, Ted Cattle could remember his being recruited because councillors were 'unhappy with the progress towards the Green Charter

(Figure 9) which was a political document from 1990 stating the 'demands' of the Labour councillors. It placed short, mid and long-term environmental targets on the city council, such as publicising openly the pollution rates in the city, valuing open spaces and the city farm; to work towards insulating homes in the city, maximising the use of recycled products within the city council; city wide door-to-door collection of recycling, a city-wide tram system run on electricity.



Figure 9 Front page of Green Charter

According to the Green Charter, it was "essential that the city council take the lead in environmental issues.....the charter sets out our belief that rather than fine words, a programme of realistic and achievable objectives must be pursued and acted upon with vigour". " (1990). The Green Charter, despite being pivotal according to a number of interviewees had no obvious author and no councillor interviewed could remember exactly, who had written the document – which was to set the scene for the energy policy and environmental policy in the city for the next 30 years. One could assume then that this was a collaborative effort with no singular author. Former Chief Executive, Ted Cantle stated that it was written mostly by former leader, Cllr Jon Collins.

It was stated by city council officers (interviews: Vaughan.A, Cantle.T, Flowers.P,) that the Labour Manifestoes became the city council plan. These plans would then be divided departmentally, with each department/service delivery area being

aware of the targets contained within the council plan (the former party manifesto) which would then be monitored every quarter at the Executive Board (where the council cabinet of elected executive councillors and senior officers met) and these items would be needed to be delivered. (interview: Collins, J).

Fuel Poverty

Importantly for a number of interviewees (interview: Vaughan.A, Collins.J, Longford.S, Bexton.W, Flowers.P, Parbutt.B) was that The Labour Manifesto, which would then become the official city council plan, contained fuel poverty targets. Having stated this, there are fuel poverty reduction targets placed on all councils within the UK and in Nottingham city council, they have always been taken seriously. During the early 1990s, former councillor Brian Parbutt could remember there being a Fuel Poverty Committee within the city council and it having a large councillor presence. There were also fuel poverty reduction targets placed within manifestos. (interview: Barbutt.P).

The most current Fuel Poverty Strategy within the City Council states that fuel poverty policy must also result in “a low-carbon, embedded and sustainable approach... beacon city for innovation in tackling fuel poverty and improving domestic energy efficiency”.(NCC,2018). It is important to know that the UK in general has one of the oldest and the least energy-efficient amount of homes in Western Europe, with the government’s own survey of English housing showing that very few of the English housing stock are in the highest energy efficiency levels (Hogkin & Sasse, 2022).

When prompted regarding the possible impetus of energy policy within the city council, interviewees would state that fuel poverty targets and the city council’s ranking using such targets were paramount. The fuel poverty percentage would need to be reduced through energy efficiency measures. Indeed, measuring and monitoring of the level of fuel poverty was already charged to a subcommittee of councillors back in the 1990s (ref:interview Parbutt.P) and has remained a high-profile issue, with there still being a committee of councillors and council officers

will careful tracking fuel poverty issues and levels in the city: the “Domestic Energy Efficiency Fuel Poverty Subgroup”. Fuel poverty reduction targets are stated in numerous party political (Labour) manifestos and consequently, city council plans. The city council produced its own strategy for reducing fuel poverty every 5 years.

The current fuel poverty plan runs until 2025 and states that there is “a significant national funding gap for energy efficiency measures in fuel-poor homes .

Additional finance will be required for Nottingham to meet the national targets for fuel-poverty alleviation and domestic energy efficiency”(NCC, 2018). Its stated mission is “for Nottingham City Council, its partners and citizens to be empowered to tackle fuel poverty challenges in a low-carbon, embedded and sustainable approach Through coordinated and distributed actions across the city using a range of partnerships at local, regional and national levels, the city will build on past success”.

Interestingly, is that the interviewees all stated that the council already closely monitored levels of fuel poverty in the city, well before the national targets.

Informal/Unwritten Rules

The existence of informal, unwritten rules in this sense was taken as the existence of such areas as expectations on the behaviour of city council employees or councillors, of agreement on particular standpoints, the existence of norms and values and/or the influence of social pressure - positive or negative- explained through the interviewees themselves and added to through the experience of the author of the thesis, who experienced more than ten years as a senior councillor within the city council.

Competition

A strong theme running through the interviews when being asked about energy policy was the existence of “competition”: that is, being better than other cities, reaching targets or bettering targets in comparison to other cities “it’s an inspiration to try and become better than the other cities, how do we become

better than Bristol?" stated one interviewee (Interviewee: Flowers,P); "We see ourselves as setting the agenda, and the government play catch-up" stated one senior member of staff. (interview: Vaughan. A) One senior sitting councillor stated that "nobody in Nottingham was talking about decline...we don't accept decline...the stuff you pick up in Nottingham is the exceptional stuff".

Rebellion

A former chief executive of the city council stated that there was a general feeling of "being entirely opposed to everything that the Conservative lot stood for...a rebel attitude". (interview: Cattle.T). In his opinion the Green Charter was symbolic of that change: that, coupled with the opposition to out-of-city centre shopping, being one of the few cities to retain a council-owned bus company, the tram, the workplace parking levy: all indications of the progressive attitude; the 'ambitious' attitude.

A corporate director overseeing energy policy at that time stated that "It was always about changing the world...trying to fight for Nottingham people. The Labour crew - were, how can I put it: rebels, they were rebels, they had a protesting instinct" (Vaughan,A).

One councillor went deeper, and described the political culture as being something that was 'inherited'. That things being done differently in Nottingham was "something about that generation, [the generation of former leader, Betty Higgins]that we have inherited": about being out there, being very active...about thinking about the big issues: transport, sustainability".(interview: Edwards.M) In his opinion, as a councillor you "felt that sense of history, about the hand of history on your shoulder".

He did not think the feeling could be replicated since it was even difficult to put one's finger on the real nature of the political culture. "But it has worked, hasn't it?" he stated.

Risk

The overall feeling of rebellion would influence the amount of risk that the city councillors were prepared to take in the pursuit of policy priorities. If a policy was a core principle, then councillors would take much more risk to see the policy through and this risk “permeates through the whole organisation: workplace parking levy, the tram, Robin Hood Energy,. We have done some groundbreaking things” (Interview: Vaughan.A)

Measure and monitor

A number of interviewees stated that important areas within core policies contained within the manifesto and then service plans were publicly monitored within committees of councillors and staff and measured at regular intervals. This was also the case for aspects of energy policy. Each service area would produce a plan and these contained actions that would need to be reported to committees. These plans would plan for 5 years and state what their targets were and how those targets would be achieved. There would also be comparisons to other cities: bringing in competition once again (Interview: Cattle.T);

Staff at the city council stated that they would “innovate when legislation allowed.. and that we had to set out our vision, understand aspirations, plot that path to 2050”. (Interview: Baxton.W). Setting out a plan which was then tracked, was the norm within the city council and was an expectation of all departments: this meant a pressure to succeed and this was evident within energy policy also. As Cllr Mike Edwards stated, “ the way you get change done, is to make sure it's in everybody's service plan...you make sure it's in their plan so every month they're looking at what they're doing”. Cllr Sally Longford (Deputy Leader and Environment Portfolio) added “I was determined to bring a pledge to the council about being carbon neutral, which was accepted. Then it got into the party manifesto, and then it will be in the service plans...Everything is being cranked up dramatically all of sudden because it is in our manifesto”. In the beginning, for a policy to be pushed within the city council, it needs to make it first into the party political election programme

– and then ultimately it will end within a department service plan where it will be monitored and the progress towards that particular ‘promise’ will be tracked, openly by the city council through publication and through discussion in committees of councillors and staff.

9.2 Policy Arrangement - Actors

Deep/Core Policy Beliefs

Here the set of beliefs found to be most relevant to the research question will be presented.

“Enlightened self-interest is working as an approach for Nottingham, which has put green energy at the heart of its long-term growth strategy” (interview: Chapman.G)

Given the existence of national and local rules – it is the actors that are critical in responding to national or local opportunities. National legislation will get local government only so far. How a city council responds will be down to the actors present. In this case, the beliefs can be central to how decisions are made and the functioning of the entire council.

In an ideal situation, policy should be observed for longer than 10 years – and many of the interviewees had a long institutional memory after many years of service and with memories of previous councillors whom they felt critical to the formation of the ‘beliefs’ within the city council and around energy policy. Unprompted, interviewees described the city council as a place to work or described the councillors with words that could be strongly associated with a set of beliefs. And those beliefs were described as *infectious*. Although many of the traits used to explain progress around energy policy (and other policy areas) were not always explicitly described as ‘beliefs’ by interviewees, the words used to describe the feelings can be understood as ‘beliefs’.

Within Nottingham, the type of beliefs held within the coalition of councillors and staff were clear. The adjectives used by interviewees were placed into a word

*“We want Nottingham to be a city where people feel safe to live and work, that is an exciting and welcoming place to play, study and visit, a city that is clean and environmentally sustainable, where we are **ambitious** for Nottingham people and businesses, and where local people are proud of their city, their neighbourhood and their local community” (2021, NCC)*

So setting the scene at the very highest level is the strategic plan or the corporate plan. Each of the last few decades of plans have had ‘ambition’ as a headline. Just the last 3 plans are quoted above. The premise from the start is the council will act in an ambitious way for its residents. Ambition is the belief that things can get better and will improve. The headlines within the city council's strategic or corporate plan are transferred over from the winning Labour Party manifesto.

It is this ambition that has pushed along policy and this is not different with energy policy. The ambition is pushed by councillors, which then drives staff. In almost every single interview, councillors and staff stated that the energy policy push came largely from councillors from a need to do better, to improve: Cllr Mike Edwards stated that “we’re about radical change... you’ve got to have a belief”.

“But the world is in a climate crisis,” Cllr Longford tells the national newspaper, *The Independent* at her home in the city’s Wollaton area. “It’s no good hoping it goes away. Ambitious is exactly what we have to be.” (Drury, 2020)

For Brian Parbutt, the aspiration and ambition comes from many decades back – with planning for the waste incinerator back in the late 1960s and early 1970s, he believed was a clear example of *ambition*. It was a phenomenal cost to the city council, creating heating for an extremely poor part of the city – but the city council “decided to afford it”. In the years to follow, this incinerator would become the district heating scheme of today, the largest district heating scheme in the UK with more than 5000 homes covered.

Former Leader, Cllr Graham Chapman reiterated the legacy of ambitious thinking: “There is a history of political leadership in the city which sort of is inherited, one generation passed it onto the other”.

Cllr Edwards described the feeling as “culture and capability was right from the point of view of delivering big change”, which was echoed by the Corporate Director for Energy and Waste-: “You need to create that organisational culture, we are asking 6000 people to put their hearts into their job every day”.(Vaughan.A)

Belief in ‘doing the right thing’

A thread running through the city council is the feeling that councillors and staff are there to improve the lives of Nottingham residents. They are there to ‘do good’, to do the right thing. Cllr Longford described herself as “always looking for the ethical option”. Former City Council Leader, Jon Collins described it as his “Quaker upbringing, a sense of duty, I think”. (Interview, J Collins)

“We have elected members, [councillors] that are particularly keen on protecting services” stated Paul Flowers. Paul listed a number of individual councillors with whom he works closely to increase the visibility of help towards the costs of energy – be that insulation or help within or out-of-work benefits. He stated that many councillors leaflet around schools together with council staff to highlight the help available to parents. Andy Vaughan, (Corporate Director) reiterated that the “unfairness, leading to fuel poverty” was a driver for energy policy. He pointed to the fact that the city council had recently tried to recruit a new Chief Executive of the council three times: “None of the candidates could understand our values...actually there are relatively few people that do”.

Sally Longford described many of the areas influencing energy policy, including clean air, fuel poverty and responding to the climate crisis: “There has been a succession of people prepared to champion it”. She described herself as “I walk the walk: people actually trust what I say. I actually care”.(interview)

Cllr Mike Edwards describes the city council as a 'change agent'- being prepared to "do big things for the right reasons, makes it all worthwhile- we can make a difference, be an agent for change when we show the ambition and steel to use public money for the public good" (interview). Former city council leader, Jon Collins reiterated this: "it's often a combination of people having a bit of vision and a bit of drive and ambition" (Interview)

Actors- Coalitions

The area of policy beliefs contained within the ACF explores the assumption that at the heart of a policy subsystem, you will find actors converging with shared ideas - shared beliefs- along with shared resources and forming 'coalitions' to ensure their success in policy formation. (Sabatier and Weible, 2007). The formation of a coalition around policy beliefs could be unique to each location.

Green Nottingham Partnership

This partnership of internal and external to the city council grouping was formed in 2010 to understand the environmental issues, including reducing fossil fuels, that affect Nottingham and its citizens. "It recognises that there are both impacts and opportunities from this agenda and shared benefits for us all" (NGP, 2010).

The NGP was set up to set strategy and planning and reviewing delivery against the environmental targets contained within the city-wide 'Nottingham Plan'. It meets regularly to receive updates on progress towards green targets for the city. It has no statutory power, but it is seen as a partner to the city council and contains representatives from the voluntary sector, business and the city council.

The partnership has just celebrated its 30th year anniversary – with the chair Richard Barlow recently stating that "businesses and organisations across Nottingham have a large part to play in Nottingham's ambition to become a carbon neutral city by 2028. I would like to encourage all businesses in the city to get involved and feel the benefits that climate action can bring".(Nottingham News, 2022). It is an example of like-minded leading individuals and organisations coming

together within the city to tackle the issues of the climate crisis – and have been doing so for 3 decades.

The partnership worked together with the city council to bring out the ‘Carbon Neutral Charter’ where the city as a whole aims to be carbon neutral by 2028. In this document, the chair of GNP states he is “pleased that Nottingham is continuing its strong record of work on Climate Change and will continue to be a leading city for sustainability. By bringing this vision to life as a partnership, we can help safeguard Nottingham’s environment, economy and quality of life”. The city is “on track to meet this carbon target” (interview: Baxton.W) – and is backed fully by the voluntary sector and the business community which is represented within the GNP.

Meadows Ozone- Meadows Ozone Energy Services.

This was a group of local residents to the south of the city, who were all concerned with the impact of climate change on the city. This area is a particularly poor area but one with an active community. This area also has a successful community garden, producing local vegetables and being a community resource. It is supported by one of the former local Members of Parliament, Alan Simpson.

Their goals are “for both environmental and energy-price reasons in communities like the Meadows we need: to reduce our individual carbon footprints; to enable the Meadows to become self-sufficient in its energy-related technologies; to enable the residents of the Meadows and then other areas to access affordable energy; and contribute to the community and economic development of the Meadows.” (MOZES,) These objectives run parallel to those of the city council, and as such the group represents a useful ‘collaborator’ in the city council’s desire to offer affordable energy and to play its part in mitigating the climate crisis.

Nottingham Energy Partnership

In 1997, councillors wished to have a more formal response to fuel poverty (Angus.P, NEP). A small team of three members of staff within the city council was

established and they were working on mostly poor housing within the city- focussing on fuel poverty and poorly insulated housing. By early 2000, there was a decision to stop work within this team, with more of a housing element and focus on a broader energy policy. This team moved across to form an NGO and slowly built up its expertise and became the one-stop shop for advice on energy efficiency in the home -accessing many sources of government, private and European funding for its insulation programmes.

Their formal role since 2002 is an NGO working together and separately to the city council and they are very successful in attracting funding to insulate homes in the city. They state their role now as “to advance the education of the public about energy efficiency, including the alleviation of fuel poverty. The protection and preservation of the environment and public health, by means of education into the provision and use of energy in ways that reduce, or eliminate, harmful emissions, in doing so contribute to the creation of new jobs in the energy efficiency sector” (NEP, 2024) This is a award-winning group of experts working on fuel poverty and climate change.

9.3 Policy Arrangement -Resources

Below the financial and non-financial resources are presented as part of the Policy Arrangement in Nottingham will be presented.

Financial

The impact of resources has been critical to the city council. Not only in the existence of funding or financial resources but also in how finances are used by the city council, to their benefit. This is not a one-way relationship: in that the city council first waits to receive national funding and then acts. There were many examples spoken within the interviews where the city council acts, in order to receive funding or examples of ingenuity around finances.

In the 1980s, with Betty Higgins as Leader of the city council, established an Energy Conservation Fund supported by the Chief Finance Officer, Ian Blair. They designed

a fund that meant a department could bid for funds for energy conservation and reductions within the council's own buildings. There was then a reduction in energy costs and some of the savings were kept by the department and some were used to repay the fund. The norm from then onwards was for the city council to invest in energy saving, in order to help cut costs.

City Council deputy leader Graham Chapman stated: "Our procurement processes support our local economy, create jobs and deliver value for money for our citizens. For instance - as well as supporting local businesses, the council's solar pipeline will support the commitment to tackle climate change while reducing our operating costs and protecting frontline services. (Pratt, 2017). "" Investing in alternative energies, reducing carbon emissions, are all going to reduce our costs in the long run, the economics are obvious"(interview: Chapman.G). Cllr Edwards agreed that although the city council looked at costs: "what is the cheapest thing to do? More capital in the short term but cost savings in the long term".

There was a divide within the councillors, with some councillors seeing first the cost savings in investment in alternative/sustainable energy and then the climate benefit.

Local Government over the last ten years, in particular cities in the north of the country has suffered devastating reductions in national government finance. It has had the equivalent cut in government funding of 18%, which is a huge reduction in overall spending. (Hansard, 2013). This makes the issue of financial resources all the more important.

Cllr Longford stated: "if the money dried up, the government money and the European money, there would be lots of jobs lost on the council. Who is going to pay all those energy people? We are very dependent on funding". Cllr Parbutt was proud to state that despite the overall reduction in government funding, the city council "whenever there's a bit of money, we have sucked it into Nottingham".

Non Financial

“It’s the energy team...they are really good people. They are extremely good at finding funding for projects, such as our electric vehicles”(interview: Longford. S). Alongside financial resources, other resources such as the staff, and specifically the quality of staff can maximise the financial resources that a council has, or in this case, also make up for the finances that the city does not have. .

“The key thing is to embed this into everything the council does so that potential environmental impact feeds into the decisions we make across every department,” says Jonathan Ward, principal energy policy officer” (Quoted in Drury, 2020) Having staff that are committed to this, has made a large impact on the success of the city council.

Cllr Longford put forward that “you have to have very savvy officers who are fleet of foot and can find ways of tapping into pots of money”. The Corporate Director, A. Vaughan explained that in his view Nottingham “was a team, a genuine team. Ultimately councillors determine policy but you are as much a part of the development as councillors are. It is a genuine team effort, with trust”. If a city council has ambition and is known for this – it will undoubtedly attract staff that find ambition attractive: making this a self-fulfilling circle that the staff have ambition for the city too. Cllr Parbutt added that in his view, many council employees were: “anticipating national legislation, and that was part of our success”. “we have councillors and staff that are taking good strategic decisions, understanding why you are taking them, thinking them through”. Andy Vaughan has a theory that “the best people gravitate towards cities because that is where the action is” (interview: Vaughan. A)

Cllr Edwards was more adamant that it was the elected councillors that made the difference: “because of the knowledge and the expertise of many, many councillors”;

Robin Hood Energy Company -an important policy decision

The city council was the first council in the UK the set up its own energy company – Robin Hood Energy. The idea was that it would deliver low-cost energy to those that set up a contract with them. It was very much a desire of the then leader of the city council Cllr Jon Collins. He was determined that the city council would be able to offer Nottingham residents in particular, a better deal than they were currently getting from the larger energy firms. (interview: Collins.J) Cllr Longford stated in her interview that “reducing fuel poverty was the driver for setting up the company”. However, the complications of having a publicly owned energy company in a free market structure have meant that the company had a difficult first few years [at the time of writing, the company has closed, leaving the city council with large debts]. Despite its failure on the energy market, it was still an extremely risky and bold move by the city council -a huge step in the dark in order to try and “have more levers in their hands” to tackle fuel poverty. (Interview: Collins.J).

9.4 Policy Arrangement -Discourse

The conversation with interviewees highlighted one overriding discourse in Nottingham. This is presented in the following section.

Poverty

According to former councillor, Brian Parbutt, all the way back into the 50s and 60s, Nottingham was “different to everywhere else”. Just before and after he became a councillor he could remember that there was a very popular committee meeting on a Friday afternoon, with many councillors present. It was called the *Anti-Poverty Sub Committee*. It was very popular amongst councillors and was a cross-department committee looking at poverty across the city and across policy areas. It was where the figures around fuel poverty would be taken and monitored. “A big political driver would have been fuel poverty”. (interview: Parbutt.B)

Councillor Chapman, formerly the city council's portfolio holder for finance and economic development – stated that the city council is concerned about poverty in the city: Nottingham has carried out large-scale insulation projects in both private and social housing. More recently Nottingham has promoted programmes of internal and external cladding of homes without cavity walls and one of the most extensive domestic solar panel projects in the UK.

Paul Flowers stated, “the aspiration is from members: setting long-term targets within fuel poverty”. Using the fuel poverty tag to get green stuff done was how things happened, according to Cllr Longford: ‘improving the lives of the poorest communities: solar panels, cheap free electricity; cutting energy bills for deprived communities”

Every single interviewee stated either fuel poverty or poverty as a factor in why both energy and climate policy had such a large influence on the city council. ‘It was all done on the back of fuel poverty” (interview: Longford.S)

Using the researcher's own knowledge as a former cabinet member for the Environment shows that in order to pass any climate-related policy through the senior members of the cabinet, there has to be a “poverty angle”. The cabinet would be far more likely to agree to a controversial or risky climate policy if it was to reduce unfairness in the city or reduce fuel poverty – even more helpful would be if it saved money in the long run. This was certainly the case in such examples as installing free (for the tenant) solar panels onto council-owned housing in one of the city's poorer areas (. This project would cost considerable funding up front, but would effectively allow tenants to receive “free electricity” when the sun was shining – estimated savings of 72,000 pounds a year (The Guardian, 2017) Even when being applauded for being the one of the largest scale installation of solar panels in the UK, (see Fig 11. as such as example) the then deputy leader of the city council, Cllr Graham Chapman stated that “Nottingham already provides 11% of its own energy...but more importantly it will also help reduce fuel poverty and offer

real jobs and training opportunities for local people in the growing green economy."(BBC, 2011)



Figure 11 Aspley solar panels

It was summed up by Cllr Parbutt as “In the past, it has always been about cutting costs, reducing fuel poverty, giving people a better quality of life’. Wayne Baxton, a senior member of staff in the energy department agreed that “fuel poverty is a key driver. In the Council plan, poverty was up there and fuel poverty”.

9.5 Leadership Functions

The leadership functions as presented by Meijerink and Stiller state that five leadership functions are critical to the formation of effective climate *adaptation* policy. This thesis seeks to explore if these leadership functions can be used to explore climate *mitigation* policies also. In effect, which of those five leadership functions can be seen within Nottingham and how much of an influence (if at all) are these functions on the city’s climate mitigation policies – specifically the development of energy policy. Each of the five leadership functions will be presented below.

Leadership as a whole is evident within Nottingham: Ted Cante stated that whilst in his position as Chief Executive, he wanted to support the councillors' wish to move on the Green Charter. He stated that was why he was recruited. He launched The Nottingham Declaration as a call to other councils to accept their role in combatting climate change: “Evidence shows that climate change is occurring; Climate change will continue to have far-reaching effects on the UK’s people and

places, economy, society and environment”(NCC,2000) It was a voluntary agreement, ultimately signed by more than 300 councils across England (Scotland and Wales drafted their own versions). The establishment of the Nottingham Declaration in 2000 was symbolic of the city council leadership around what former Chief Executive Ted Cattle called “decarbonisation”: it was launched in October 2000 at a conference in Nottingham with 200 leaders, chief executives and senior managers of UK local government. It was renewed again in 2006. This was an example of positional leadership within the city.

Political Administrative

Nottingham has several “positional leaders; (elected) politicians and/or public managers which decide on, communicate, and monitor the realization of a shared vision” (Meijerink & Stiller, 2013,p252), Earlier in the thesis, the value of measuring and monitoring was explained as part of the informal rules of the game. Various interviewees stated named councillors whom they felt critical, past and present to the development of policy within the city council: this being former leader, Cllr John Collins (interview: Cattle.T, Vauhan.A, Baxter W), former deputy leader, Cllr Graham Chapman (interview: Edwards.M, Flower.P, Vaughan.A,); Cllr Longford as leading in climate terms (Vaughan.A, Bexton.W, Barbutt.B), almost every interviewee stated the importance of past leaders of the city council: Jack and Betty Higgins. In particular Cllr Jon Collins, was described as “less inclusive” and his dogged, dominant nature caused many arguments amongst the councillors, “unfortunately for us, he was mostly right” stated one interviewee (anonymous). It was certainly Jon Collins who brought in the strict monitoring of manifesto pledges which morphed into the council plan (interview: Cattle.T). These political leaders, along with their senior staff members were then able to ensure despite a falling funding stream from national government, that enough resources for this area could be realised.

“Leadership is absolutely critical” “[council] member pressure was there: Jon Collins, Brian Parbutt – there were many young councillors opposed to the

Conservatives. The Green Charter was symbolic of the change" (interview: Cattle. T)

Adaptive

This leadership function "entails the generation of new and innovative ideas, which do not always fit organizational objectives and routines" (Meijerink and Stiller, 2013, p251) at first glance, this leadership function was less obvious – at least the second part of the statement does not fit Nottingham. A number of interviewees expressed the need and the existence of a risk appetite within the city council, indeed the former leader, Jon Collins listed "the biggest risk for the council is that it becomes risk averse and inward-looking" as he left the city council after 32 years of service (Wilson, 2019). The city council has a long list of innovation: biogas buses, tram, workplace parking levy, solar panels fitted on council homes and buildings: yet these innovative and sometimes risky decisions do fit into the organisational objectives: innovation and ambition fit wholeheartedly within the city council's objectives. "We have to seize the opportunity in the moment. It is all leadership, isn't it?"(Interview: Vaughan.A)

Enabling

This leadership function "allows positional leaders and/or key individuals to stimulate a variety of adaptation [mitigation] strategies and options; create a sense of urgency, e.g., by setting deadlines" (Meijerink and Stiller, 2013,p251). Andy Vaughan, Corporate Director spoke of his team as "an organic team, passing the baton on.. you are challenged every day but that is something to savour, not to shrink from". The nature of a city council means that there are very many services and plans to match. The monitoring and measurement regime could have enabled a sense of urgency in that there was always a deadline to meet. Progress on manifesto commitments was reported every quarter at the executive board meetings.

This leadership function was not strongly visible amongst the interviewees: that does not mean it is not present – only that the interviews may not have been able to pick out examples of positional leaders encouraging various strategies. The newly written Carbon Neutral Charter states that “the City’s carbon neutral ambition is not isolated within future plans of the council. Many other plans and pledges from the City Council Plan 2019-2023 will help deliver the 2028 commitment, whilst many of the carbon reduction interventions will in return help to deliver new plans, highlighting that Nottingham’s approach to sustainable carbon neutrality is mutually beneficial.” (NCC, 2021) This indicates a willingness and openness, at least on paper to various strategies in order to reach the goal of carbon neutrality.

Dissemination

Meijerink and Stiller write that “positional leaders; key individuals (boundary spanners, policy entrepreneurs, champions)insert newly developed ideas into the network of positional leaders, these ideas then get accepted’ (Meijerink & Stiller, 2013,p252. The policy formation process within the city council starts well before the writing of the council plan. It starts as a discussion amongst the cabinet members on their priorities for the next electoral period. These priorities were then discussed amongst the Labour councillors, through a number of manifesto meetings -the manifesto is set and the Labour councillors stand for election on those manifesto promises; after a successful election, those promises are worked out with senior managers and directors within the council and strategic priorities are set and the details are set out to be measured and monitored via the Council Plan and below that, service plans.

There is a clear political process which can allow for new ideas, and that they get accepted by other positional leaders or key individuals: “Safe has never been in our DNA; it has been quite the opposite...you respect each other’s position but you are all trying to get the ball into the back of the net”. (interview: Vaughan.A). Both councillors and staff are together on the journey: dissemination is clearly visible

with many new policies in Nottingham contributing to climate mitigation: investing in the tram network, the district heating, workplace parking levy to reduce car usage: without the ideas being brought by both councillors and leading key individuals such as senior management, and being accepted by both groups - would mean that the city would have seen less progress than it has. Change or improvement would not have happened without this function of leadership.

Connective

“Positional leaders, key individuals (sponsors, boundary spanners, policy entrepreneurs, champions) promote problems and mobilize actors to search for solutions; bring people together/agree on a collaborative strategy; stimulate multiple action options/working together/building trust and legitimacy; forge agreement/move to action/implement strategies” (Meijerink and Stiller, 2013, p252). The last of the leadership functions describes the work of for example – of the Green Nottingham Partnership and the work of the Fuel Poverty Strategy: “A **collaborative** approach to a complex problem” is the headline of the strategy. The vision for the Fuel Poverty Strategy clearly describes working in partnership in a coordinated way. (NCC, 2018). Green Nottingham Partnership’s *Carbon Neutral Charter* reiterates cross-working with partners, from residents to businesses, listing concrete principles to guide their work, aiming to be ambitious (GNP, 2021). It reiterates using new methods and business models to decouple from carbon. Both are just two examples of cross-department groupings, containing both council and non-council bodies and representatives. The plans are written by a number of key individuals and positional leaders – coming to an agreement in order to form outcomes, which will then be monitored. These are examples of connective leadership.

10 Discussion of findings & reflection

In this final section, the findings will be discussed. The research questions will be answered by first presenting conclusions to the sub-questions, then will revert to the main question. This section will include a reflection and the limitations of the study will be presented. The research will end with recommendations.

“the main thrust of the city council’s approach to carbon reduction is to concentrate on energy production and consumption because this is where a green philosophy and self-interest most readily coincide. (Cllr Graham Chapman, cabinet member for finance) Inside Track, 2013)

Sub question 1: *In which policy arrangement does energy policy apply - how do actors, resources, rules and discourse influence energy policy in Nottingham City Council?*

The use of the PAA in this respect has been very useful in showing the relationships between each dimension and looking for the written and unwritten rules (Lieverink, 2016)

10.1 Actors

The overarching influencing factor that can be extrapolated from the interviews is the role of the actors: that is, positional leaders and key individuals that are prepared to take risks, champion ideas and persuade colleagues or the electorate that their idea is worth voting for. The councillors are able to assess levels of risk and are not afraid of taking a chance -ably assisted by intelligent and knowledgeable staff that bring ideas into policy. Through the conversations with interviewees, it seems that there was an overall feeling of rebelliousness, making the political leaders less risk-averse and much more interested in making change. The can-do attitude from members of staff comes from the positive attitude of the councillors and council as a place of work. The council and in particular the energy team attracted good quality staff that wanted to achieve – that the positive, attitude was ‘infectious’.

However, the role of the councillor – more specifically, the leader and the cabinet of councillors is at the heart of the forward-thinking within Nottingham. In Nottingham, there was/is an ideal combination. The role of the actor was by far the most referenced influence on energy policy within the city council, because “action is often more effective at the city level where policymakers are closer, physically and culturally, to their citizens than national governments” (Zenghelis and Stern, 2015). It seems that Nottingham’s innovation can also be seen historically through many policy choices, not only energy policy.

With the presentation of the Green Charter, and strategies that stemmed from that original work, Labour councillors recognised from very early on the central importance of these environmental issues to the quality of life in the city. Here is a reference to Hoffmann’s ‘win-win’ situation. In that following a green agenda offers benefits to the quality of life for Nottingham residents. (Bulkeley, 2010, Streimikiene et al, 2021). Snells et al’s (2015) work also stated that the more vulnerable groups are often less likely to be part of the policy process and policies do not then reflect their daily realities – this is not the case within Nottingham as the actors strive to ensure that their resident’s lives are made better through the use of energy policies.

10.2 Resources

The role of resources cannot be underestimated: it is obvious that enough financial resources need to be present to explore and develop new or radical ideas. But there are hundreds of councils with similar levels of funding – yet they do not produce carbon reductions that Nottingham does. However, the city retains many non-financial resources such as highly competent senior staff and a dedicated workforce, with the staff often being stated as a reason for their success by councillors and equally, staff would complement the elected members for their “political leadership” being stated as a “must” (Vaughan, A).

Importantly, it can be the *lack* of financial resources as a city which seems to promote a strong response: the lack of resources in the city as a whole prompts a

well-thought-out, egalitarian policy response ensuring that the less well-off are given the support that they need through the use of energy policy.

Non-financial resources can be unique to a city and can make all the difference in terms of results. For example, the Energy team within the city council started with a few members of staff within the environmental protection team, busy with responding to issues relating to national legislation around air pollution. In addition, there were a few members of staff responding to national legislation around fuel poverty within the housing team. From discussions with staff and members, (see findings: resources) the quality and number of staff working in the area of energy had grown within the city council and has had a significant impact on driving policy. Because of the overriding appetite for risk and the positive, can-do mentality that exists within the city council, this has influenced the sort of staff being attracted to the city and wanting to work in this environment. This has supported an environment of 'front-runner' and at the "forefront of sustainability" (Meadowcroft, in Rotmans & Loorbach, 2010, p108, Loorbach.D, 2023, p1)). And Wittemayer also states that "the role of local government is increasingly understood as moving from controlling and containing to facilitating and supporting" (2016, p45)

10.3 Rules

A number of small but significant rules have driven the direction of policy in the city: the pressure to monitor and improve on nationally set fuel poverty figures proved quite a stress for the city council: some of this stress, of course, was self-inflicted as their informal rules push the council to monitor and track the progress of hundreds of outcomes: including targets within energy policy and fuel poverty – which are certainly influenced by national targets but there is an obvious pressure to meet locally set fuel poverty targets, set firstly through the election manifestos and then the city council's own fuel poverty targets. This was very obvious in discussions with various actors in the city.

Reflecting back to earlier in the paper, different rules have driven policy at different times and with different levels of influence. In the 1950s and 1960s, national rules insisted that the city respond with policy answers and this was again evident at different times -shown by the timeline. There were a number of national targets that enabled a local response, but the national rules did not appear to be the main driver of policy response – certainly, the party manifesto had a significant influence, and one could argue that this would have been written from a belief perspective. It is pertinent, that interviewees and documents did not speak or begin from the starting point that energy policy was a response to legislation.

It was Nottingham's forward-thinking position that encouraged other cities to make a statement on climate change. Bulkeley and Kern (2006) attribute the real start of climate action from UK city councils to the development of the 'Nottingham Declaration' in 2000 (started by Nottingham City Council) which commits signatories to address the causes and consequences of climate change.

10.4 Discourse

According to Liefferink, discourses capture the views and narratives of the actors involved (2006). This exploration was able to distinguish that actors, councillors, and staff within the city council held beliefs regarding how things needed to be done within the city council. But there was also an overriding, overarching discourse around poverty in the city council, in particular, fuel poverty.

There was and is a problem with fuel poverty within the city, this was a running theme in interviews. This was the dominant narrative around energy policy. More policy documents and interviewees stated that it was important to invest in renewable energy and insulate homes to reduce fuel poverty in the city, rather than for any other reason. Actors are well aware of the level of poverty in the city and acting on poverty influences virtually every council strategy. The discourse around poverty is a significant factor in driving energy policy.

Hajer (1995) stated that it is discourse that explains policy choice and that the ACF is found wanting and it is often argued that belief systems and discourse provide alternative explanations for policy formation (DiGregorio et al, 2017) however, belief systems can be seen as a driver of discourse: “the beliefs systems of the ACF and their related underlying values, tend to be formulated as meanings of discourse. This is why it was also relevant to ask how beliefs influence energy policy in Nottingham.

Sub question 2: How do beliefs influence the development of energy policy in Nottingham?

According to von Malmberg, policy in the public domain is the direct result of beliefs being transcribed into policy, one set of beliefs having won over the other (von Malmberg 2021). There is a strong belief in Nottingham ‘of doing the right thing’ . There is a firm belief in the council as agents of change, regardless of national or local rules. This in turn results in energy policy responding to the discourse of poverty “discourses express, reproduce, or enact belief systems” (Di Gregorio, 2017, p136). It is not clear if discourse influences beliefs or if beliefs influence discourse but it is clearly because of the nature of the actors and their belief systems that discourse is taken seriously and energy policy is used as a response.

Being ambitious for the city is a thread running through the city council – it is linked to the belief that the council must do the right thing, the ethical thing. Because belief (ambition, doing the right thing) forms such a strong glue around councillors in particular, it means that all other areas are influenced by this. Nottingham city councillors know that reducing fuel poverty is the right thing to do – but also that because of ambition, it is not afraid of acknowledging that carbon reduction goes hand in hand with good economics. And this belief in ambition is met with the same ambition across the city, in partners also. Its confidence follows from investing in human capital as well as being fortunate enough to have

attracted ambitious council staff but also being able to retain long-serving, experienced and well-respected staff.

Not all groups having similar beliefs will work together to ensure a particular outcome -but this seems to happen in Nottingham - groups of actors having to respond to the same written and unwritten rules, with the same beliefs work together to ensure the energy policy is both helping poverty and helping the city reduce its carbon emissions. Interestingly, it has been stated that the ACF can be used to show levels of trust - (Schlager, 1995; Zafonte & Sabatier,2004) When actors sharing the same beliefs work regularly together and are seen to be reliable and can be counted on – or even when positional leaders decide to act in such a way and they expect other actors to follow their example – this can be said to show levels of trust. (Cairney, 2012). Nottingham actors could be experiencing a higher level of trust among each other -although trust was not specifically part of this exploration.

Sub Question 3: How does the presence of coalition/s influence the development of energy policy?

At first glance, coalitions were not a significant influence. The existence of external groupings such as the Green Nottingham Partnership and the Nottingham Energy Partnership gives an added value, or weight to the city's energy policy. There are then a number of groupings moving in exactly the same direction: all believing in carbon reduction, all wanting to reduce fuel poverty in the city. This is not a major influencing factor, without a coalition including external bodies, the city council would still be driven by its values and beliefs and would be putting forward challenging energy policies. However, having an advocacy coalition in the city brings weight and depth to the arguments that are very positive. It further validates the council's position.

Sub question 4: How do the leadership functions particularly influence energy policy?

This was the most difficult area to explore within the research. After analysing the locus and the leadership tasks based on the five leadership functions in the previous chapter - it is the role of positional leader and key individuals which forms the largest influencer in the drafting of energy policy: particularly at the political-administrative level. This is because Nottingham has historically had strong leaders working with key individuals, and they have been introducing the majority of the ideas, enthusing other councillors and sometimes forcing the policy through. Political stability could be an enabling factor since the ruling Labour Party has been in power for many decades. Meijerink and Stiller state that it is beneficial for climate policy if all five leadership functions are present. In the findings, all five functions of Meijerink and Stiller's leadership were present, at different loci, in Nottingham. The functions were in existence in differing levels: with adaptive less obvious than enabling in that through having historically strong leaders over stable periods, makes it inevitably more difficult to stimulate new options for discussion. Strong leaders may not want to discuss or allow room for doubt: this has been part of Nottingham's success - a dogged determination to get the job done (without too much discussion). However, through the *Dissemination function* new ideas can be discussed among Labour councillors -or less formally through the leader, or deputy leader having informal conversations with senior staff to discuss particular policies before involving a wider group. This would often occur., then once a policy was accepted by the other positional leaders or key individuals, it could branch out into a wider network of non-council bodies where the *connective function* would come into play.

It could be stated that if all of the leadership functions were present in more equal quantities- less risk would have been taken as the involvement of other key individuals in the discussion around some subjects, could have avoided blind spots (or blind ignorance) in the face of financial risk e.g. the energy company was a belief motivated policy, wanting to provide cheaper energy for residents but arguably too risky a policy decision given the economic climate. Senior staff had stated that both senior councillors had a healthy risk appetite but that could lead

to some decisions being too risky, given a lack of general or wider discussion, not enough consideration was given to other points of view -and this is where risk can be negative.

10.5 Conclusion

The main question asked in this thesis was: *Which drivers influence the city of Nottingham's energy policy - which factors explain how they are able to marry their 'low income' status with their carbon-neutral ambitions?*

In the previous chapters, the three theories were explained and applied to the case of Nottingham. Through the use of interviews, observations and reading through documents – the elements of the policy arrangement approach have been discussed, beliefs presented and the leadership functions of Nottingham have been evaluated.

The thesis concludes that it is Nottingham's strong *belief* in 'doing the right thing' for the people of Nottingham which drives the formulation of energy policy in Nottingham. In fact, this is what drives the elected members and staff within the city council, regardless of which policy is explored. At the core of the energy policy, are national rules, translated into local rules (targets) – and the policy response to this must be fair and offer a solution to the significant problem (discourse) of poverty in the city. The discourse around poverty in particular has a strong push for using energy policy as a tool to help alleviate poverty. This would be an interesting next question, examining the instruments used within energy policy but this was not included in this paper.

Although the city's response to and dedication to the climate crisis has been historically and presently much better than most other councils: it is not wholly a concern for the climate which drives the city's climate policy successes.

After interviews with senior councillors and staff within the city council despite Nottingham's ambitious and almost unique success in reducing its carbon emissions – there was little said regarding passion for climate mitigation

influencing energy policy. And yet the city's energy policy is decarbonizing and reducing the city's carbon emissions. There were many policies listed by interviewees and within documents that appear to offer an environmentally conscious alternative and policies which have reduced carbon emissions but it appears that it is the discourse of poverty rather than the climate crisis which has the most influence on policy.

Cutting carbon emissions was not the overriding driver of energy policy for the majority of positional leaders in the city. Factors such as acting on climate and being seen to act on climate- were important in terms of competition and ambition and the city's place in rankings with peers.

Nottingham exhibits a strong coalition based on shared beliefs of a sense of duty and strong leadership, fueled by the sense to do good, to influence fuel poverty for the poor, and to punch above its weight in terms of the climate. A long history of independent and strong ideational leaders – starting from Jack and then Betty Higgins. When a new leader has large shoes to fill, they are not going to risk not filling them.

The thesis borrowed parts of the ACF – the existence of beliefs and a coalition. Two points of the ACF described by Weible (2017) that have been found as significant in the case study of Nottingham were specifically: “Policies often reflect and translate the beliefs of one or more coalitions. Scientific and technical information is important for understanding subsystem affairs. Scientific and technical information, besides the day-to-day experience of the policy actors, inform the causal patterns adopted by the Belief systems.”. A significant coalition swelled around the belief to do good, and to be ambitious: this is what makes Nottingham, Nottingham.

Poverty is an undeniable issue within the city– made obvious by the position of Nottingham's ranking within fuel poverty 'league tables' and the existence of the national rules to monitor levels of fuel poverty, which were given even more local importance by the city councillors and staff of the city council. Fuel poverty was

given high importance within the city, because of the overwhelming belief of city councillors that they needed to make change, be radical, and improve the lives of the poor in the city. Within this coalition, there are some councillors, that see investing funds in insulation across the city homes as meaning that they would improve the lives of many – by reducing fuel bills and making their house more comfortable. For other councillors, investing in energy-saving measures meant they would see a reduction in carbon emissions. The two parts are intertwined.

We can refer back to Streimikiene et al – where it was stated that it was vital that research allows for the bringing forward of good policy answers for the challenges we face in terms of climate mitigation, that also “ensure energy poverty alleviation and the promotion of social justice” (2023, p2) This is clear in Nottingham – energy poverty alleviation comes together with climate mitigation policies.

There is of course not only one factor needed for a successful climate response at local government level. A number of conditions need to be present. One of the strongest conditions present in Nottingham is the *belief in doing the right thing*, through positional leaders, when faced with the overriding discourse around poverty. The response to poverty is fueling the climate response in Nottingham – obviously being a poor city does not automatically make you a ‘green’ city but the combination of historically ambitious councillors, coupled with the desire from councillors to *serve* – and a number of key individuals who are prepared to take risk when finding a policy response to (fuel) poverty has ensured that the city uses energy policy, as part of climate mitigation to tackle poverty in the city. It is almost a happy coincidence that tackling poverty can also be good for the planet.

An additional factor is having great leadership. The five leadership functions first applied to climate adaptation, were applied to climate mitigation and Nottingham exhibits all five functions (in differing degrees). This is at the heart of the forward-thinking within Nottingham. In Nottingham, there was/is an ideal combination - of various positional leaders, and policy entrepreneurs working within an environment where those leaders and supporters believed that the city could

affect change around climate mitigation, by providing a 'win-win' for the poorer residents of Nottingham through the provision of affordable, low/zero carbon energy. Nottingham shows that with the right direction of resources, and the will to achieve – even a city with significant poverty can (*because of its poverty*) achieve climate milestones and reduce carbon emissions. This was referred to earlier in the paper, where cities are seen as vital in the response to the climate crisis (Bulkeley and Betsill, 2004, Albarus, et al, 2023) for which we will need leadership.

Additionally, Meijerink and Stiller emphasised in their work around the leadership functions framework that local government actors had a vital role to play and in particular we “need to consider the interactions between social and ecological systems and to take a long-term perspective” (2016, p253). In Nottingham, the interaction between the social and ecological is very apparent.

Because Nottingham has high levels of poverty and because Nottingham has a strong set of beliefs and the right combination of leadership functions, it uses energy policy to respond to the discourse around poverty and this also happens to be policy which reduces carbon emissions – they are green because they are red. There are other cities not using energy policy to either improve the daily life of residents or reduce emissions – and so the overriding factor is that the actors resolve to do the right thing which prevails in Nottingham. The literature around cities and the energy transition states that local-level decision-making is better able to respond to the climate crisis than national governments: that cities are closer to the people and better able to respond to the climate crisis and put policies in place. (Bayulgen,O. 2020)

As was highlighted by Fitzpatrick, remarkably, Nottingham is an example of one of those cities that have chosen a policy response that both reduces fuel poverty and reduces carbon emissions. (Fitzpatrick, 2015).

10.6 Reflections and Limitations

Reflections

Overall the use of the chosen frameworks fitted the analysis of Nottingham. As far as could be found, this was the first example of research on Nottingham using this combination of frameworks and the first research on energy policy. The clear structure of the frameworks made it easily applicable to the research. The PAA framework alone would not have been complete enough to study Nottingham. Combining frameworks made an ideal combination. Since there has been no other study of Nottingham using the PAA, ACF and Leadership Functions, it is difficult to know if this is a good reflection of its use or whether the results hold true in other studies.

Limitations

Unfortunately much of the documentation from the historical period of the council is not online -the local documents library has been closed to visitors for a number of years due to renovations and although the documents library can be visited by appointment as some stages over the last few years, these dates did not coincide with dates where the researcher was in Nottingham – performing interviews for example. This meant a reliance on the luckily available institutional memory of long-serving councillors for historical references.

The use of a single case study can be a limiting factor. It is only one example - and as such is difficult to make assumptions. Any limitations of a single case study have hopefully been limited due to the knowledge of the case study by the researcher, ensuring that is a more concentrated and deeper study and in the honest nature of the interviewees: who were willing to give honest and open answers -on record.

The study would be improved with the use of quantitative data in the form of a questionnaire to all councillors, to show the relevance of policy arrangements and their hierarchy within the group of councillors. A questionnaire would also be useful in disseminating any further beliefs within the councillors and senior staff.

Furthermore, additional interviews with external organisations – such as the chair or members of the Green Nottingham Partnership and the Meadows Ozone group and also with other city leaders would have been interesting to further build on the overall relevance or existence of leadership functions within the city and also to act as a control group – just how relevant is the council leadership for example, within this policy area.

10.7 Areas for Further Research

This research has opened up many further questions. For instance, it would be extremely interesting to explore further the area of fuel poverty and its influence either on other policy areas or its influence in other similar cities: moving the study to a comparative case study would further show how relevant this discourse is in other cities, or which areas of the policy arrangement are dominant in other cities that are also moving ahead with carbon reductions of other climate mitigating policies.

Further work on the presence of coalitions outside the city council would be an interesting development.

The discourse around fuel poverty is even more relevant today than it was when this study was begun almost 5 years ago – as we are now in an energy and climate crisis. Brenda Boardman argued that fuel poverty had been deliberately ignored for decades by successive governments in the UK in her book, ‘Fixing Fuel Poverty’ (2010). Streimikiene et al (2020) suggest that more research is needed to bring energy poverty and climate mitigation together.

How governments respond or need to respond in a time of existential crisis: faced with both energy and climate crises - is critical. In this study, one city has been found, offering hope that local leadership makes a difference. Exploring the rest of the world for more successful city scenarios could offer hopeful alternatives as we watch in horror at national governments seemingly unwilling or unable to respond to the current multiple crises.

“Energy governance and transitions are multifaceted and multilayered. The local government layer deserves more attention” (Bayulgen,O. 2020. P10),

10.8 Policy Recommendations

Investing in non-financial resources

Since non-financial resources were and are an important element in the success of energy policy in Nottingham, it seems critical for local councils to ensure that they invest in their personnel – recruiting intelligent, loyal and hard-working members of staff to support the development of new and challenging policy.

Vital to the functioning of the council is that quality, intelligent and caring councillors are elected to ensure that decisions are made in the interest of the residents. Political parties should be investing in their membership to ensure the right caliber of candidates.

This is all the more relevant in an era of decreasing local government finance in the UK, and councils needing to think about attracting funding from non-government bodies or entering into collaborations. Staff need to be agile in their thinking.

Ensuring a collaborative working environment

Strong positional leaders took risks in Nottingham -this can often be a benefit to a city but local government can also benefit in allowing there to be an environment where staff and council members can openly discuss ideas and evaluate and discuss risk. A collegiate and collaborative environment could be encouraged within local government by regularly allowing coaching or facilitators to run courses for teams of council members and staff together.

Regularly visiting other councils

In order that other similar cities benefit from energy policy expertise, it should be usual practice that local government share their ideas with peers. Councils should use existing local government networks to share and learn from each other. City Councils can learn from others by taking an active part in Local Government Association (LGA) events in their region or nationally. This can also be a good

method for seeking other councils to collaborate with or with whom to build a network to lobby the national government for resources, for example.

11 References

- Abbass, K., Qasim, M.Z., Song, H. et al. (2022), *A review of the global climate change impacts, adaptation, and sustainable mitigation measures*. Environ Sci Pollut Res 29
- Aalderen, N & Horlings. L, (2020), *Accommodative public leadership in wind energy development: Enabling citizens initiatives in the Netherlands*, Energy Policy 138
- Ambrose.J (18/07/2019) *UK energy-saving efforts collapse after government subsidy cuts*, The Guardian newspaper
- Archer & Rahmstorf, (2010), *An introduction to the Climate Crisis*, Cambridge University Press
- Arts en Leroy, (2006), *Institutional Dynamics in Environmental Governance*, Springer. ProQuest Ebook Central
- Association for Public Service Excellence, (APSE), 2021, *Case Study, Leading the Way with Demonstrator Projects*: <https://www.apse.org.uk/apse/index.cfm/local-authority-energy-collaboration/beis-local-energy-team/nottingham-city-council/>
- Bansard, J.S., Pattberg, P.H., and Widerberg, O., (2017), *Cities to the rescue? Assessing the performance of transnational municipal networks in global climate governance*. International Environmental Agreements: Politics, Law and Economics, 17 (2), 229–246.
- Bawden. A, (10/07/2019) The Guardian newspaper, *Climate crisis: can councils deliver on bold promises to cut emissions?*<https://www.theguardian.com/society/2019/jul/10/climate-crisis-can-councils-deliver-bold-pledges>
- Bayulgen,O. (2020), *Energy Research & Social Science* 62 (2020) 101376
- BBC, (2011) *Solar panel plan for Nottingham council homes on*: <https://www.bbc.com/news/uk-england-nottinghamshire-12796701>
- Béland, D. (2005) *Ideas and Social Policy: An Institutionalist Perspective*, Social Policy and Administration, Vol.39 Issue 1

- Berger, G., Flynn, A., & Hines, F. (2001). *Ecological modernization as a basis for environmental policy: Current environmental discourse and policy and the implications on environmental supply chain management*. The European Journal of Social Science Research, 14(1), 55-72
- Berman. S, (1998), *The Social Democratic Moment: Ideas and Politics in the Making of Interwar Europe*, Cambridge, MA: Harvard University Press
- Betsill and Bulkeley, (2004), *Transnational Networks and Global Environmental Governance: The Cities for Climate Protection Program*, International Studies Quarterly(2004)48, 471–493
- Bhaskar, R. (1975). *A realist theory of science*. York: Books.
- Boardman et al, (2005), *40% House*, Environmental Change Institute, Oxford University
- Boardman, B. (1991). *Fuel poverty: From cold homes to affordable warmth*. Belhaven Press.
- Boardman (2010), *Fixing Fuel Poverty*, Earthscan
- Boyle, M., Crone, S., Endfield, G., Jarvis, S. and McClelland, A.,2019. *Towards a green future for Liverpool City Region*. Liverpool:Heseltine Institute for Public Policy, Practice and Place, University of Liverpool.
- Bulkeley, H. (2010). *Cities and the governing of climate change*, Annual Review of Environment and Resources, 35; 229-253
- Bulkeley,H. (2020) *Cities and the Governing of Climate Change, Annual. Review. Environmental Resource. 2010. 35:229–53*
- Bulkeley.H (2021) *Climate changed urban futures: environmental politics in the anthropocene city*, Environmental Politics, 30:1-2, 266-284,

Burnham, P. Grant, W. and Layton-Henry, Z. (2008), *Research Methods in Politics*, Palgrave Macmillan

Cairney, P. (2012). *Understanding public policy: Theories and issues*. Palgrave Macmillan.

Carley.S & Noninsky.D, (2020) *The justice and equity implications of the clean energy transition*, *Nature Energy* | VOL 5 | August 2020 | 569–577

Carrington, D. (29th August 2016), *The Anthropocene epoch: scientists declare dawn of human-influenced age*, *The Guardian*

Cauvain, Jenni. 2018. *Urban Social Sustainability –A case study of Nottingham, United Kingdom*. In *The Palgrave Handbook of Sustainability*, edited by Robert Brinkmann and Sandra Garren, 241–260. London: Palgrave Macmillan

C40, (2012) *Why Cities - Ending Climate Change Begins in the City*, Found at:

<https://www.c40.org/ending-climate-change-begins-in-the-city>

[C40, \(2021\) Benefits of Urban Climate Action, Winter 2021 edition](#)

[C40\(2023\), Policy Brief, C40 Climate Leadership Group, July 2023 Found at:](#)

https://www.c40knowledgehub.org/s/article/Why-city-action-is-critical-in-the-fight-against-climate-change?language=en_US

[C40 –\(2019\) Defining Carbon Neutrality for Cities and Managing Residual Emissions, found at:](#)

https://c40.my.salesforce.com/sfc/p/#36000001Enhz/a/1Q000000MdT5/U6w4rHAB.8WTb_kpPnzYSI.dqfOkKhx_ii.i49dWJWU

Chang, R., Zuo, J., Zhao, Z., Soebarto, V., Zillante, G., and Gan, X. (2017) *Approaches for Transitions Towards Sustainable Development: Status Quo and Challenges*. *Sust. Dev.*, 25: 359–371.

Champagne.S, Phimister.E, Maediarmid.J, Guntupalli.A, (2023) *Assessing the impact of energy and fuel poverty on health: a European scoping review*, European Journal of Public Health, Volume 33, Issue 5, October 2023, Pages 764–770

Crooks, E. (2016) The Financial Times, <https://www.ft.com/content/de192e80-b71e-11e6-ba85-95d1533d9a62>

Dale et al, (2014), *Evaluating the impact of a workplace parking levy on local traffic congestion: The case of Nottingham UK*, Elsevier

Peta Darke, Graeme Shanks, (2002) Editor(s): Kirsty Williamson et al, *In Topics in Australasian Library and Information Studies*, Research Methods for Students, Academics and Professionals (Second Edition)

Davidson.K, Coenen.L, & Gleeson.B, (2019), *A Decade of C40: Research Insights and Agendas for City Networks*, Global Policy Volume 10 . Issue 4

Denzin, (2009), *The Research Act: A Theoretical Introduction to Sociological Method*.Transaction Publishers

Drury.C, (2020) *How Nottingham is racing to be the UK's first carbon neutral city*, The Independent Newspaper, 18/01/2020

<https://www.independent.co.uk/news/uk/home-news/nottingham-carbon-neutral-climate-change-global-warming-emissions-a9287851.html>

[Elgendy. K, \(9th June 2023\), Unleashing Urban Power, UNFCC, Found at: https://climatechampions.unfccc.int/unleashing-urban-power-how-cities-can-reshape-climate-governance/](https://climatechampions.unfccc.int/unleashing-urban-power-how-cities-can-reshape-climate-governance/)

EPSRC Centre for Doctoral Training in Geospatial Systems (2020), *The City of Nottingham's Public Transport Network*, Found At:

<https://storymaps.arcgis.com/stories/afe2ae8e385442f4b5eea7654a548628>

European Parliament, (2009) *Covenant of Mayors make green pledge for cleaner cities*
<https://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+IM-PRESS+20090206STO48708+0+DOC+XML+V0//EN>

Fearn,H. *Retrofitting homes, how councils can insulate their economies*, The Guardian, 25th February 2015, <https://www.theguardian.com/public-leaders-network/2015/feb/26/retrofitting-homes-how-councils-can-insulate-their-economies>

Fitzpatrick, Tony, (2015) 'Energy and fuel poverty', *Climate change and poverty: A new agenda for developed nations*, Policy Press Scholarship Online

Flyvbjerg,B. "Five Misunderstandings About Case-Study Research," *Qualitative Inquiry*, vol. 12, no. 2, April 2006, pp. 219-245.

Gabehart et al. (2022), *Lessons from the Advocacy Coalition Framework for climate change policy and politics*, *Climate Action* 1:13

Geels, F. (2002). *Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case-study*. *Research Policy*, 31, 1257–1274.

Geels. F, Sovacool. B, Sorrell.S, (2019) *Of emergence, diffusion and impact; Transitions in Energy Efficiency and Deman*, Routeldge.

Gillard ,. Snell.C & Bevan.M, (2017) *Advancing an energy justice perspective of fuel poverty: Household*

vulnerability and domestic retrofit policy in the United Kingdom, *Energy Research & Social Science* 29, 53–61

Global Covenant of Mayors, (2021) <https://www.globalcovenantofmayors.org/what-is-our-mission/>

[Goodman, J. \(2002\) Researching climate crisis and energy transitions: Some issues for ethnography, Energy Research & Social Science, Volume 45, 2018, Pages 340-347](#)

Green, S, *Research Methods in Health Social and Early Years Care* (2000) Nelson Thornes

Green Nottingham Partnership (2021) *Carbon Neutral Charter*

Hajer, M and Versteeg, W. (1994) *A Decade of Discourse Analysis of Environmental Politics: Achievements, Challenges, Perspectives*, *Journal of Environmental Policy & Planning*, 7:3, 175-184,

Hajer, M. (1995). *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*, Oxford: Oxford University Press.

Head, M, et al (2022), *The proposed Anthropocene Epoch/Series is underpinned by an extensive array of mid-20th century stratigraphic event signals*, *JOURNAL OF QUATERNARY SCIENCE* (2022)37(7)

Hills, J (2011) *Fuel Poverty: The problem and its measurement*, CASE Report 69 ISSN 1465-3001 Department for Energy and Climate Change (DECC)

Hogkins, R & Sasse T, *Tackling the UK's energy efficiency problem*, Institute for Government, 2022

House of Commons, Public Administration and Constitutional Affairs Committee, (2022-2023), *Governing England*, Third Report of Session

Hughes, S. (2017) *The Politics of Urban Climate Change Policy*, *Urban Affairs Review* 2017 53:2, 362-380

Hughes, Sara & Chu, Eric & Mason, Susan. (2018). *Climate Change in Cities: Innovations in Multi-Level Governance*. 10.1007/978-3-319-65003-6.

Ijson, S. & Mulley, C. (Ed.) *Parking Issues and Policies*, 2014, Emerald Publishing p335-360

IPCC, (2007) *Climate Change Synthesis Report*

IEA (2012) *World Energy Outlook 2012*. International Energy Agency, Paris, France.

IEA (2015) World Energy Outlook Special Report 2015: Energy and Climate Change. International Energy Agency, Paris, France.

IEA (2017) Perspectives for the Energy Transition: Investment Needs for a Low-carbon Energy System. International Energy Agency, Paris, France.

Ianakiiev A, Cui JM, Garbett S and Filer A (2017) *Innovative System for Delivery of Low Temperature District Heating*, International Journal of Sustainable Energy Planning and Management Vol. 12 2017 19–28

IPCC (2014) Summary for Policymakers. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental, Edenhofer, O., Pichs-Madruga, R., Sokona, Y., Farahani, E., Kadner, S., Seyboth, K., Adler, A., Baum, I., Brunner, S., Eickemeier, P., Kriemann, B., Savolainen, J., Schlömer, S., von Stechow, C., Zwickel, T. and Minx, J.C. (Eds)). Cambridge University Press, Cambridge, UK and New York, USA.

IPCC (2022) Langsdorf S, Lösckhe S, Möller V, Okem A, Officer S, Rama B, et al. Climate change 2022 impacts, adaptation and vulnerability working group II contribution to the sixth assessment report of the intergovernmental panel on climate change. Cambridge, UK New York, NY, USA: Cambridge University Press; 2022

IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34

Jessel, S, Sawyer.S, & Hernández.D, *Energy, Poverty, and Health in Climate Change: A Comprehensive Review of an Emerging Literature*, Front. Public Health, 12 December 2019
Sec. Inequalities in Health Volume 7 - 2019

Jenkin-Smith,H. Nohrestedt,D. Weible,C. and Sabatier, P. (2014), *The Advocacy Coalition Framework: Foundations, Evolution, and Ongoing Research*, *Theories of the Policy Process*, edited by Sabatier,P. & Weible, C. Westview Press.

Ed: Jordan,A, Huiteman D, Van Assel H, Forster J, (2018), *GOVERNING CLIMATE CHANGE Polycentricity in Action*

Kern, F. and Smith, A. (2008). Restructuring energy systems for sustainability? Energy transition policy in the Netherlands. *Energy Policy*, 36, 4093–4103.

Khalifa, Mahmoud. (2018). LOCAL GOVERNMENT AND POLICY NETWORKS IN THE UK: AN ANALYTICAL STUDY, *Journal of Political Science*.

Kingdon, J (2011) *Agendas, Alternatives and Public Policies*, Published by Longman

Klimaatakkoord, (28 juni 2019) Found at:

<https://www.klimaatakkoord.nl/documenten/publicaties/2019/06/28/klimaatakkoord>

Klein, D. R., Carazo Ortiz María Pía, Doelle, M., Bulmer, J., & Higham, A. (Eds.). (2017). *The paris agreement on climate change : analysis and commentary* (First). Oxford University Press.

Kemp, R. and Loorbach D. (2006), *Transition management: a reflexive governance approach*, Chapter in: Voss, J., D. Bauknecht and R. Kemp, Eds. *Reflexive Governance for Sustainable Development*. Cheltenham, Edward Elgar

Le Quéré, C et al, (2018), *Global Carbon Budget 2018*, *Earth System Science Data*, Vol.10 Issue 4.

Liljenström H, Svedin U, (2005) editors. *Micro meso, macro-addressing complex system couplings*. New Jersey: World Scientific

Liefferink,D, (2006) in B. Arts and P. Leroy (eds.), *Institutional Dynamics in Environmental Governance*, p45–68.

- Littig, B. (2009). *Interviewing the Elite — Interviewing Experts: Is There a Difference?*. In *Interviewing Experts* editors: Bogner, Littig & Menz
- Lombardi, P., Shen, Q., & Brandon, P. (2017) *Future Challenges for Sustainable Development Within the Built Environment*. Wiley Blackwell Publishing
- Lombardi, D. (2022) Climate crisis mitigation and adaptation: educational and developmental psychology's responsibility in helping face this threat, *Educational and Developmental Psychologist* 39:1, 1-4
- Loorbach, D. (2010) *Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework*, *Governance: An International Journal of Policy, Administration, and Institutions*, Vol. 23, No. 1, (pp. 161–183).
- Loorbach, D. (2022) *Designing radical transitions: a plea for a new governance culture to empower deep transformative change* in *City, Territory and Architecture*, 9:30
<https://doi.org/10.1186/s40410-022-00176-z>
- Maher, C., Hadfield, M., Hutchings, M., & Eyto, A. (2018). Ensuring Rigor in Qualitative Data Analysis: *A Design Research Approach to Coding Combining NVivo with Traditional Material Methods*. *International Journal of Qualitative Methods*, 17, 1–13.
- Mark Lynas et al (2021) *Greater than 99% consensus on human caused climate change in the peer-reviewed scientific literature*, *Environmental Research Letters*. Vol 16, Number 11.
- Maisland, L. (5th December 2023) Council on Foreign Relations, *Global Climate Agreements: Successes and Failures* found on:
<https://www.cfr.org/background/paris-global-climate-change-agreements>
- March, D. and Stoker, G. (2010), *Theory and Methods in Political Science*
- May, T. (2011). *Social research: Issues, methods and process* 44th ed. Buckingham: Open Buckingham

Maher, C., Hadfield, M., Hutchings, M., & Eyto, A. (2018). *Ensuring Rigor in Qualitative Data Analysis: A Design Research Approach to Coding Combining NVivo with Traditional Material Methods*. *International Journal of Qualitative Methods*, 17, 1–13.

Meadowcroft, J. (2009) *What about the politics? Sustainable development, transition management, and long term energy transitions*. *Policy Sci.* 42, 323–340.

Milner J, Hamilton I, Woodcock J, Williams M, Davies M, Wilkinson P et al. Health benefits of policies to reduce carbon emissions *BMJ* 2020; 368 :l6758

[doi:10.1136/bmj.l6758](https://doi.org/10.1136/bmj.l6758)

Millner.A and Ollivier,H. (2016), *Beliefs, Politics, and Environmental Policy* in *Review of Environmental Economics and Policy* 10:2,

Murphy E, Dingwall R. (2007) Informed consent, anticipatory regulation and ethnographic practice. *Soc Sci Med*.

NEEP4. (2002). *Where there's a will there's a world*. The Netherlands Forth National Environmental Policy Plan, Ministry of Housing Spatial Planning and the Environment

Nottingham City Council (2018), Fuel Poverty Strategy 2018-2025

Nottingham City Council (2019), Nottingham City Council Plan, 2019-2023

Nottingham City Council. Carbon Neutral Action Plan, Nottingham City Council. 2020. Available online: <https://www.nottinghamcity.gov.uk/media/2619917/2028-carbon-neutral-action-plan-v2-160620.pdf>

Nottingham Energy Partnership, (2024) *Who is NEP, Our Story* Found at <https://www.nottenergy.com/our-story-about-us>

Nottingham Green Partnership, Terms of Reference (2010)

Nottingham Green Charter (1990), *Nottingham, a Green City*

Office of Gas & Electricity Markets (OFGEM)

<https://www.ofgem.gov.uk/environmental-and-social-schemes/energy-company-obligation-eco/energy-company-obligation-eco-eco1-eco2-eco2t-and-eco3>

[Office of National Statistics, \(2023\) *Regional gross disposable household income: local authorities by ITL1 region*, 14.09.23 Found at:](https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/datasets/regionalgrossdisposablehouseholdincomelocalauthoritiesbyitl1region)

<https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/datasets/regionalgrossdisposablehouseholdincomelocalauthoritiesbyitl1region>

Osei-Kojo A, Ingold K, Weible C M (2022) *The advocacy coalition framework: Lessons from application in African countries*. Politische Vierteljahresschrift 63:181–201

Ostrom E. (2010) *Polycentric systems for coping with collective action and global environmental change*. Global Environmental Change

Palmer, J., Boardman, B., Terry, N., Fawcett, T. and Narayan, U. (2023) Finding the fuel poor and framing better policy. Cambridge Architectural Research and Environmental Change Institute, University of Oxford

Peeters, (2009) *Climate Law in The Netherlands: The Search towards a National Legislative Framework for a Global Problem* Electronic Journal of Comparative Law, vol. 14.3 (December 2010),

Pierce, R. (2008) *Research Methods in Politics*, Sage Publishing

Pratt.D (2017), Solar Power Portal found on:

https://www.solarpowerportal.co.uk/news/nottingham_city_council_opens_up_multi_million_pound_solar_framework

Roger, C , Hale. T & Andonova, L. (2017) *The Comparative Politics of Transnational Climate Governance*, International Interactions, 43:1, 1-25,

Ros, J. (2015) *Energietransitie: zoektocht met een helder doel*, PBL Planbureau voor de Leefomgeving

Ritchie, H., & Roser, M. (2023). Sector by sector: where do global greenhouse gas emissions come from?. Our World in data.

Rosenow, J. (2012) *Energy savings obligations in the UK—A history of change*. Elsevier- Energy Policy 49.

Rotmans, Jan, René Kemp, and Marjolein van Asselt. (2001). *More Evolution Than Revolution: Transition Management in Public Policy*. Foresight 03 (01): 17.

Sabatier P. (1998) *The advocacy coalition framework: revisions and relevance for Europe*, Journal of European Public Policy, 5:1, 98-130, Editors: Sabatier P. and Wieble C. (2014) *Theories of the Policy Process*, Westview Press

Salvia, M., Reckien, D., Pietrapertosa, F., Eckersley, P., Spyridaki, N., Krook-Riekkola, A., Olazabal, M., De Gregorio Hurtado, S., Simoes, S. G., Geneletti, D., Vigiú, V., Fokaides, P. A., Ioannou, B. I., Flamos, A., Csete, M. S., Buzasi, A., Orru, H., De Boer, C., Foley, A., . . . Heidrich, O. (2020). Will climate mitigation ambitions lead to carbon neutrality? An analysis of the local-level plans of 327 cities in the EU. *Renewable and Sustainable Energy Reviews*, 135, 110253. <https://doi.org/10.1016/j.rser.2020.110253>

Short, J. R., & Farmer, A. (2021). Cities and Climate Change. *Earth*, 2(4), 1038-1045. <https://doi.org/10.3390/earth2040061>

Snell, C, Bevan, M & Thomson, H (2015) *Justice: fuel poverty and disabled people in England*, *Energy Res. Soc. Sci.* 10 123–132.

Steffen et al, (2018) *Trajectories of the Earth System in the Anthropocene*, *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 115 no. 33

Stellingma, M. *Oppositie vreest kosten voor burger door klimaatakkoord*, 3rd July 2019, NRC

Streimikiene D, Lekavičius V, Baležentis T, Kyriakopoulos GL, Abrhám J. (2020) *Climate Change Mitigation Policies Targeting Households and Addressing Energy Poverty in European Union*. *Energies*; 13(13):3389.

Streimikiene, D., Kyriakopoulos, G., Lekavicius, V. et al. (2021) *Energy Poverty and Low Carbon Just Energy Transition: Comparative Study in Lithuania and Greece*. *Soc Indic Res* 158, 319–371

Sovacool, B.K., Upham, P., Martiskainen, M. et al. (2023) Policy prescriptions to address energy and transport poverty in the United Kingdom. *Nat Energy* 8, 273–283

Subramanian, M. (2019) *Anthropocene now: influential panel votes to recognize Earth's new epoch*, *Nature: International Journal of Science*, 21st May 2019 Found on: <https://www.nature.com/articles/d41586-019-01641-5>

Sun, Y.-L.; Zhang, C.-H.; Lian, Y.-J.; Zhao, J.-M. (2022) Exploring the Global Research Trends of Cities and Climate Change Based on a Bibliometric Analysis. *Sustainability* 14,

Tatenhove, J. van, B. Arts and P. Leroy (ed.) (2000). 'Political Modernisation and the Environment; The Renewal of Environmental Policy Arrangements', Kluwer Academic Publishers, Dordrecht.

UK Committee on Climate Change, July 2019, Found at: <https://www.theccc.org.uk/publication/reducing-uk-emissions-2019-progress-report-to-parliament/>

[Gutierrez, A \(11th October 2019\) Speech Transcript, Found at: https://www.un.org/sg/en/content/sg/statement/2019-10-11/secretary-generals-remarks-c40-world-mayors-summit](https://www.un.org/sg/en/content/sg/statement/2019-10-11/secretary-generals-remarks-c40-world-mayors-summit)

United Nations News, (21st September 2014) *no 'Plan B' for climate action as there is no 'Planet B, says UN chief*, *UN News* Found at:

<https://news.un.org/en/story/2014/09/477962-feature-no-plan-b-climate-action-there-no-planet-b-says-un-chief>

United Nations, (2015), The Paris Agreement, Found at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

United Nations Paris Agreement, (16 February 2016), Signatories Agreement, C.N.63.2016.TREATIES-XXVII.7.d

United Nations Department of Economic and Social affairs, 16th May 2018, found at: <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanizationprospects.html#:~:text=68%25%20of%20the%20world%20population,of%20Economic%20and%20Social%20Affairs>

United Nations Climate Change, 5th October 2020, found at <https://unfccc.int/news/urban-climate-action-is-crucial-to-bend-the-emissions-curve>

Urge-Vorsatzn,, D & Tirado Herrero, S. (2012) *Building synergies between climate change mitigation and energy poverty alleviation* Energy Policy 49, p83-90

Victor, D.G., Lumkowsky, M. & Dannenberg, A. (2022) Determining the credibility of commitments in international climate policy. *Nat. Clim. Chang.* 12, 793–800

von Malmborg, F. (2023) *Tales of creation: advocacy coalitions, beliefs and paths to policy change on the 'energy efficiency first' principle in EU*. In *Energy Efficiency* 16, 87 (2023).

Walton, J. in Ragin, Charles C. and Becker, Howard S. (eds), (1992) *What is a Case? Exploring the Foundations of Social Inquiry*. Cambridge: Cambridge University Press, pp. 121-137.

Weible.C, Sabatier. P, Jenkins-Smith. H, Nohrstedt. D, Henry. A, and de Leon. P, (2011) *A Quarter Century of the Advocacy Coalition Framework: An Introduction to the Special Issue*. The Policy Studies Journal, Vol. 39, No. 3, 2011

Weible, C.M., Sabatier, P.A., (2005). Comparing policy networks: marine protected areas in California. *Policy Studies Journal* 33, 181–201.

Hajer, Maarten A. (1995). *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process* 1995. Oxford: Oxford University Press.

Wiering M, Liefferink. D, and Crabbé A (2018) *Stability and change in flood risk governance: on path dependencies and change agents*, *Journal of Flood Risk Management* 11 (2018) 230–238

Weiring.M and Arts.B, (2006) in *Hydrobiologia*,, Leuven.R, Ragas.A, Smits.A, & van der Velde. G, (eds), *Living Rivers: Trends and Challenges in Science and Management*

Williams.R, (2019), *Green new deal for Nottingham wins top Guardian award*, The Guardian Newspaper, 27th November 2019

<https://www.theguardian.com/society/2019/nov/27/green-new-deal-nottingham-wins-top-guardian-award>

Winter. A, Le. H, (2020) *Nottingham's urban sustainability fix as creative environmental commercialization*, *Urban Geography*, 41:5, 760-776

World Bank. (2010). *Cities and Climate Change : An Urgent Agenda*. Urban development series; knowledge papers no. 10. Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/17381> License: CC BY 3.0 IGO."

World Bank Group. 2021. World Bank Group Climate Change Action Plan 2021–2025: Supporting Green, Resilient, and Inclusive Development.

Zenghelis, D. and Nicholas Stern, N. (2015) *Climate change and cities: a prime source of problems, yet key to a solution*, The Guardian newspaper, 19th November 2015 `

Zhifu Mi et al (2019), *Cities: The core of climate change mitigation*, Journal of Cleaner Production, Volume 207,

12 Appendices

1. List of interview questions
2. Codebook

Appendix 1: Interview questions	
Introduction	I am exploring the drivers of energy policy in Nottingham and as part of this research I am interviewing prominent sitting/former councillors, staff or outside bodies within the city. Thank you so much for giving your time to answer my questions. I would like to hear your opinions and will have a lot of time for discussion.
	I am Katrina Bull, you and I have worked together in the past. Please treat me as a neutral person for the purposes of this interview.
	I will be recording this interview and you have stated that this is not a problem -is this still the case? Please treat this as a conversation, I will ask a number of questions but I hope that we can have an open and interesting discussion.
Question 1.	What is your role within the city – can you explain?
Question 2.	Since when have you been within the city council/your organisation?
Question 3.	Nottingham has a challenging carbon-neutral target. Do you know who started the idea to have this target?

Question 4.	How long ago would have you been discussing this as a target?
Question 5.	Who is involved in the setting of such a target?
Question 6.	Which other staff, or groups, if any were involved in the discussion?
Question 7.	Which policies will help the city reach this target? In particular what part does energy policy play?
Question 8.	Who within the council or outside the council will help the city reach this target?
Question 9.	Other cities do not have this target – why is it important for Nottingham?
Question 10.	How is Nottingham able to reach this target and other cities are not?
Question 11.	Will Nottingham meet the carbon-neutral target that it has set and how can you be sure?
Question 12.	Do you know any of the history around Nottingham and its energy policy?
Question 13.	Can you think of periods or people important to the energy policy discussion in the past or currently? How have they influenced energy policy?
Question 14.	Has national government or international policy influenced Nottingham? If so, how?
Question 15.	Are there issues or anything else relevant that is particularly a Nottingham issue?
Question 16.	Have I missed any important points that you would like to share?

Conclusion	I would like to thank you so much for your time. I will send you a copy of the interview during the next few months so that you can be assured of what I have written. You can contact me via email kat*****ll@gmail.com if you have any further points or questions.

Appendix 2. Code Book				
	Code name	Code colour	Code description	Code example (interviews)
1	Rules - formal	Red	Statements regarding following national or local legislation or indicators and targets.	"manifesto commitments"; "we care about clean air"; "meeting the healthy homes programme"; "air quality driving it"
2	Rules- informal	Light blue	Statements showing an expectation of the group or individuals, specific statements of values, norms needing to be fulfilled	"You have to understand our values"; "there is a risk appetite from members around energy"
3	Actor – beliefs	Orange	Statements containing normative statements regarding the problem of poverty or climate, feeling needing to respond to a problem, sense of duty, their values regarding specific solutions	"We have always done what is right"; "Always look for the ethical option"; "we are rebels"; "trying to change the world"; "there is a protest instinct"
4	Actor -Presence of Coalitions	Yellow-Green	Statements or observations of likeminded actors working together	"when people like me and Parbutt came in, with left backgrounds, environment was absolutely part of the picture"; "we don't accept decline";
5	Leadership-political/administrative	Mid purple	Statements or information on positional leaders who are	"succession of people prepared to champion

			communicating, monitoring or ensuring resource allocation	climate"; "whole list of things we have that that others have not"; "we monitor, put values into plans"
6	Leadership -adaptive	Mid green	Statements showing the development of different/new strategies to reach energy policy	" we are anticipating the future"; "something about our culture that is unique"
7	Leadership- enabling	Light purple	Statements relaying the creation of a sense of urgency (deadlines, timetables) or competition	"we are leading the way"; "we are only the 2 nd council to do this"; "monthly air pollution monitoring committee"
8	Leadership - dissemination	Yellow	Statements showing there were newly developed ideas getting accepted	"we have to innovate with legislation"
9	Leadership - connective	Black	Statements showing the promotion of problems and mobilising actors to search for solutions, building together and building trust	"We have got to set the leadership tone that allows creativity to flourish"
10	Resources- financial	Grey	Statement regarding budgets allocated, funds spent or grant received, applying for funds	"national funding for low emissions cities"; ""we are good at bidding for money"; "energy team has sucked in all this cash"; "it always has to make financial sense"

11	Resources- non financial	Blue	Statements regarding staffing levels, quality of staff, staff morale, staff knowledge	"we are fortunate with the assets we have in the city"; "stuff you pick up in Nottingham is the exceptional stuff"
12	Discourse	Pink	Statements declaring or describing norms or values Statements showing definitions of problems or their approaches to solutions	"poverty remains the motivation throughout"; "Poverty is a key driver"; "helping people feel better off"; 'climate serious left issue, had to be done"