Fuel poverty and transport poverty in the UK: a critical examination of their future evolution in relation to government policy

ALISTAIR DAVID BOGAARS

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DECLARATION

I certify that the work contained in this thesis, or any part of it, has not been accepted in substance for any previous degree awarded to me or any other person, and is not concurrently being submitted for any other degree other than that of (Doctor of Philosophy) which has been studied at the University of Greenwich, London, UK.

I also declare that the work contained in this thesis is the result of my own investigations, except where otherwise identified and acknowledged by references. I further declare that no aspects of the contents of this thesis are the outcome of any form of research misconduct.

I declare any personal, sensitive or confidential information/data has been removed or participants have been anonymised. I further declare that where any questionnaires, survey answers or other qualitative responses of participants are recorded/included in the appendices, all personal information has been removed or anonymised. Where University forms (such as those from the Research Ethics Committee) have been included in appendices, all handwritten/scanned signatures have been removed.

Student Name: Alistair Bogaars

Student Signature:

Date: 24/01/2020

First Supervisor’s Name: Dr Yuliya Yurchenko

First Supervisor’s Signature:

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ABSTRACT

In the UK, transport poverty has evolved out of an explicit analogy with the more recognised fuel poverty. This thesis adapts a practical approach to these phenomena through the use of in-depth semi-structured expert interviews, supported by detailed research and policy review.

Extensive exploration of literature on the subject outlines the broader factors behind the prevalence of fuel and transport poverty in the UK, addressing the impacts of social exclusion and the neoliberal austerity agenda. The theoretical underpinnings of this thesis lie in *The Right to the City* by Henri Lefebvre, drawing on his vision of emancipatory spatial politics. Insightful primary evidence in the form of 17 expert interviews, taken from the energy and transport sectors, were used to gain a detailed understanding of the impact of government policy on these issues. Thematic analysis of the interview data revealed a number of key themes which are explored in the interview analysis chapter.

The discussion highlights the synergies between the issues of fuel and transport poverty, proposes a range of policy recommendations and makes some key methodological contributions. The contributions to knowledge of fuel and transport poverty are set out in the conclusion. These include advances in understanding the synergies between them along with policy recommendations around the provision of energy advice, addressing the health impacts of cold homes, defining fuel poverty, along with officially recognising and agreeing the structure of transport poverty.

The methodological contributions, advocate the importance of an approach that fits with the local circumstances of the area. Along with the importance of taking a holistic view of the way that people chose to live their lives. This finding brings fuel and transport poverty together, with other forms of poverty.

We urgently need a publicly funded energy efficiency programme in England, in order to meet the UK Government's fuel poverty target by 2030. It is also vitally important that we

achieve official policy recognition of transport poverty from the UK Government, if we are to tackle this issue that blights so many lives.

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GLOSSARY

10% indicator – former fuel poverty indicator (2001 to 2013), based on 10% of household income spend on fuel.

LIHC – Low Income High Cost indicator current fuel poverty indicator (2013 to 2019).

LILEE – Low Income Low Energy Efficiency proposed indicator for fuel poverty (2019).

BEIS – Department for Business, Energy and Industrial Strategy.

DECC – Department for Energy and Climate Change (2008 to 2016).

DfT – Department for Transport.

DWP – Department for Work and Pensions.

ECO – Energy Companies Obligation.

TfL – Transport for London.

1. INTRODUCTION

1.1 THE POINT OF THE RESEARCH

This research project seeks to critically examine the links between fuel poverty and transport poverty, which are part of wider socioeconomic issues affecting UK society in light of the UK post 2007/08 recession. It also seeks to make to a methodological contribution to the field by looking at the connections between these two issues, which are not being handled effectively in the current climate.

Fuel poverty and transport poverty form part of a wider social problem with poverty in the UK, which is complex and methodologically challenging as a matter of analysis. Poverty in the UK, in line with other developed countries, is relative to the distribution of national income rather than being an absolute measure (Townsend, 1979). Transport poverty, in particular, is a research area that is relatively underdeveloped (Lucas, Mattioli, et al., 2016). Fuel poverty has been the subject of research by academics since the mid-1970s (Boardman, 2010). However, the policy around fuel poverty has transformed in recent years with limited critique in the public arena (Middlemiss, 2016). The use of markets to deliver essential goods and services since the 1980s, has limited the policy options available to these decision makers (Thomas, 2008b).

The research has revealed that there is a lack of publicly available data on fuel poverty and transport poverty. However, there is significantly more data on fuel poverty than on transport poverty. The available data was patchy and there appears to be a lack of data categories across different databases, making analysis difficult. For example, in previous years data on fuel poverty was freely available aggregated to small area level (Department for Energy and Climate Change, 2015a). The most recent data on fuel poverty is only aggregated to regional level, which makes comparison with the historic sub regional datasets problematic (Department for Business, Energy & Industrial Strategy, 2017c).

Data availability is not a new problem, it was highlighted in the literature as an issue that hampered attempts to assess the extent of fuel poverty. The available fuel poverty data was not disaggregated by factors such as social class, income and age group (Cooper, 1981). The literature review has revealed energy poverty and energy justice as alternative ways of looking at these issues. The similarities between fuel poverty and transport poverty, make fuel poverty analyses and policies a useful analytical framework to consider when studying transport poverty (Mattioli, Lucas and Marsden, 2017).

1.2 RESEARCH AIM

This research commenced in the School of Science in 2012 under the supervision of Dr Richard Simon and Professor Stephen Thomas and it was solely focused on fuel poverty. Transport poverty was incorporated at the suggestion of Professor Petros Ieromonachou in 2016, as a way of broadening the research base.

The aim of this research is to critically evaluate the main factors (location, income levels, consumer behaviour/demographics, quality of housing stock, the influence of energy providers, fuel pricing, access to a car, public transport provision and cost of use) that determine the levels of fuel poverty and transport poverty in the United Kingdom, and examine the impacts of government legislation and policy, on the issues.

This research proposes to carry out a detailed investigation of the key determinants at the heart of fuel poverty and transport poverty, and further critically examine the potential impacts of government policies.

1.3 RESEARCH OBJECTIVES

The following objectives were set in 2016 to achieve the research aim.

1. Identify the policy reform that is needed to eliminate fuel poverty in the UK.

i. What is the current state of fuel poverty in the UK, and how has it evolved since its inception as the subject of United Kingdom Government policy in 1997?

ii. What are the impacts of the actions of energy providers and fuel pricing on fuel poverty, and how have these evolved since 1997?

iii. What is the relationship between fuel poverty and different demographics groups, individual consumer behaviour and household location?

iv. What are the implications for fuel poverty of the United Kingdom government's legislation and policies on energy, climate change and economics?

2. Identify the policy reform that is needed to eliminate transport poverty in the UK.

i. What is transport poverty and what are the challenges in reaching a definition of the issue that is acceptable to the United Kingdom government and other interested stakeholders?

ii. How are those experiencing difficulties in accessing transport currently identified and how is the impact of transport policy on vulnerable groups being evaluated?

3. Identify the links between fuel poverty and transport poverty.

i. Use the Royal Borough of Greenwich as a case study to examine fuel poverty and transport poverty and the impact of local and national government policy on these issues.

1.3.1 PILOT STUDY ON FUEL POVERTY

These objectives were amended over the course of the course of the project, as the research progressed. The use of a case study (Eisenhardt, 1989), to examine fuel poverty in the Royal Borough of Greenwich, was tested in a pilot study carried out in April 2016. The pilot study used anonymised fuel poverty checklist data obtained from the Royal Borough of Greenwich council (Yedigaroff, 2016).

The fuel poverty checklist was developed by Royal Borough of Greenwich, as an assessment tool for staff working with residents deemed to be at risk of fuel poverty (McCann and Butler, 2016). The data provided by the Royal Borough of Greenwich did not contain sufficient valid data at the Lower Level Super Output Area (LSOA) level for a comparative analysis with the DECC sub-regional fuel poverty data at small level geographic areas (LSOA). The sub-regional fuel poverty data was modelled from data that was taken from the English National Household survey (Department for Energy and Climate Change, 2015a).

The reliance on modelled data from the Department for Energy and Climate Change was something that Royal Borough of Greenwich noted in their report on fuel poverty (McCann and Butler, 2016). However, the sample size of the English National Household Survey (12,000 household in the 2013 data), mean that the data could not be used to estimate fuel poverty directly at local authority level (Department for Energy and Climate Change, 2015b). This is an important caveat which meant that attempted comparison between the fuel poverty checklist data and sub regional fuel poverty data for the Royal Borough of Greenwich in the 2016 pilot study would have been invalid. The comparative case study approach was formally removed from the project in 2017 following the successful transfer from MPhil to PhD.

1.3.2 RESEARCH OUTCOMES

The following outcomes for this research project were finalised in 2017.

1. Improved understanding of fuel poverty and transport poverty as complex, interconnected phenomena by conducting of their consolidated study on empirical and policy levels.
2. Fuel poverty and transport poverty policy recommendations for decision makers in local and national government.
3. Contributions to methodological enquiry through recommendations on how to improve the identification and classification of those affected by fuel poverty and transport poverty.

These three research outcomes were developed to complement the research questions as they focus on the interconnected nature of the two phenomena.

> “British researchers and NGOs have put forward the notion of ‘transport poverty’, building on an implicit analogy between (recognised) fuel

> poverty and (neglected) transport affordability issues." (Mattioli, Lucas and Marsden, 2017, p. 94)

This research builds on the work by researchers on fuel poverty and transport poverty in the United Kingdom and aims to propose recommendations for resolving the dilemmas presented by these phenomena.

1.4 THESIS STRUCTURE

This thesis meets the requirements for the presentation of a PhD Business thesis, with the structure following a social science thesis format (see Section I of the Postgraduate Research Student's and Supervisor's Handbook) (The University of Greenwich, 2019).

The thesis consists of the following chapters:

- Introduction – this chapter sets the scene for the research and covers the point of the research, before moving onto the research questions and how these led to the research outcomes.
- Literature Review – this chapter is split into three sub sections:
    - Exclusion – this section addresses the theoretical background of the research, which includes an explanation of Lefebvre's social theories followed by an examination of poverty in the UK.
    - Fuel Poverty – this section examines the literature from a historic perspective looking at the origins of fuel poverty in the 1970s and how government response has evolved since that time, which includes how the definition has changed. It moves into a contemporary view of the phenomena, which includes a review of fuel poverty indicators and how they developed and examination of issues surrounding the use of pre-payment meters followed by a review of energy poverty and energy justice. Lastly the section examines the emerging fields of energy vulnerability and social relations.
    - Transport Poverty – this section examines how the relationship between transport and poverty has evolved since the 1960s, moving to the origins of the term transport poverty in the 1990s and how it came into popular usage in 2012.

It examines the challenges around the definition and the issue of mobility poverty. The contemporary sub section covers the numbers of people impacted and a review of transport policy across the UK.

- Methodology – this chapter contains three sub sections:
  - Qualitative Research – this section sets out how why this method was chosen and describes how the sampling methodology was determined, covering purposive, snowball and opportunistic sampling. Lastly it looks at the sample size and how the sample was selected.
  - Interviews – this section addresses the semi-structured interview format and how the questions were developed. Lastly it addresses the recording and transcription of the interviews.
  - Analysis – this section provides details about how the six phase thematic analysis methodology (Braun and Clarke, 2006) was selected for this project and how it was used to code the data, define the themes, name them and write them up for the two NVivo projects.
- Analysis – this chapter contains two principle sub sections:
  - Fuel Poverty Analysis – this section is divided into five key themes:
    - Current Situation – this theme reflects the lived experience of fuel poverty in England and consists of seven sub themes.
    - Current Solutions – this theme examines the solutions for fuel poverty that are currently in place and consists of two sub themes.
    - Policy Approaches – this theme critically examines the policies in place to tackle fuel poverty and consists of eight sub themes.
    - Public Sector – this theme looks at the work of the public sector bodies that have a statutory role in tackling fuel poverty and consists of five sub themes.
    - Energy Sector – this theme critically examines the role of energy companies and the types of fuel used in the experience of fuel poverty.
  - Transport Poverty Analysis – this section is divided into four key themes:

        - Transport Concept – this theme addresses transport poverty from the perspective of the concepts that emerged in the literature and consists of six sub themes.
        - Transport Impacts – this theme examines how the impacts of transport poverty are felt and it consists of three sub themes.
        - Transport Mode – this theme covers the various modes of transport that were discussed by the respondents and it consists of six sub themes.
        - Policy Approaches – this theme critically examines the policy in place to address the issues and includes how the respondents defined the phenomena. It consists of five sub sections.
- Discussion – this chapter contains four sub sections that explore the research outcomes.
    - Empirical Findings – this section explores the empirical that arose from the fuel and transport poverty research.
    - Understanding fuel and transport poverty – this section explores fuel poverty and transport poverty as complex, interconnected phenomena. It consists of five sub sections.
    - Policy recommendations – this section sets out a range of policy recommendations around fuel and transport poverty. It consists of two sub sections.
    - Methodological contributions – this section explores ways to improve the identification and classification of those affected by fuel and transport poverty.
- Conclusion – this chapter consists of three sub sections that provide the conclusions to this thesis.
    - Contribution to knowledge – this section clarifies the contribution to knowledge made by this thesis.
    - Future work – this section discusses the future work that has been identified through this research.
    - Conclusions – this section contains the final conclusions for this thesis.

2. LITERATURE REVIEW

2.1 INTRODUCTION

The underlying inspiration for this thesis started during a brief period spent working for the newly formed Social Exclusion Task Force, at the Cabinet Office in 2006. The small department was a hive of research activity, with colleagues starting and completing PhDs across a wide range of poverty-related topics. Fuel poverty was just one of many topics that were addressed in the ‘Reaching Out: An Action Plan on Social Exclusion’ (Social Exclusion Task Force, 2006). This was a pivotal policy publication, as it sought to address the issues affecting individuals living in deep-seated social exclusion. Fuel poverty was seen as a success story, following a significant decrease in the number of households affected (Social Exclusion Task Force, 2006).

The ‘Making the connections: Final report on transport and social exclusion’ was published by the Social Exclusion Unit (2003). It was revealed through the research into transport poverty to be a key policy document, which is still regularly cited. The Social Exclusion Unit preceded the Social Exclusion Task Force, and it was responsible for a wide range of policy documentation on this topic. The ‘Preventing Social Exclusion’ report for example, described how the UK of the mid-1990s experienced higher levels of social exclusion than its neighbours in the EU, which were typified by high levels of crime, drug addiction and rough sleeping in major cities like London (Social Exclusion Unit, 2001b).

In 2018, Professor Philip Alston, United Nations Special Rapporteur on extreme poverty and human rights, published a damning indictment on the UK, which sets the scene by pointing out that the fifth largest economy, now tolerates a fifth of its population (14 million people) living in poverty (Alston, 2018). It would seem that things have gone drastically wrong since the optimistic days of the millennium. This thesis sets out to determine what happened, by examining in detail two of the many distinct forms of poverty that have become all too common in the UK today.

The election of a Conservative led coalition with the Liberal Democrats in 2010, following the 2008 recession, led to a period of ‘austerity’ typified by budget cuts where local authorities suffered from severe revenue cuts (Mueller, 2019). The cuts were portrayed by the Coalition government as a beneficial aspect of the Big Society, whereby the role of the state would be replaced by the non-government organisations, with the intention that they would deliver these services more efficiently (Mueller, 2019). Under the new neo-liberal narrative of austerity, poverty and unemployment were blamed on what was portrayed as ineffective state support and poor choices/behaviours of the individuals affected (Wiggan, 2012). Booth (2019), talks about this in terms of developing individual resilience amongst the disadvantaged, but points out that this short-term approach that focuses on the individual disregards the wider social, economic and political forces behind their disadvantage.

2.2 NEOLIBERALISM

Neoliberalism arose from the ‘political projects’ of Thatcher and Regan, evidenced through the change in relationship between the state and economy through policies that were highly experimental in nature (Whiteside, 2016). The impact of neo-liberalisation has resonated across the global economy and been felt most strongly in cities, with many aspects of social life becoming increasing subject to sway of neoliberalism, such as free markets, open competition and minimal regulations on the flow of capital (Purcell, 2008).

The neoliberal approach through economic and social policies has been unsuccessful in preventing a rise in the level of poverty and social inequality in the UK since the 1970s (Wiggan, 2012). There was, however, a reduction in relative poverty over the first two terms of the Labour administration, which was elected in 1997, but severe poverty rose again from 2004 to 05 (Joyce et al., 2010).

The influence of neoliberalism on UK government social policy dates back to the 1970s, as evidenced through the adoption of a ‘market-based approach’, where self-reliance among welfare recipients has been encouraged over policies that seek to improve life chances and reduce unemployment (Whiteside, 2016). Whiteside (2016), points out that austerity is an integral component of neoliberalism, with the resurgence of post 2008 recession austerity originating in the era of fiscal restraint that begun in the 1970s. Recent changes in UK politics have led to a situation where poverty and unemployment no longer represent failures of the market and inadequate incomes, instead becoming indicative of failure by the state and the welfare recipient (Wiggan, 2012).

The way that the UK Coalition government (2010-2015) represented the problems with poverty and the welfare system in combination with the assumptions on which they were based, conspired to show that the liberal market economy alone was the primary route to improved well-being (Pantazis, 2016). The shift towards a neoliberal ideology found in the UK and USA can, in simple and straightforward terms be regarded as a shift to 'private prosperity' and 'public poverty', which has been widely accepted by the majority of voters in these countries (Jeekel, 2018). The recent election of a Conservative government with a significant majority in the UK, is in many ways a validation of this observation, as many voters from traditional Labour seats switched over to the Conservatives (BBC News, 2019).

2.3 SOCIAL EXCLUSION

> "Social exclusion is (or should be) a theoretical concept, a lens through which people look at reality, not reality itself." (De Haan, 1999, p. 5)

The topic of exclusion arose in France in the 1960s (Silver, 1994). Academics made vague references to those living in poverty as *'les exclus'* (Klanfer, 1965). The issue of exclusion was identified as a problem in France as it was taking steps to complete the system of social welfare provision in the 1970s (Silver, 1994). The publication of "Les Exclus: Un français sur dix" by René Lenoir (1974), is viewed as the point of origination for the term social exclusion (Silver, 1994).

The concept of 'poverty' in France has not been well regarded due to historic associations with charity and the pre-socialist regime, responsibility for social integration fell to the welfare state, as such social exclusion was regarded as a breakdown of the fabric of society caused by a failure of the state (De Haan, 1999).

In the 1970s, the French political left was also examining exclusion from an objective and subjective standpoint (Silver, 1994). The work of Henri Lefebvre in *La production de* *l'espace* (1974) (The Production of Space) republished in an English translated version (Lefebvre, 1991), built on the Marxist idea of the socio-spatial exclusion of certain groups from the benefits of society (Preston and Rajé, 2007).

Lefebvre, in his writing, has demonstrated a humanist Marxist approach, which has been enhanced by Hegel in relation to the all-powerful state and Nietzsche in terms of cultural factors, such as the celebration of art and festival (Butler, 2012). The English translation of Lefebvre's *The Production of Space* in 1991, brought his work to the attention of much wider audience and became a catalyst for a re-examination for social and spatial theory in the field of critical human geography (Merrifield, 2006).

Inclusion of some and exclusion of others is a strong theme running through *The Production of Space*, intrinsically this is the simultaneous nature of inclusion and exclusion that is rooted in spatial factors (Lefebvre, 1991). The writings of Lefebvre have formed the theoretical underpinning for this thesis, which sets out to critically examine why UK Government policy has failed to prevent socio-spatial exclusion in the fields of energy and transport.

2.4 EXCLUSION

2.4.1 THE PRODUCTION OF SPACE

In *La production de l'espace*, Lefebvre made an important theoretical contribution to how space is approached (Butler, 2012). Merrifield (2006), points out that *The Production of Space* was influenced by Lefebvre's views on the state of the world at the time. The multi-dimensional scope with which Lefebvre addresses the concept of space is fascinating, as it goes far wider than geographic or physical location to encompass political aspects, relationships between property and ownership, along with creative and aesthetic expression (Butler, 2012).

In *The Production of Space*, it was Lefebvre's intention to link the physical and mental aspects into the social characteristics of the space, through an understanding of the impact of human agency on the production of space (Butler, 2012).

> "Deriving inspiration from the Leibnizian notion of 'relative space', rather than the absolute space of Newtonian physics, Lefebvre characterises spatial relations as a complex of practices, representations and imaginary elements. His central claim is that space cannot be conceptualised as either an inert container of social relations or as a purely discursive or mental field. Instead, he understands it as both a product and a precondition of processes of social production. It is an instrument of state planning and control, and an arena of creativity and political struggle." (Butler, 2012, p. 5)

The *conceptual triad* that emerged from the discussion about relative space were: *Spatial practices*; *Representations of space* and *Representational spaces* (Lefebvre, 1991). Butler (2012), describes these dimensions as physical, mental and lived respectively, which are key to the way that Lefebvre explains how space is produced and used socially. Another way of looking at this triad is through the prism of an unstable relationship between 'conceived-perceived-lived spaces' that alternates between concrete space and abstract space (Merrifield, 2006).

Abstract space was produced by the rise of capitalism, which has resulted in the displacement of organic relationships that were present within absolute space (Butler, 2012). Merrifield (2006), likens Lefebvre's concept of abstract space to Marx's notion of abstract labour, which was reduced to one measure – money. For Lefebvre, abstract space, is a space that is fragmented so that is becomes controllable and negotiable, which makes it possible to impose a hierarchy (Lefebvre, 1991). Butler (2012), describes abstract space as a creation of the capitalist economy with the support of the state, which is able to manage and dominate the space that it controls. Lefebvre (1991), points out that movement towards homogenisation is another characteristic of abstract space, which is realised through pressure and repression. Across the globe there are a number of movements that oppose the homogenisation of abstract space, for example by opposing mono-culturalism through the spread of chain restaurants (Butler, 2012).

Lefebvre's *conceptual triad* has been applied to the spatial exclusion of the elderly in an attempt to better understand the concept of "age friendliness", resulting in the creation of heuristic model based on "aging, space and exclusion" to drive the research agenda in this area (Moulaert, Wanka and Drilling, 2018). This is an interesting real world application of Lefebvre’s theoretical concepts, which brings with it lots of questions about the treatment of the elderly by our society.

2.4.2 THE RIGHT TO THE CITY

An earlier work by Lefebvre *Le droit à la ville* (1968), which translates to English as *The Right to the City*, forms the basis of a call for the restructuring of the relationship between, society, politics and economics in the city (Purcell, 2002). The publication of *Le droit à la ville* in 1968, was intended to commemorate the centennial anniversary of *Capital* by Karl Marx (in 1967) and its title has become a slogan in its own right (Lefebvre, 1996). Butler (2012), describes *The Right to the City*, as Lefebvre’s articulation of his utopian vision, which he portrays through resistance to the establishment and transformation of socio-spatial relations. This utopian vision is part of what makes Lefebvre’s writing so relevant to contemporary social movements in urban areas across the world.

> “Increasingly, the ‘right to the city’ is being deployed as a theoretical and practical device that can be used to identify and advance a vision of the just city which helps scholars and activists to move between normative theorising and worldly situations, between universal and particular.” (Fincher and Iveson, 2012, p. 238)

This astute observation on the usage of the right to the city is key to understanding why concept has regained popularity in academic circles, as it offers the potential of a city that is more just for its residents (Fincher and Iveson, 2012).

The Occupy movement which took place in New York City in 2011, actualised many of the ideas put forward by Lefebvre as it became a protest in the form counter-space to the abstract space that had been occupied by Wall Street under the social control of the New York authorities (Hammond, 2013). According to Butler (2012), Lefebvre’s original formulation of the right to the city was a radical contest against the power of the state. Fuel Poverty Action (2019) actively protest against the power of large energy companies and the state in the UK, in a way that shows strong parallels to the resistance typified in Lefebvre’s writings.

For Lefebvre, the urban area represents an *oeuvre* (work of art) that has been produced by the industry of its residents, citing the example of Paris, where exclusion was a major theme in the context of the urban change endured by its populace (Lefebvre, 1996). Membership of this group of urban residents being earned by living everyday life in the city space (Purcell, 2002). Butler (2012), states that these struggles by urban residents for their right to the city are a well-known feature of Lefebvre's writing, which have since become a vital aspect of emancipatory spatial politics.

The complex and fluid arguments set out by Lefebvre in *The Right to the City* can be viewed as a call for the radical restructuring of the relationship between capitalism and the citizens of liberal democracies, which applied to the cities and the surrounding countryside (Purcell, 2002). It's this radical approach to social, political and economic relations (Purcell, 2002), that makes Lefebvre's ideas attractive to those individuals and groups trying to change the *status quo* to this day.

2.4.3 URBANISM

'*Urbanism'* was the name that Lefebvre gave to the ideology behind the process used by the state through planners and politicians to manage urban spaces, which made questions about the urban environmental political, bringing a new exposure to issues around class and territoriality (Merrifield, 2006). Merrifield (2006) states that the rendering of the *urban fabric* was viewed by Lefebvre as a negative outcome to those living in urban areas. The resulting decay as residents moved out of centre to the suburbs and outlying areas, leading for example in America to the abandonment of these areas to the poor creating ghettoes for those left behind (Lefebvre, 1996).

Detroit and Chicago, along with many other large cities in America contained ghettos that housed non-white populations near the city centre which was considered to be a direct result of housing segregation (Kain, 1968)[1]. Lefebvre (1996) contrasts this by pointing out that the wealthy elite often live in established locations right in the heart of major cities, such as Central Park in New York City. Lefebvre was clearly aware of the spatial injustices that were taking place in America, as he was writing in the same era. Pasha (2018), argues that the impacts of historic racial segregation and poverty in the United States is

[1] The Kain article reflects the era in which it was written and uses language to describe African-Americans that would not be acceptable today.

being felt in the current era, with marginalised groups receiving fewer benefits from public transportation policy, due to a lower collective demand for resources, as a result of less mobile populations.

Lefebvre (1996) examines the *urban fabric* in more detail, by pointing out that it is not a clear metaphor to describe urban areas, as it does not include the villages, hamlets and regions that surround them and the resulting population flows, which are related to transport and commerce. Harvey (2008), also wrote a paper called “Right to the City,” influenced by Lefebvre’s “Writings on Cities,” advocating for the right to control the whole urban process and its impacts on the countryside and providing concrete examples in the form of agribusiness, second homes and rural tourism.

Purcell (2002), has identified a more radical alternative to liberal democratic political structures on a closer reading of Lefebvre’s “Right to the City,” in response to urban disenfranchisement brought about by the growing power of capital. Harvey (2008), observes that the rights to many cities have fallen into the hands of private capital and are controlled by a small elite able to shape cities as they see fit in the absence of a coherent opposition. Purcell (2002), points out that the conflation of the idea of ‘inhabitant’ with the category of ‘working class’ is a key weakness in Lefebvre writing and advocates that the idea of ‘inhabitant’ should be devoid of social category. This is possibly of a feature of the era in which Lefebvre wrote when society was stratified into more distinct class delineations, whereas the small elite represented by private capital are far removed from the traditional class system due to their extreme wealth.

Where Purcell (2002) and Harvey (2008), agree in their interpretation of Lefebvre is the advocation of a broad urban social movement that encompasses a wide range of political interests in seeking to take back their rights to the city.

2.4.4 MOBILITIES

Sheller and Urry (2006), described the formation of a new paradigm in the field of social sciences, which they named the *“mobilities paradigm”* as it linked transport and social research, by putting social relations at the forefront of the experience of movement. Urry

(2000), points out that the earlier work of Lefebvre (1991), highlighted the importance of mobilities and the spatial networks that underpin them.

Lefebvre (1991), examines the study of social relationships by the social sciences and goes beyond this by looking at the factors that underpin these social relationships, arriving at the analysis of Hegel (concept) and Marx (commodity). Marxist analysis in terms of *qua* commodities takes things beyond being simply things and resolves them into relationships, taken to the extreme this can mean that things are only represented by their monetary value (Lefebvre, 1991).

Reflecting on the concept of social space Lefebvre (1991), is clear that this also thing that is not a thing as it does not have a substantial or mental reality and cannot be resolved into abstractions. However, Lefebvre (1991) points out that the foundation of social space lies a natural or physical space over which networks can be overlaid with a material form that goes beyond their material nature, giving the examples of paths, roads, railways and telephone lines. The internet is perhaps the ultimate network created by humans, which goes far beyond its physical infrastructure to connect the modern world in ways that would be unimaginable to previous generations.

The analogy of a large 1950s era house, as presented by Lefebvre, is poignant in the way that it imagines how a physical building could sit at the centre of a complex set of mobilities.

> “In the light of this imaginary analysis, our house would emerge as permeated from every direction by streams of energy which run in and out of it by every imaginable route: water, gas, electricity, telephone lines, radio and television signals, and so on. Its image of immobility would then be replaced by an image of a complex of mobilities, a nexus of in an out conduits.” (Lefebvre, 1991, p. 93).

The introduction of the ‘Internet of Things’ which connects physical devices both inside and outside the home as part of wider cyber-physical technology systems across smart grids in smart cities (Sheller, 2018a). These new technological innovations appear to genuinely have the potential to make Lefebvre’s “streams of energy” a reality.

2.4.5 SOCIAL RELATIONS MOBILITY

Lefebvre (1991), places commodities firmly inside their own determinative networks in the worldwide market, which sits within planetary space, along with disciplines such as architecture, urbanism and spatial planning. Social relations, on the other hand, are reproduced within the worldwide framework, through a multiplicity of interactions in spaces that are impacted by the conflicts and contradictions of daily existence (Lefebvre, 1991).

> "Social relations, which are concrete abstractions, have no real existence save in and through space. *Their underpinning is spatial*. In each particular case, the connection between this underpinning and the relations it supports call for analysis. Such and analysis must imply and explain a genesis and constitute a critique of those institutions, substitutions, transpositions, metaphorizations, anaphorizations, and so forth, that have transformed the space under consideration." (Lefebvre, 1991, p. 404)

The ability to be mobile confers a level of social advantage, which applies to certain social groups more than others, thus producing new socio-spatial opportunities for some and increasing inequality for others (Cook and Butz, 2018). Elliott and Urry (2010), point out that those who experience reduced mobility, effectively become socially excluded through their inability access to goods, services and opportunities. Mobilities, therefore, reinforce the existing power differentials in societies as a result of the uneven way in which they are experienced (Cook and Butz, 2018).

2.4.6 MOBILITY JUSTICE

Spatiality of justice has emerged in thinking about justice and injustice in cities, presenting the question whether space derives from social justice or socio-spatial (in)justice, which represent alternative ontological views on relationship between form and process (Fincher and Iveson, 2012). Purcell (2008), advocates for an openness between outcome and process, with the right to the city acting as a catalyst to the political process.

Mobility justice takes inspiration from social justice and expands on its limitations from a mobilities perspective by moving from a social to a mobile framework and incorporating from a wider viewpoint than just human social relations (e.g. mobility platforms and related technologies) (Cook and Butz, 2018). Sheller (2018b), points out that there is a lack of agreement around the meaning of mobility justice, along an assumption that it's another term for transportation justice, with a primary focus on urban accessibility issues. Mullen and Marsden (2016), have also expressed the view that mobility justice is wider than accessibility, but explain that this results from the complexity surrounding some of the individual issues such as affordability, safety, greenhouse gas emissions and pollution.

Mobility justice is wider than transportation and urban accessibility and should be approached from a more holistic standpoint (Sheller, 2018b; Mullen and Marsden, 2016). However, Sheller (2018b), argues that mobility justice should not extend mobility to everyone and cites the example of the harmful impacts on the environment that would arise from increased use of vehicles on roads. Mullen and Marsden (2016), also take issue with liberal egalitarian theories that would grant some level of mobility access to all everyone, as it does not equate with fairness with respect to wider social values, such as feminism.

2.4.7 DISTRIBUTIVE JUSTICE

The concept of distributive justice, which can be equated with transport equity (Pereira, Schwanen and Banister, 2017), features in the writings of Sheller (2018b) and Mullen and Marsden (2016). Sheller (2018b), critiques the use of Rawl's difference principle as adapted by Pereira, Schwanen and Banister (2017), which suggests that for state interventions into transport to be regarded as fair need to ensure that the accessibility of the most disadvantaged groups is enhanced. The application of Rawl's difference principle presented by Pereira, Schwanen and Banister (2017), recommends that dense urban areas introduce policies that promote public and active transport over the use of private motor cars and in turn promote car use for low-income households living in rural areas. Sheller (2018b), argues that this approach would still exclude some groups as it does not factor in feminist justice theories (Young, 1990). However, Pereira, Schwanen and Banister (2017), in the notes of their article have stated the right to the city (Fincher and Iveson, 2012) and feminist justice theories (Young, 1990), fall outside the scope of distributive justice.

Sheller takes a wide ranging of distributive justice in her book on Mobility Justice (Sheller, 2018a). Sheller (2018a), acknowledges that Pereira, Schwanen and Banister (2017), have chosen to focus their review of distributive justice focused on transport and the equality of all transport users. However, Sheller (2018a), disagrees with the limitations of this focus on transport and equity alone, because of the resulting disconnection with the wider meanings represented the spaces that residents inhabit (e.g. streets, neighbourhoods and communities).

Mullen and Marsden (2016) take a narrower view of distributive justice, in relation to the ability to access mobility systems such as a private car, thus putting those unable to access or afford to use a car at a disadvantage in justice terms. A comprehensive understanding of mobility justice is therefore required to ensure that injustice is not created when attempting to address specific problems (Mullen and Marsden, 2016).

2.4.8 CAPABILITIES APPROACH

The links between equality, poverty and choice of space are key to identifying and aggregating information about the poor (Sen, 1992). This link to space is fundamental to understanding the background of social exclusion. Sen (1992), looked at economic inequality and the links to poverty, particularly around poverty in developed countries, such as the United States of America and Western Europe, which related to spaces and deprivation, income and capabilities. These concepts are explored in great detail by Sen in ‘Inequality Re-examined’, where relative poverty is linked to diminished capabilities and the challenges around functioning in a society where there a shame attached to being poor (Sen, 1992).

The importance of sustaining human freedoms and their capabilities was a factor that was missing from the Bruntland Report (World Commission on Environment and Development, 1987) according to Sen (2013), as Bruntland focused more on human needs than freedoms. Banister (2018), follows Sen’s argument through by suggesting that the changes needed to achieve the goal of full sustainability occur through reasoning and freedoms, rather than orchestrated reductions in consumption. The argument put forward by Banister (2018), evolved into a discussion about the justice implications of reductions in consumption, and whether resources should be allocated in a way that is fair for all members of society, through capability thresholds or ceilings. Capability thresholds have been defined as a minimum entitlement to the capabilities required to live in dignity and are closely aligned with capability ceilings which advocate limiting the use of resources to prevent conflict (Nussbaum, 2011).

Ultimately, according to Banister (2018), the dilemma presented by restricted versus unrestricted views on development of human capabilities, in the context of sustainability, remains unresolved. However, a respect for environmental consumption limits, in relation to individuals and society, should remain as a key factor in decision making around sustainable development (Holden et al., 2017). The implications for society are profound, in that sense that the freedom of individuals to improve their situation, needs to be balanced with the earth's capacity to sustain human development (Rockström et al., 2009).

2.4.5 POVERTY

Marshall (1950), describes how civil, political and social rights evolved with citizenship of the United Kingdom, with social rights not gaining parity with civil and political rights until the twentieth century. In the nineteenth century, efforts to tackle poverty failed to address the underlying inequality, of which poverty was an undesirable outcome (Marshall, 1950).

Britain in the 1930s experienced mass unemployment and deprivation followed by the hardships of Second World War in the 1940s, throughout the 1950s unemployment decreased and welfare spending increased, along with the living standards of the majority (Mack and Lansley, 1985). The 1960s marked that start of a renewed drive to collect evidence of poverty in the United Kingdom, in 1965 the Milner Holland Committee on Housing in Greater London was published and in 1967 the Ministry of Social Security published the *Circumstances of Families* (Townsend, 1979).

This was the era that academic research into poverty resumed, in combination with newly formed pressure groups to raise the profile of poverty across the United Kingdom (Mack and Lansley, 1985). Research into poverty – in a quantitative form – is regarded as an Anglo-Saxon (particularly British) concept with origins in the nineteenth century research by Rowntree (Townsend, 1979). This poverty research with links to a liberal vision (held by intellectual and political elites) of the how society functioned – lots of separate individuals engaged in competitive market – policy goals were developed to ensure that each individual had enough to survive in this competition (Room, 1995). Unfortunately, poverty is still very much a significant an issue in the UK to this day, as evidenced by the millions that still live in relative poverty (Alston, 2018).

2.4.5.1 RELATIVE POVERTY

Townsend (1979), described poverty in the United Kingdom in terms of relative deprivation.

> "Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the types of diet, participate in the activities and have the living conditions and amenities which are customary, or are at least widely encouraged or approved, in the societies to which they belong." (Townsend, 1979, p. 31)

The year 1979, also marked the return to power of a Conservative Government and a move away government responsibility for poverty, towards blaming the poor for being in poverty, attributing to a failure of individual character as opposed to a failure of the welfare state (Mack and Lansley, 1985). The proportion of people living in low-income households more than doubled under the Conservative government led by Mrs Thatcher, despite falling during under Mr Major's leadership (Atkinson, 1998). Income inequality grew rapidly in the period between 1977 and 1990 (when Mrs Thatcher led the Conservative government) and reached the highest point since 1945 (Hills, 2007).

Individual explanations for poverty were to re-emerge following the election of the Conservative and Liberal Democrats Coalition government in 2010, this time presented under the subtext of a 'broken society' and focusing on individual motivations and behaviours (Pantazis, 2016).

2.4.5.2 POVERTY AND SOCIAL EXCLUSION IN THE UNITED KINGDOM

The first anti-poverty programmes in the European Union ran from 1975 to 1980, the second anti-poverty programme ran from 1986 to 1989 and the third from 1990 to 1994

(Room, 1995). According to Room (1995), social exclusion became a fashionable concept around the time that the third EU anti-poverty programme was launched in the early 1990s, which integrated the least privileged in society.

The term social exclusion was first used in the UK by Conservative politicians, in the political climate where the existence of poverty was not a recognised phenomenon (Burchardt, Le Grand and Piachaud, 2002). In European debates the terms poverty and social exclusion have both been used, with the adaption of social exclusion by EU being viewed as a way to placate the Conservative politicians in the UK who wanted to avoid the use of the term poverty within the UK and by the EU with respect to the UK (Atkinson, 1998).

Social rights tend to be regularly confirmed in policy statements at national and EU level, with social exclusion arising from a denial of these social rights relating to the extent that an individual is bound into their community (Room, 1995). The links between poverty and social exclusion can be conceptualised in terms of trajectories – slipping from poverty into social exclusion – triggered by loss of employment, for example (Walker, 1995). Viet-Wilson (2002), argues that the real problem for poverty research and policy lies with the not with the consequences typified by multi-facetted poverties and social exclusion, but rather the governments and societies which cause the exclusion.

In the UK, the Labour government under the leadership of Tony Blair took a great interest in social exclusion, which gave rise to a number of academic work on the subject in the early 21st Century (Schwanen et al., 2015). Preston (2009) has pointed out that 'social exclusion' as a concept had risen to prominence in transport policy since 2000, noting that the term had been 'appropriated, de-radicalised and mainstreamed' by social democrats in the late 1990s, with a notable example being the New Labour party in the UK. Watt and Jacobs (2000), found that 'social exclusion' was a term that resonated across politics and academia, as it was multi-dimensional with a flexibility that translated easily across the two sectors.

2.4.5.3 AUSTERITY IN THE UNITED KINGDOM

Austerity begun in 2010 and was typified by the budget cuts inflicted by the newly elected Conservative – Liberal Democrats Coalition Government, these cuts impacted on many areas of government spending across many areas, with local government spending being severely affected (Mueller, 2019). Whiteside (2016), points out that the fiscal consolidation measures implemented by the Conservative Government of 1980 to 1997 relied on taxation measures rather than spending cuts, which was essentially another form of austerity taken under a neoliberal agenda.

Alston (2018), describes austerity in terms of the impact of the radical social engineering that has been implemented by successive governments in the UK. The welfare-to-work agenda that was a hallmark of the austerity era, was based on moving individuals from so-called dependence on benefits to formal paid employment (Patrick, 2014). The implications of the austerity agenda have been ideological, with the contract between residents and their local authorities being readjusted so that residents effectively need to do more to help themselves (Vigar and Varna, 2019).

2.5 FUEL POVERTY

2.5.1 INTRODUCTION

Fuel poverty is a complex issue. It has a long history stretching back to the OPEC oil crisis of the 1970s, which led to increases in the cost of fuel in the UK (Green, 1980). This section looks at the origins of fuel poverty and how it has developed to the present day.

2.5.2 HISTORIC FUEL POVERTY

2.5.2.1 ORIGINS OF FUEL POVERTY

Put most simply, fuel poverty is the inability for a household to afford adequate warmth (Lewis, 1982). Fuel poverty emerged as an issue that received the attention of campaigners in 1975 (Boardman, 2010). Lewis and Winwood (1976) were among the earliest academics to utilise the term fuel poverty, prior to this point the focus was on fuel debts and disconnections of gas and electricity supplies by the fuel boards, which were the nationalised industries responsible for domestic distribution (Johnson, 1975). The British Association of Settlements initiated the ‘a right to fuel’ campaign in 1975 in response to rising numbers of disconnections of energy supplies and the effect that this was having on low-income families (British Association of Settlements, 1976), although the term fuel poverty wasn’t actually used in this campaign.

Boardman (1991) highlights the increase in public concern following the oil crisis in 1973-74, as a key turning point for the development of the issue of fuel poverty. Richardson (1978), refers to the emergence of fuel poverty as an issue arising from fuel price increases, impacting on low-income fuel consumers, lacking in resources to meet basic fuel needs including heating, lighting and cooking. Lewis and Winwood (1976), looking more widely at the issue, state that fuel poverty is a multi-dimensional phenomenon resulting from industrial and commercial strategies, economic policies and the structure of income received. Descriptions of the impact of fuel poverty from the time contain the following three factors:

1. Continue existing patterns of fuel use, with risk of arrears and disconnection (Johnson and Rowland, 1976);
2. Reduce spending on other household essentials, such as food and clothing to pay for existing levels of fuel use (Richardson, 1978);
3. Significantly reducing the levels of fuel used, with risks to health sick and elderly (Cooper, 1981).

Cooper (1981) discusses the change in domestic heating standards since 1945, when even upper middle classes families would not expect to heat all the rooms in their homes. To the fact that space heating within houses came to be regarded as normal, and by some as an essential requirement. Electricity had once been thought of a cheap fuel for the future. However, by the 1960s there was insufficient plant capacity to generate the load encouraged by the authorities. This had the impact of tariff (price) increases, which were required to facilitate the necessary capital investment (Wright, 1964). Fuel price was considered a key issue affecting the elderly population in the early 1960s, where low indoor temperatures were noted as a common occurrence in their homes (British Medical Association, 1964).

British Association of Settlements (1976) attribute two main causes for the fuel price increases that took place since early 1973:

1. Energy shortage affecting all net oil importers, which included the UK in the short term (North Sea Oil and newly discovered coal seams were thought to be limiting factors in the long term);
2. The government policy decision to bring about economic viability for the nationalised gas and electricity industries by removing subsidies to them.

Between 1970-74 the nationalised fuel industries were stopped from passing cost increases onto the consumer, which meant that they built up large deficits in support of the anti-inflation policies that the government had in place at the time. In 1975, this situation radically changed, following a recognition by the government, that further increases in tax and public spending needed to be avoided, and that energy conservation should be encouraged. This meant that the nationalised fuel industries were allowed to increase fuel prices in line with costs (Chesshire et al., 1977).

The impact of these measures could be seen in the Retail Price Index (RPI). Throughout the period leading up to June 1976 (RPI 156.0) when compared to June 1975 (RPI 137.1) and January 1974 (RPI 100), which was attributed in part to increases in the average prices for electricity charges (Department of Employment, 1976). Johnson and Rowland (1976) pointed out that the price of domestic electricity rose twice quickly as the price of food from 1975 to 76, with food prices rising by 19% since April 1975 and electricity prices rising by 52% since April 1975.

2.5.2.2 IMPACTS OF FUEL POVERTY

The heating needs of elderly persons living in local authority accommodation in Aberdeen, triggered a survey by the Aberdeen City and University Young Liberals between

November 1972 and January 1973 (Aberdeen University Liberal Society, 1973). This survey found that the problem of the old and cold needed to have greater public recognition in order to bring about pressure on the local authorities to make improvements and to identify those elderly persons in need of assistance (Aberdeen University Liberal Society, 1973). The underlying issue identified from this study was that many of the elderly occupants of the local authority housing estates could not afford to adequately heat their homes on their pensions, due to the low quality of the housing (Aberdeen University Liberal Society, 1973).

A national analysis on the impact of low body temperatures and cold conditions on the elderly, which was carried out in 1972 by a multi-disciplinary group consisting of doctors, scientists, nutritionists and experts in housing and welfare, found that older pensioners receiving supplementary benefits (income support) were more likely to suffer from low body temperatures than younger pensioners (Wicks, 1978). This finding was attributed to bad health, a decline in physical condition and very poor living conditions amongst the older pensioners (Wicks, 1978). The 1972 survey found that 0.58% of the elderly persons surveyed were hypothermic, which represented 700,000 elderly persons nationally (+/- margin of error) in 1972, rising to 800,000 elderly persons nationally (+/- margin of error) when recalculated on the basis of more old people present within the whole population in 1982 (Wicks, 1978).

A study of 65 families living on supplementary benefits by the Family Services Unit and CPAG, carried out in 1980, found that families who declared that they were unable to heat their homes sufficiently, did so for the following reasons: cost of fuel; expensive heating systems and hard-to-heat homes (Burghes, 1980). When looking at why people get into fuel debt, a number of common reasons were found by the Child Poverty Action Group (CPAG), these included: a sudden drop in income as a result of unemployment; sickness; being a lone parent; living in a damp, poorly insulated dwelling; having a dependency on expensive forms of heating; requirements for extra heating due to illness, old age or the presence of young children in the home; the receipt of an unexpectedly large bill; or a combination of these reasons (Lorant, 1981).

The Building Research Establishment (BRE) carried out a study on energy consumption in buildings using data on energy usage from 1972 to 73 (Building Research Establishment, 1975). One of their principal findings was that 40-50% of national primary energy consumption comes from building services, half of which came from the domestic sector. The domestic sector was found the largest user of electricity, mostly for space heating purposes (Building Research Establishment, 1975). Green (1980) noted that the withdrawal of fuel prices subsidies took place in the background of a failure by government to enforce building standards around thermal efficiency, without effective compensation for low-income consumers. Donnison (1982) took the view that Britain as a country created much of the poverty prevalent in the early 1980s, through the placement of the poor and vulnerable in dwellings with high running costs connected to expensive central heating systems.

2.5.2.3 GOVERNMENT RESPONSE TO FUEL POVERTY

The turning point with respect to fuel poverty, came with the policy decision, made in principle by government in 1972 and implemented in autumn 1973, to reduce demand for energy and limit expenditure by phasing out direct fuel subsidies to the electricity, gas and coal industries (Johnson and Rowland, 1976). It was regarded as an essential decision in response to the enormous price increases of imported oil (Johnson and Rowland, 1976; Green, 1980). The grounds for this decision were a desire for competitive pricing of fuel within the whole market and realistic pricing of fuel to send a clear energy conservation message to domestic consumers (Cooper, 1981).

The government reported on an interdepartmental review in February 1976, which looked at the viability for helping poor consumers with energy bills through a range of proposed measures (Department of Energy, 1976). These included following the adjustment of energy tariff structure; or the introduction of special concessionary tariffs; or free allowances for gas and electricity (Department of Energy, 1976). The review concluded that none of the measures proposed would provide a satisfactory response to the problem

(Department of Energy, 1976). This report attracted criticism at the time for rejecting outright proposals, which contained some degree of advantage to poor consumers, in particular with respect to the costs of industry to supply consumers with energy and the possibility of a universal flat rate of supply (Johnson and Rowland, 1976).

In 1975, the National Consumer Council (NCC) were commissioned to prepare a report for the Secretary of State for Prices and Consumer Protection on the impacts of energy prices on the budgets of low-income households (National Consumer Council, 1976). They were asked to look at evidence of hardship and to propose ways in which this may be alleviated, with respect to the current government policy for public spending restraint and the intention to permit the nationalised energy industries to resume economic pricing levels (National Consumer Council, 1976). The report found that the removal of fuel subsidies impacted disproportionally on the fuel costs of low-income households, as they spend a greater proportion of their income on fuel (National Consumer Council, 1976). The result being that low-income households have spent less on other essentials like food in order to keep warm, or accept living in colder homes with discomfort and dangers that impact the vulnerable (National Consumer Council, 1976).

Some key recommendations made in NCC report included: the introduction of flat rate tariffs for domestic energy users; the removal of the disconnection powers of the energy industries with fuel debts to be collected through the courts instead; the installation of prepayment meters on consumer request and the inclusion of more than one fuel supply in new homes (National Consumer Council, 1976). The government response to the NCC report was to confirm that gas and electricity prices should be economic and be reflective of supply costs, to encourage ‘best use’ of energy (energy conservation) and avoid public spending on subsidies. In addition, the government drew attention to the extra support with fuel bills that it provided to benefit recipients throughout the winter of 1975/76 (National Consumer Council, 1976). The main outcome of the NCC review, however, was the introduction of the voluntary ‘code of practice on payment of domestic gas and electricity bills’ in 1977 with the aim of reducing disconnections (Department of Energy, 1977).

The ‘code of practice’ came in for considerable criticism after its introduction. Berthoud (1981) conducted a formal review and concluded that the code was inadequate to achieve its aim of radically reducing hardship to energy consumers, with the faults being in the code rather than in the implementation by the gas and electricity industries. Green (1980) described the code as an administrative means to delay disconnections, as consumers unable to meet the terms of debt payment agreements would will be in a position whereby they could still be disconnected. The code was eventually partially replaced by conditions imposed within the licence to supply energy; this meant that consumer protection evolved into a part voluntary and a part statutory system (Boardman, 1991).

The Energy Efficiency Office, which reported to the Secretary of State for Energy, was created in 1983, as part of a government drive to encourage efficient energy usage by domestic consumers (Boardman, 1991). In 1985, the Secretary of State for Energy, Peter Walker MP, stated that 1986 would be designated as the Energy Efficiency Year in order to build momentum on the energy efficiency campaign across all sectors of society, including community energy projects to support low-income consumers (Neighbourhood Energy Action, 1985). In 1991, the government introduced the Home Energy Efficiency Scheme (HEES), which was a government grant available to low-income households to make improvements to the energy efficiency of their home, such as draught proofing and loft insulation (Boardman, 1991). The HEES evolved into a scheme called Warm Front in 2000, which was a government scheme to assist vulnerable households with energy efficiency measures (Boardman, 2010). The Warm Front Scheme was eventually closed to new applicants on 19 January 2013 (Department for Energy and Climate Change, 2013e).

2.5.2.4 DEFINITIONS OF FUEL POVERTY

Cooper (1981), pointed out that there were significant difficulties in analysing spending on fuel across households in different income brackets, although the data contained in annual Family Expenditure Survey (FES) had supported anecdotal evidence of the large impact of fuel price increases on low-income consumers. Work carried out by the economists Isherwood and Hancock for the Department of Health and Social Security (DHSS) on the FES in 1977, showed that spending twice as much as the median expenditure on household essentials (e.g. food, housing and fuel) was a key marker of hardship (Boardman, 1991). This finding could be seen in data on household expenditure patterns from 1980, in which low-income households spent 9% of their income on fuel and light compared to and middle-income households, which spent 6% of their income (Central Statistical Office, 1983).

It was noted in the early 1980s that there was no accepted definition of fuel poverty in quantitative empirical or systematic terms, which meant that it was impossible to use a specific code or indicator to estimate numbers of people impacted by fuel poverty (Boardman, 1984; Cooper, 1981). The development of a definition of fuel poverty was made more difficult by the lack of an accepted definition of warmth in the UK (Boardman, 1984). This situation was presumably exacerbated by a lack of political acceptance of the specific issue of fuel poverty at the time. When asked for his views on the solution for fuel poverty, Peter Walker MP Secretary of State for Energy stated that it wasn't useful to talk about fuel poverty as a separate issue to general poverty (Neighbourhood Energy Action, 1985).

Boardman (1991), looked to problems with inadequate home insulation and the fact that low-income families could be required to spent twice the median of the income on fuel when compared to the wider population. Boardman (1991), used this to form the first quantitative definition of fuel poverty, which read as follows, homes with low energy efficiency levels that were unable to provide adequate energy requirements for 10% of household income. This definition went on to become widely accepted and formed the basis of the definition used in the UK Fuel Poverty Strategy:

> "The most widely accepted definition of a fuel poor household is one which needs to spend more than 10% of its income on all fuel use and to heat its home to an adequate standard of warmth." (Department of Trade and Industry, 2001, p. 6)

The Warm Homes and Energy Conservation Act 2000 specified a target date of 2016 (15 years after the Strategy was published) to end fuel poverty for all households, as far as reasonably practicable (WHECA, 2000). The UK Fuel Poverty Strategy set an interim target to end fuel poverty for all vulnerable households by 2010 (Department of Trade and Industry, 2001).

Boardman (2010) acknowledged that there were issues with the current accepted definition of fuel poverty, but stated that core principle of the definition – the amount of energy used in the home should be obtainable within a specific proportion of household income – continued to be correct.

There have been recent challenges to the accepted definition of fuel poverty. The 10% threshold (twice median spend on fuel) used in the 2001 fuel poverty definition was based on data from the 1988 FES, for reasons which were deemed to be unclear, as FES data from 2000 put the twice median spend on fuel at 7%, leading to an underestimate of the numbers affected by fuel poverty (Liddell et al., 2012). Hills (2012) recommended that the 10% ratio indicator should be dropped and a new indicator adopted. The new indicator would look at the extent of fuel poverty in fuel poor households – looking at fuel expenditure over the median and whether this spending would put them below the official poverty line – including an actual count by the government of the numbers of affected households (Hills, 2012).

In July 2013, the government formally adopted the fuel poverty indicator recommended by the Hills Review in 2012. The latest Low Income High Cost (LIHC) indicator for fuel poverty reads as follows:

> "This new indicator finds a household to be fuel poor if:
> • Their income is below the poverty line (taking into account energy costs); and
> • Their energy costs are higher than is typical for their household type."
> (Department for Energy and Climate Change, 2013b, p. 11)

The number of households in the UK, who are in fuel poverty at any point in time, is directly linked to the indicator used to define fuel poverty. The UK Fuel Poverty Strategy refers to two distinct definitions of fuel poverty. The key difference between these indicators is the inclusion or exclusion of housing benefit payments within household income. The government decided to adopt the inclusive indicator to avoid the classification of high-income owners of more expensive (larger and thus harder to heat) properties as fuel poor (Department of Trade and Industry, 2001). The change to definition of fuel poverty in 2013, lead to the provision of two sets of data on trends in fuel poverty, based on the old (10% measure) and new (low income high costs) indicators (Department for Energy and Climate Change, 2013d). The fuel poverty gap was introduced as an additional measure of how much more money households in fuel poverty need to spend in order to keep warm, compared to households not living in fuel poverty (Department for Energy and Climate Change, 2015c). Boardman (2012), pointed out that the use of the fuel poverty gap as an additional element to the main definition, meant it could be forgotten, as a complex addition element.

In 2019, the Government have consulted on a new measure for fuel poverty, which is called Low Income Low Energy Efficiency (LILEE) (Department for Business, Energy & Industrial Strategy, 2019a).

> “Government proposes to update the way in which fuel poverty is measured to better track progress against the statutory fuel poverty target. The updated measure would still reflect the three key drivers of fuel poverty (income, energy efficiency and fuel prices) and would still measure the number of households in fuel poverty and the fuel poverty gap.
>
> Under the proposed measure, Low Income Low Energy Efficiency (LILEE), a household would be classed as fuel poor if:
>
> • they are living in a property with an energy efficiency rating of Band D, E, F or G as determined by the most up-to-date Fuel Poverty Energy Efficiency Rating Methodology (FPEER); and
> • their disposable income (after housing costs and energy needs) would be below the poverty line.

> The LILEE measure would update the current relative high cost threshold to an absolute threshold. The income threshold would remain unchanged, following the existing methodology as specified under LIHC." (Department for Business, Energy & Industrial Strategy, 2019a, p. 17–18)

The consultation on the LILEE measure aims to increase the number of households covered by the definition of fuel poverty by including more households under the band bands D, E, F and G ratings, which is expected to add an extra 1.1 million households when compared to the LIHC target currently in place (Department for Business, Energy & Industrial Strategy, 2019a).

2.5.3 CONTEMPORARY FUEL POVERTY

2.5.3.1 NEW FUEL POVERTY INDICATORS

The number of households living in fuel poverty (under the 10% measure) across the UK, fell from 5.5 million to 4 million between 1996 and 2000 (The Department of Trade and Industry, 2001). Boardman (2010) notes that the numbers living in fuel poverty have steadily risen since 2004, but urges caution due to uncertainties with all fuel poverty figures going back to 1996. By 2013 there were 2.35 households living in fuel poverty in England, which equated to 10.4% of all households (Department for Energy and Climate Change, 2015b). In 2015 there were 2.50 million households estimated to be in fuel poverty in England, which equated to 11% of all households (an increase of 0.4% from 2014) (Department for Business, Energy & Industrial Strategy, 2017a).

In December 2014 a new statutory target for fuel poverty was brought in by the UK Government. This target required the government to bring an unspecified number of fuel poor homes (as many as "reasonably practicable") up to an energy efficiency rating of Band C by 2030, with interim targets in 2020 (Band E) and 2025 (Band D) (Department for Energy and Climate Change, 2015c). The threshold for energy costs within the UK Government's 2013 fuel poverty indicator has been criticised for discounting small properties with low energy expenditure, thus excluding vulnerable households living in smaller properties (Walker et al., 2014). The new definition (and target) of fuel poverty marks a clear shift in Government policy away from regarding fuel poverty as something that should be eradicated by 2016 (under WHECA 2000) to something that can only realistically be alleviated (Middlemiss, 2016).

The focus of fuel poverty policy has moved away from an incorporation of energy costs and household income, settling on energy efficiency of housing as the main solution (Middlemiss, 2016). It has been suggested that those living in fuel poverty face a range of challenges including: housing quality, energy costs, household income, but also including poverty related factors around tenancy type, social relationships and health status (Middlemiss and Gillard, 2015). The coping strategies for those living in fuel poverty include cutting back on food and fuel consumption, these strategies were also found to have been adapted by people on low incomes living in energy-efficient homes (Anderson, White and Finney, 2012).

The LIHC indicator has also led to a reduction in the spatial concentration of fuel poor households compared to the previous 10% indicator (Robinson, Bouzarovski and Lindley, 2018). It will be interesting to see what the newly proposed LILEE indicator will bring to the debate on the concentration of fuel poor households.

2.5.3.2 SMALL AREA FUEL POVERTY INDICATORS

Work on the development of a small area fuel poverty indicator was a success, producing an indicator that could be used to predict the number and proportion of households in fuel poverty in England across a wide area range (Baker, Starling and Gordon, 2003). Small area fuel poverty models are only ‘best estimates’ of fuel poverty levels (Fahmy, Gordon and Patsios, 2011). Morrison and Shortt (2008), point out that the use of relatively large spatial units has the effect of masking smaller areas at risk of fuel poverty, adding that these masking issues can be reduced by using smaller spatial units such as individual dwellings.

In a broad sense the use of composite indicators as a way of summarising complex or multi-dimensional issues are recommended for decision makers in areas of policy or public communications (Nardo et al., 2005). Energy pricing was also noted as a key determinative factor after household income and thermal energy efficiency, which was only picked up by the best predictors of fuel poverty (Fahmy, Gordon and Patsios, 2011).

2.5.3.3 HOUSEHOLDS IN FUEL POVERTY

Under the 10% indicator, larger households comprised some 22% of those living in cold homes, which led to a recommendation to give greater weight to other supplementary indicators of fuel poverty, to enable more accurate reporting of fuel poverty in different household types (Sefton and Chesshire, 2005). Boardman called for the inclusion within policy of the needs of children living in fuel poverty in response to the identification of this issue by Sefton and Chesshire (Boardman, 2010). Under the 10% indicator, couples with dependent children make up 10.9% of all fuel poor households and under the Low Income High Costs Indicator couples with dependent children make up 27.4% of all fuel poor households (Department for Energy and Climate Change, 2013a). The LIHC Indicator equivalises for income and bills in order to provide different cost thresholds across varying household sizes (Hills, 2012).

2.5.3.5 THERMAL COMFORT IN LOW INCOME DWELLINGS

Measuring perception of thermal comfort has been used as a practical alternative to measuring indoor temperatures, as the perception of an individual can take into account a wide range of factors that are difficult to measure (Ormandy and Ezratty, 2012). The Warm Front health-impact study found that detailed evidence (includes property age, type and area deprivation score) about a dwelling only provided a ‘moderate’ indication of how cold it would be on the coldest days in winter, adding that cold dwellings couldn’t be effectively targeted without measurement of indoor temperature (Hutchinson et al., 2006).

An evaluation of the health impact of Warm Front, noted that the benefits were strongest with the elderly group which saw a mean indoor temperature increase of 2.3°C compared to a 1.1°C for younger households, implementation led to an increase in reported thermal comfort from 36.4% to 78.7% across the whole study (Hong et al., 2009). However, the take back effect resulted in no corresponding decrease in energy usage following the improvements brought by the Warm Front scheme (Hong et al., 2009). Sovacool (2015), reviewed the Warm Front scheme and also found evidence for the take back effect (comfort factor), which was evidenced by higher fuel use in dwellings that had been involved in the scheme.

The use of different energy efficiency measures has a distinct effect on levels of 'take-back' such as double glazing instead of single glazing (Milne and Boardman, 2000). In New Zealand, it was noted that the projected energy efficiency gains from improved energy efficiency can be 'frustrated' by the complexity of human behaviour, in reference to 'take-back' or the 'rebound' effect (Howden-Chapman et al., 2009).

2.5.3.6 COPING WITH LOW INCOMES AND COLD HOMES

Anderson, White and Finney (2012), looked at the coping strategies of low-income households across the winter months in Great Britain, their findings revealed that fuel poor households endured the winter months by using their heating occasionally or only when it was essential, restricting their domestic arrangements to a few key rooms and wearing additional clothing or blankets. These findings were in line with those from an earlier study on coping strategies for those in fuel poverty by Gibbons and Singler (2008).

A number of studies found that older people rationed fuel use less than other low-income groups (Gibbons and Singler, 2008; Anderson, White and Finney, 2012; Adams and West, 2006; Wright, 2004). Research carried out for the Department for Work and Pensions, attributed the lower reported levels of reported deprivation amongst older people was an increase in the Winter Fuel Payments, which meant that they were cutting back less on heating (Dominy and Kempson, 2006).

2.5.3.7 ENERGY POVERTY

Energy poverty is a common way to describe issues around access to energy for domestic consumption and is coming into prominence across the EU having being traditionally associated with developing countries (Bouzarovski and Petrova, 2015). The inclusion of non-heating uses of energy in the official definition of fuel poverty has been recommended, due the high prevalence of energy inefficient devices in the homes of low-income households (Simcock, Walker and Day, 2016).

2.5.3.8 ENERGY JUSTICE

Energy Justice is a newly emerged ‘cross-cutting social science research agenda’, seeking to apply justice principles to a range of energy-related issues, such as energy policy and energy consumption (Jenkins et al., 2016). Energy poverty is seen as a form of energy injustice and is strongly aligned to social inequality (Walker and Day, 2012). Energy vulnerability arises from the situation where there is risk of enforced removal of energy services and the links between energy vulnerability, energy poverty and energy justice are relatively under explored in the literature (Bouzarovski and Petrova, 2015).

2.5.3.9 ENERGY VULNERABILITY

The emerging concept of energy vulnerability, looks at the wider factors that influence domestic energy deprivation by going beyond the concept of fuel/energy poverty, as a way of examining the likelihood of experiencing inadequate energy services in the home (Bouzarovski and Petrova, 2015). The concept of energy vulnerability was something that Middlemiss and Gillard (2015), attempted to define in a way that best characterised the lived experience of fuel poverty. Longhurst and Hargreaves (2019), have also discussed moving beyond the narrow technical definition of fuel poverty, to the concept of ‘energy vulnerability’, which recognises the wide-ranging dynamics that make a household energy vulnerable.

Vulnerability, has been incorporated into consultation on the new fuel poverty indicator, and it is proposed that the fuel poverty policy will take into account the health and wellbeing of low-income households even if they are not fuel poor, especially if they are living in homes classed as energy efficient (EPC bands A to C) (Department for Business, Energy & Industrial Strategy, 2019a). Castaño-Rosa et al. (2019), created an Index of Vulnerable Homes to assess the local levels of vulnerability to fuel poverty and found that household size and income were the most significant factors.

Energy vulnerability is a new way to describe the situation faced by those living in fuel poverty, it is a terminology that is rising in prominence in the academic literature by switching the focus to the suffering of those living lives blighted by fuel poverty.

2.5.3.10 SOCIAL RELATIONS FUEL POVERTY

Middlemiss and Gillard (2015), describe social relations as one of the key challenges facing the fuel poor, it refers to the presence of a network of family and friends that can support those living in fuel poverty. This is represents a more humanitarian way of looking at the lives of those families living in fuel poverty. Middlemiss et al. (2019), have built a framework that can be used to examine the connections between social relations and fuel poverty and make the point that an individual's experiences of fuel poverty are determined by their relationships with other people in the social network.

2.6 TRANSPORT POVERTY

2.6.1 INTRODUCTION

Transport poverty is also a complex issue. The origins of the term date back to Australia in the late 1990s where it was used to describe the situation faced by households that were forced by spend more than they could reasonably afford on transport by car in the absence of other transport options (Gleeson and Randolph, 2002). This section looks at the origins of fuel poverty and how it has evolved to the present day.

2.6.2 HISTORIC TRANSPORT POVERTY

2.6.2.1 ORIGINS OF TRANSPORT AND POVERTY

Historically, the relationship between transport and poverty has been covered by a number of theories. Spatial mismatch, spatial entrapment, social exclusion theory and social justice are viewed as the major theories in this area (Titheridge et al., 2014). Spatial mismatch evolved out of studies of the impacts of racial segregation (Kain, 1968, 1992), whereas spatial entrapment arose from gender divisions (England, 1993) around access to housing and employment in major US cities. The term social exclusion has its origins in France and is attributed to writings of René Lenoir (1974). Marxist spatial theory arose from the writings of Henri Lefebvre in 1974 (Lefebvre, 1991) pertaining that certain groups are being excluded from the benefits of society (Preston and Rajé, 2007). This leads to social justice i.e. refers to the allocation of advantages and burdens within society, with injustice occurring where one group receives fewer advantages than expected (Miller, 1999).

The term ‘transport poverty’ has been widely used in academic literature (Lucas, 2012; Velaga et al., 2012) and activist organisations in the transport sector since 2012 (Sustrans, 2012; Bourn, 2012b). Transport poverty as a term has been used to raise awareness of the plight of individuals and households struggling to make essential journeys (Titheridge et al., 2014). However, it has not been formally adopted within UK Government policy (Sustrans, 2012).

Transport poverty is a socioeconomic phenomenon which is not clearly defined (Titheridge et al., 2014; Lucas, Mattioli, et al., 2016). Its conceptualisation has evolved from a way of describing the situation faced by low-income households living on the outskirts of major Australian cities with significant costs associated with car ownership and usage (Currie et al., 2010). Those experiencing transport poverty have been described as being directly and indirectly affected by transport disadvantage and social disadvantage (Lucas, 2012). Transport poverty has moved on to become an overarching combination of a number of sub concepts including mobility poverty, accessibility poverty and transport affordability (Lucas, Mattioli, et al., 2016). Closely interlinked in the developed world is the issue of time poverty for women living in low-income households, which is particularly prevalent in single-parent households, as many are headed by women (Turner and Grieco, 2000). Hamilton and Jenkins (2000), found increasing evidence of transport poverty impacting on the lives of women, compounded by the difficulties of living on a low household income. The increasing complexity of the issues covered by transport poverty as an umbrella term, make it a 'wicked problem'[2] for academics and policy makers to tackle in a meaningful way.

Modern academic research into the links between transport and poverty has its roots in the USA. The effects of racial segregation in the housing market combined with a move of jobs to the suburbs of major US cities like Detroit and Chicago, was found to have a significant impact on employment levels in African-American communities due to the limited transport options available (Kain, 1968). This is now known as the 'spatial mismatch hypothesis' (Kain, 1992). More recent research on the relationship between employment in African-American communities and segregation focusing on the US Postal Service, found that spatial mismatch had once been an important factor in employment which has diminished in significance (Boustan and Margo, 2009). Spatial mismatch has also been found to be less applicable to newer US cities such as Los Angeles where many residents have access to cars, but women without access to a car in these cities are particularly disadvantaged (Blumenberg and Manville, 2004).

Spatial entrapment is closely related to spatial mismatch (Jocoy and Del Casino, 2010). The 'social entrapment hypothesis' evolved from research by feminist geographers looking at the role of gender divisions in the US labour market (England, 1993). Women living in the suburbs of major US cities have been found to experience local employment conditions that were spatially constrained (Hanson and Pratt, 1988). Traditionally this reflected the role of white suburban women working for employers easily accessible by a short commute, due to their domestic roles, but this definition has been criticised for not acknowledging the complexity in women's lives and levels of ethnic diversity prevalent in US cities (England, 1993). There has been a recognition by researchers and policy analysts looking at US cities that 'traditional public transportation systems' have a limited

[2] Difficult policy problem characterised by its complexity, intractability and open-ended nature (Head, 2008).

impact on the travel requirements of those with some access to cars (Sanchez, 2008). The situation in US cities looks set to continue, as recent systems dynamics based modelling has indicated that the behavioural shift from cars to public transport is not expected to take place anytime soon (Ercan et al., 2017). Uber has been identified as a complimentary service, which is likely to have a positive effect on public transportation usage across urban areas in the US (Hall, Palsson and Price, 2018).

In the UK, Banister (1980), used the term ‘transport deprivation’ to describe a situation faced by the person not receiving the transport service to which they are entitled, which could be considered in relative or absolute terms. Preston (2009) has pointed out that ‘social exclusion’ as a concept had risen to prominence in transport policy since 2000, noting that the term had been ‘appropriated, de-radicalised and mainstreamed’ by social democrats in the late 1990s, with a notable example being the New Labour party in the UK. Watt and Jacobs (2000), found that ‘social exclusion’ was a term that resonated across politics and academia, as it was multi-dimensional with a flexibility that translated easily across the two sectors. Transport was often not the main issue in the research and policy work that was carried out on social exclusion in the late 1990s (Church, Frost and Sullivan, 2000). Spatial mismatch, spatial entrapment and social exclusion can be interpreted as instances of mobility injustice (Mullen and Marsden, 2016), these are phenomena that unevenly affect various demographics and their intersections e.g. women, elderly, poor, ethnic minorities thus producing, increasing, and perpetuating inequalities.

The social justice theory examines transportation and poverty from an inequality perspective (Titheridge et al., 2014). The term originates from the work on ’local justice’ with respect to the decentralised allocation of scarce goods and resources (Elster, 1991). Social justice can be broadly defined as the allocation of good and bad things within a society, whereby injustice occurs when a group within the society receives fewer advantages than they otherwise should expect to receive (Miller, 1999). In the UK, transport policymakers were interviewed about ‘equity, fairness and justice’, and agreed that the principles of ‘formal equality’ and ‘basic need’ were central to these concepts (Hay and Trinder, 1991). A progressive transport policy should therefore, look to reconcile the freedom of choice of an individual transport users with the best interests of society as a whole (Grayling, 2004). Whereas discrimination in the allocation of transport resources brings disadvantages to vulnerable communities (Pasha, 2018).

The phenomenon of transport poverty manifests itself in a fashion similar to fuel poverty and originates from an implicit analogy between the two terms (Mattioli, Lucas and Marsden, 2017). Unlike fuel poverty, an agreed definition of transport poverty has not yet been achieved in academic literature or policy documentation (Lucas, Mattioli, et al., 2016). Attempts have been made to draw parallels between transport poverty and the way that fuel poverty was measured "10% of income to keep warm" (RAC Foundation, 2012), which alludes to the former official definition of fuel poverty in place at the time. The more recent "low income high cost" definition of fuel poverty, which introduces an income threshold set at the poverty line plus bills (Department for Energy and Climate Change, 2013b) has been recommended as the blueprint for an equivalent measure in the transport sector (Mattioli, Lucas and Marsden, 2017).

2.6.2.2 TRANSPORT POVERTY POLICY

Transport poverty is not defined by UK Government policy at this time. Unlike fuel poverty, a precise definition of transport poverty does not exist in the current literature (Lucas, Mattioli, et al., 2016). The term has been used by organisations campaigning on transport, along with local and regional government, to raise the profile of the issue and highlight the fact that some individuals and households have difficulty in paying for essential journeys (Titheridge et al., 2014).

2.6.2.3 POLICY DEVELOPMENT ON TRANSPORT AND SOCIAL EXCLUSION

The European Union released a 1996 green paper 'The Citizen's Network', which advocated an integrated approach to the development of public transport initiatives (European Commission, 1996a). The costs that individual users pay for transport were highlighted by the European Commission in 'Towards fair and efficient pricing in public transport', which highlighted the mismatch between the costs paid by the individual user and the costs that they caused (European Commission, 1996b).

The 1998 UK Government (Labour administration) white paper on transport, drew strong links between high use of cars and rising costs and declining quality of service provided by public transport (Department of the Environment, Transport and the Regions, 1998). The white paper also makes the link between social exclusion and transport, identifying the 13 million households without a car in areas of poor public transport provision as being socially excluded – rural areas are highlighted (Department of the Environment, Transport and the Regions, 1998). This government policy focus on the links between transport and social exclusion theory was identified in the literature of the time (Church, Frost and Sullivan, 2000).

The relevance of poor transport links in deprived areas was raised as an issue in the 1998 report ‘Bringing Britain together: a national strategy for neighbourhood renewal’ (Social Exclusion Unit, 1998). The ‘Transport, the environment and social exclusion’ report by the Joseph Rowntree Foundation in 2001 highlighted that the Social Exclusion Unit had not yet assembled a Policy Action Team to look at the issues of transport and accessibility (Lucas, Grosvenor and Simpson, 2001). A report commissioned by the Department of the Environment, Transport and the Regions to look into public transport and social exclusion in 2000 found that this was a significant issue (Department of the Environment, Transport and the Regions, 2000).

These initiatives from the 1990s and early 2000s show an awareness by British and European authorities of the issues with cost and transport and the impact it was having on the users. In the UK, links with social exclusion were noted for being a new trajectory in transport policy, albeit one with knowledge gaps around practical implementation (Church, Frost and Sullivan, 2000).

In 2003, the Social Exclusion Unit published ‘Making the connections: Final report on transport and social exclusion’, which highlighted the links between social exclusion, transport and the location of services (Social Exclusion Unit, 2003). The report was welcomed as the first government policy document to link the use of transport to contemporary society (Kenyon, 2003). It should be noted that the term transport poverty was not used in the report. Instead the report uses the term accessibility (defined in terms of reasonable cost, time and ease of access) and describes how this relates to social exclusion and social inclusion (Social Exclusion Unit, 2003).

Within the 'Making the connections' report five key issues were identified as barriers to travel for individuals on low incomes: Availability and Accessibility of transport; Safety and Security of transport; Cost; Limited Travel Horizons and location of services (Social Exclusion Unit, 2003). To tackle these issues, the report recommends a series of high level measures to alleviate the five key issues, which conveniently mirror these issues as they are set out in the report. The measures that can tackle accessibility problems include: Improving physical accessibility and availability; safer streets and stations; Making travel more affordable; Widening travel horizons and reducing the need to travel (Social Exclusion Unit, 2003).

Kenyon (2003) raised concerns that the report was promoting a number of the short term policy options, such as identifying services deficiencies through audits, in favour of medium to long term policy options that challenge on mobility and look to reduce the need for travel were side-lined.

2.6.2.4 DEFINITION OF TRANSPORT POVERTY

Some of the earliest references to transport poverty as a distinct phenomenon came from academic literature in Australia (Gleeson and Carmichael, 2001; Gleeson and Randolph, 2002). Within the suburban context of Australian cities transport poverty was defined in affordability terms linked specifically to forced household expenditure on travel, with specific reference to car ownership and usage (Gleeson and Randolph, 2002).

Transport poverty has appeared in a range of contexts in the literature, such as transport accessibility and connectivity in rural Scotland (Velaga et al., 2012) and accessibility poverty (Martens and Bastiaanssen, 2014). Markovich and Lucas (2011) identified the need for a "lexicon of definitions" to cover the social and equity impacts of transport. The lexicon defined transport poverty as a “broad overarching notion”, which was representative of a whole field of research and policy with a number of separate sub concepts including mobility, affordability, accessibility and other transport externalities (Lucas, Mattioli, et al., 2016).

More recently the debate has moved onto the influence of local level environmental factors on transport poverty and whether this supersedes social factors (Lucas et al., 2018). For example, transport externalities are factors that impinge on the transport system, such as traffic accidents and pollution (Lucas, Mattioli, et al., 2016). There are a number of existing transport indicators in North America and the European Union that cover these factors and wider environmental justice issues, with some degree of overlap (Litman, 2016). These externalities sit outside of the three sub-concepts, but within the wider notion of transport poverty.

Kamruzzaman et al. (2016) have suggested a further category ‘activity participation’ for measuring transport based social exclusion. This perspective stems from the ‘Social Inclusion: Transport Aspects’ report (2006), which identified a gap in transport modelling approaches with respect to participation by individuals in a range of activities in terms of intensity, duration and frequency. However, Shortall (2008) points out that the assumption of participation cannot be regarded as a social norm, just as non-participation cannot be treated as social exclusion, as to do so overlooks the social processes by which these groups are actively engaged.

Additional problems arise from disagreement over what constitutes the basic level of need for travel; a problem easier to delineate in the context of fuel poverty. The relatively straightforward definition of fuel poverty has been cited as an example of how transport poverty should be defined (Bourn, 2012b; Stokes, 2015; Mattioli, Lucas and Marsden, 2017). Stokes (2015) pointed out that reasons why an individual ‘needs’ to travel, in terms of activities, are key to why a similar consensus does not exist with transport poverty. The fulfilment of ‘basic activity needs’ are central to the definition proposed by Lucas et al. (2016), who set out a range of conditions (capability, availability, income, time poverty and safety) that would put an individual in transport poverty. The impact of social ‘status’, as shown by willingness to spend more than needed on travel when compared to household energy, is thought to be a factor in the lack of consensus in transport sector (Stokes, 2015).

The challenges of constructing a definition of transport poverty relate to the way that the issue manifests within the household, as individuals were found to be impacted differently – gender differences – are a key factor in determining how transport poverty is experienced within the household (Lucas et al., 2016). In studies carried out across the developing world, it was found that women were disproportionately affected by transport burdens in comparison to men (Booth, Hanmer and Lovell, 2000). Mobility links into a range of secondary benefits to the individual (e.g. access to shops, services and leisure) these factors make it difficult to an indicator that can quantify the issue (Lucas et al., 2016).

A range of different terms have been used to describe transport poverty in the academic literature, which is viewed as being confusing (Lucas, Mattioli, et al., 2016). For example, accessibility is used to describe issues with access to a range of necessary services by people living in rural areas, including health, education, employment and shops (Velaga et al., 2012). The lack of access to a car has been highlighted as a problem for individuals living in both urban and rural areas in terms of accessibility to good and services (Kenyon, Lyons and Rafferty, 2002). The fact that a good public transport system exists doesn’t necessarily mean that it is accessible to all of its users (Kenyon, Lyons and Rafferty, 2002). A ‘lexicon of definitions’ was suggested as a way of increasing clarity and consistency in the field (Markovich and Lucas, 2011).

A reference to the need to better communicate the social impacts of ‘transport poverty’ taken from Jones and Lucas (2012), appeared in a report commissioned for the Department for Transport on the distributional impact of WebTAG (Atkins Limited, 2015). This shows an implicit acknowledgement of the social impacts that transport poverty will have for decision making at a local and national level within the UK. Indeed, the TAG UNIT A4.1 Social Impact Appraisal contains a section on Accessibility and Personal Affordability Impacts and instructions on how to factor in active travel which focuses on gender (Department for Transport, 2017a). Accessibility, although somewhat broadly defined as a concept, has been deemed to be useful by planners when looking at how problems are framed (Curl, Nelson and Anable, 2011). The Social Impact Appraisal (Department for Transport, 2017a) makes the link to the “Making the connections” report (Social Exclusion Unit, 2003) in the Personal Affordability Impacts section, which shows the continuing relevance of this report to contemporary policy.

Three sub-concepts – Mobility poverty, Accessibility poverty and Transport affordability - have been suggested as component elements of transport poverty (Lucas, Mattioli, et al., 2016). Mobility poverty has been defined as a complete lack of options for transport and mobility caused by low income (Lucas, Mattioli, et al., 2016). This definition claims to be drawn from an earlier study on social disadvantage and transport in the UK, which was co-authored by Karen Lucas. However, this earlier Lucas study does not use the term mobility poverty in an explicit way (Moore, Lucas and Bates, 2013), so it is difficult to source this interpretation, which is at odds with definitions of mobility related exclusion (Kenyon, Lyons and Rafferty, 2002). This lack of clarity makes the use of terms like ‘mobility poverty’ challenging to use in the context of transport poverty. In addition, the keywords ‘mobility poverty’ do not yield any precise matches in the Science Direct database, which is suggestive that they haven’t been widely adapted in academic literature. The term mobility difficulty is widely used in an earlier paper by Lucas and Stokes, where it is used to describe those who are on low incomes below retirement age (Stokes and Lucas, 2011).

The terms transport poverty and transport affordability were found to be difficult to measure (Stokes and Lucas, 2011), which could stem from the difficulty in arriving at an agreed definition. Trends in the National Travel Survey data supported the view that income was a driving factor, as low-income households had a reduced likelihood of car ownership, made fewer journeys which were shorter on a weekly basis (Stokes and Lucas, 2011). It was found that fuel poverty was easier to define and measure than transport poverty, due to the complexity of the concept (Stokes and Lucas, 2011).

The evidence shows that transport poverty is an issue related to restrictions on mobility and the requirement for a high proportion of income for travel, disproportionally impacting individuals on low incomes (Stokes and Lucas, 2011). The definition of social exclusion should also be considered when looking at transport poverty. Social exclusion, by definition, impacts on the ability of those affected by it to access opportunities within their local community, whether this is related to employment or the ability to socialise freely (Kenyon, 2003). Preston and Rajé (2007), make the point that a wealthy individual can still be socially excluded due to levels of participation in society. This makes social exclusion wider than a poverty-related issue.

2.6.2.5 MOBILITY POVERTY

Mobility related exclusion has been defined as the impact to arising from reduced access to services within the community as a result of 'insufficient mobility' in a society with a presumption of higher levels of mobility (Kenyon, Lyons and Rafferty, 2002). Mobility challenges were found to result in fewer journeys made for all the employment, education and leisure by those affected than those without these challenges (Sullivan, Kershaw and Cummings, 2015). Reasons include the age of those affected by mobility challenges, they were in the over 49 years age categories and generally walked drove less than their more mobile counterparts (Sullivan, Kershaw and Cummings, 2015).

Accessibility is specifically defined in relation to access to services – 'at reasonable cost, in reasonable time and at reasonable ease' (Social Exclusion Unit, 2003, p. 1). Within the report five key issues were identified as barriers to travel for individuals on low incomes, which can be summarised as: availability and accessibility; cost; safety and security; and travel horizons (Social Exclusion Unit, 2003). Within public transport there are a range of factors that reduce the levels of accessibility for many users, these factors include: reduced off-peak service; poorly maintained facilities; limitations to access at transport interchanges and onboard services; the cost of using public transport (Kenyon, 2003).

The recommendations from the 'Making the Connections' report were criticised by Kenyon (2003), for promoting a number of the short term policy options, in favour of medium to long term policy options. However, it remains a widely cited report to this day (Department for Transport, 2017a; Banister, 2018).

2.6.3 CONTEMPORARY TRANSPORT POVERTY

2.6.3.1 NUMBERS IMPACTED BY TRANSPORT POVERTY

There are measurements that can help gauge the extent of transport poverty even if the term itself has not been not adopted by government policy makers and their data collection agencies.

In the UK, there have been estimates of the numbers of households affected this phenomenon, analysis by the RAC Foundation using a measure based on expenditure on transport costs exceeding 10% of household income, found that 21 million households (four-fifths of the total) were in transport poverty (RAC Foundation, 2012). This estimate, which was based on the official fuel poverty measure in place at the time (10% measure) has been challenged as being implausible, because it included non-essential transport costs (Bourn, 2012b). The focus on actual household expenditure misses the issue of 'supressed travel demand', or the avoidance of necessary expenditure on travel and it did not factor in the non-regressive nature of household expenditure on transport (low-income households can spend up to 20% of their income on travel compared to 5% of income in higher income households) (Lucas, Mattioli, et al., 2016).

In 2015/16, the weekly household expenditure on transport in Great Britain amounted to 13.7% this expenditure included 8% on transport fares and 27% on fuel for cars (Department for Transport, 2017c). In 2016/17, the weekly household expenditure of transport in Great Britain rose to 14.4%, this expenditure included 7% on transport costs and 26% on fuel for cars (Department for Transport, 2018b). The variation in these figures hint at the complexities involved in trying to measure the phenomenon of transport poverty when the boundaries of what is being measured have not been set. The upward trend it the household weekly expenditure on fuel is indicative of wider issues with the costs.

Various methodologies have been developed for quantifying the vulnerability of households to transportation costs in the England and Australia. In England, Sustrans have identified a series of proxy indicators that can be used to measure and map transport poverty these are based on the time required to access essential services, distance to the nearest public transport access point (bus or train) and household income (Environmental Audit Committee, 2013b, p. Ev w64-Ev w66). In Australia, the 'Vulnerability Assessment for Mortgage, Petrol and Inflation Risks and Expenditure' (VAMPIRE), was developed to gain an understanding of the spatial distribution of household vulnerability to changes in petrol prices in a climate of energy insecurity and household mortgage debt in the major cities (Dodson and Sipe, 2008). Households in suburbs that are more vulnerable to petrol price changes have a high VAMPIRE score, which means that have a greater degree of exposure to rising fuel costs than households with a low VAMPIRE score (Li, Sipe and Dodson, 2017).

In the light of the fact that transport poverty is not recognised as a phenomenon, nor concept, there is no formal collection of data on transport poverty by the UK government. This is in sharp contrast to fuel poverty statistics, which are published annually (Department for Business, Energy & Industrial Strategy, 2018a). In the period 2016/17 there were 4,931 million local bus journeys were made in Great Britain, which represented 59% of all public transport journeys taken during that period (Department for Transport, 2017c). The concessionary bus pass system in Great Britain appears significant factor in the bus usage statistics. 9.9 million people in England had a concessionary bus pass in 2016, with 912,000 of these concessionary bus pass being disabled passes (Department for Transport, 2017c). The funding of concessionary bus passes for the older population in Great Britain has largely been viewed as a success (Mackett, 2014).

In England, the 2013 National Travel Survey (NTS), found that public transport usage was highest in the lowest income quintile at 19%, with bus trips being significantly higher in this quintile in this group (Department for Transport, 2014). In contrast, the NTS found that car availability was dependent on household income level, with 48% of households in the lowest income quintile having no access to a car (Department for Transport, 2014).

Geographically, residents of London had the highest levels of no car ownership at 44%, with 7% of those living in rural/hamlet locations having no car ownership in 2012/13 (Department for Transport, 2014).

Calls for the establishment of longitudinal datasets that could be used to form 'accessibility indicators' in the Los Angeles Metropolitan region followed the 1965 Watts riots, as the McCone Commission investigating the riots found that inadequate levels of public and private transport access to areas of employment were an underlying factor (Wachs and Kumagai, 1973). In England, a recent study looking at the socio-economic and environmental factors affecting transport poverty was hampered by small survey datasets and limited travel diary information (Lucas et al., 2018). These examples show that the availability of datasets that are both accurate and of a sufficient size are crucial to the ongoing examination of the phenomenon of transport poverty.

2.6.3.2 NATIONAL TRANSPORT POLICY IN THE UNITED KINGDOM

> "The United Kingdom, with its rather elaborate research on involuntary transport disadvantage, and it's almost complete neoliberal policy practice the gap between academia and public policy seems enormous!" (Jeekel, 2018, p. 155)

Jeekel sets the scene for this examination of the policy on transport in the UK. The gap between policy and practice has not always been as big as it is now. This section been set out chronologically, to show the evolution of policies on social exclusion and transport.

In the Great Britain, the link between social exclusion and mobility emerged in the 1998 government white paper 'A new deal for transport' (Department of the Environment, Transport and the Regions, 1998). The 1998, the Social Exclusion Unit (SEU) report 'Bringing Britain together: a national strategy for neighbourhood renewal', highlighted access to services, due to poor transport links and low levels of car ownership as an issue for deprived housing in outlying areas (Social Exclusion Unit, 1998). These reports were indicative of a new British government interest in the area of transport and social exclusion

(Church, Frost and Sullivan, 2000). The SEU's remit covered England, and they took the lead responsibility for ensuring coherent delivery by the local policy action teams to ensure a consistent approach (Social Exclusion Unit, 1998).

The policy solutions proposed in 'Bringing Britain together' report were presented in a way that allowed the construction of a strategic framework which promoted spatial targeting instead of more expensive state level structural interventions (Watt and Jacobs, 2000). A Public Transport Gender Audit was commissioned by the Department of Environment and the Regions (DETR) in 2000, with the aim of providing a checklist for policy makers, planners and transport providers that would become a tool to improve the future of transport for women (Hamilton and Jenkins, 2000). This is evidence of the progressive approach to transport policy in Great Britain that took in place around the millennium where social exclusion, mobility and gender were important features of policy.

The report 'A New Commitment to Neighbourhood Renewal: National Strategy Action Plan' was published in 2001 and sets out commitments to invest in improvements to the transport provision in deprived areas through the promotion of flexible employment and support for lower fares (Social Exclusion Unit, 2001a). Funding on Neighbourhood renewal peaked in 2007/08, with evidence of success appearing in 2007 at neighbourhood level in the form of improvements to housing, policing and schools with decreasing gaps in social and economic outcomes (Lupton, Fenton and Fitzgerald, 2013).

The seminal 'Making the connections' report (Social Exclusion Unit, 2003), helped to raise the profile of the issue and highlight best practice (Lucas, 2004). This report was acknowledged as the 'first official policy document' to place transport policy in a social context (Kenyon, 2003). The comprehensive study carried out for the "Making the connections" report (Social Exclusion Unit, 2003), is still used to inform analysis around transport fairness and disadvantage (Banister, 2018).

The 2008 report 'Delivering a Sustainable Transport System', included the promotion of 'equality of opportunity' as one of five goals, which included a commitment to improve a range of factors including accessibility, affordability and availability (Department for Transport, 2008). The progressive approach to transport policy typified by the Labour administration during the period from 1998 to 2008 was not destined to last. The financial crisis of 2008 introduced a relatively high budgetary pressure on transport for UK government, which led to a subsequent decrease in spending (Veeneman et al., 2015).

The election of a Conservative led coalition with the Liberal Democrats in 2010 marked a change in transport policy direction from the Labour administration, which had been in power since 1997. In June 2010, significant cuts were announced to government spending including, a planned £1.1 billion upgrade to the A14 in Cambridgeshire and the Infrastructure UK agency was set up in with a remit to reduce the funding costs associated with infrastructure delivery and encourage as much private investment as possible (Docherty et al., 2018). The government approach to public funding changed to strategic and supportive one from 2010, the background for this was a record budget deficit and fewer funds available for regeneration (Department for Communities and Local Government, 2011). All the major funding streams for regeneration, which included transport services, along with the institutes and mechanisms to deliver them at a local level were disbanded in 2010 (Lupton, Fenton and Fitzgerald, 2013). However, it was observed that the period of austerity for transport infrastructure spending was relatively short lived, as transport budgets were restored in Autumn 2011 with significant capital expenditure targeted at rail and trunk roads across England (Docherty et al., 2018).

Individuals and households affected by transport poverty on the other hand did not directly benefit from this spending on transport infrastructure in the post 2010 austerity period. Wiggan (2012) pointed out that despite the clear role of market failure and business cycles shaping economic demand in the aftermath of the 2008 recession, neo-liberal policies emphasised the need for reforms to the supply of labour and a focus on individual social problems. This was demonstrated by the reliance on individualised explanations for poverty by the coalition government of 2010-2015 (Pantazis, 2016).

2.6.3.3 DEVOLVED AND REGIONAL TRANSPORT POLICY IN THE UNITED KINGDOM

The UK has devolved administrations in Scotland, Wales and Northern Ireland. They were established following referendums in 1997 in Scotland and Wales and the Belfast (Good

Friday) agreement of 1998 in Northern Ireland (Cabinet Office, 2013). Transport policy became part of the remit of the devolved administrations. What follows are some brief examples of the language used with regard to the social impacts of transport, within these policy documents.

In Wales, the Transport Poverty Strategy published in 2008 contained a section on 'Social Outcomes', with a number of outcomes designed to reduce social exclusion for the most disadvantaged groups (Welsh Assembly Government, 2008). The commitment to improve 'social well-being' has been retained by the Welsh Government in their transport appraisal guidance (WelTAG) (Welsh Government, 2017). In Scotland, the refreshed National Transport Strategy contains a high level objective to promote the social inclusion of remote and disadvantaged communities through improved transport accessibility (Transport Scotland, 2016). In England, the recently published policy paper Inclusive Transport Strategy focuses on the 'inclusion of disabled people', with the aim that the improvements will benefit all travellers (Department for Transport, 2018a). In Northern Ireland, transport policy is addressed within the Regional Development Strategy, the vision for this strategy includes a contribution to social inclusion through alternatives to car usage such as public transport, equitable access and environmental impacts through increased opportunities to walk and cycle amongst other measures (Department for Regional Development, 2012)

In Manchester, the Transport Strategy contains a commitment to reduce 'social inequality' in the region (Transport for Greater Manchester, 2017). In the West Midlands, the Transport Delivery Plan also includes a commitment to improve 'social well-being', it includes a section 'Mobility and Social Inclusion' that highlights the importance of 'social inclusion' and introduces a 'Mobility for Inclusion Strategy (MfIS)' to be launched in 2018 (Transport for West Midlands, 2017). The MfIS in the West Midlands, is intended to focus on social inclusion and reducing transport barriers across a range of groups including children and young people, older people, people with mobility impairments and individuals with multiple and complex needs (Transport for West Midlands, 2017).

These transport strategies from across the UK highlight the progressive approaches taking place in a number of regions. The devolved administrations and regions are taking a lead in promoting a wide-ranging social inclusion across the whole of society. In England, national pre-2008 transport policies included social inclusion and post-2008 it is not viewed as priority, although the recent commitment to improved inclusion for disabled people appears to be move perhaps linked to a move away from 'austerity'. The lack of an overarching Transport Strategy for all transport users in England is a key policy gap, which will impact more greatly on the life chances of those people living outside of the devolved regional administrations. The absence of clear indicators to measure the success of equity targets has been identified as a gap in many policy documents (Manaugh and El-Geneidy, 2012). Banister (2018), observes that from a political perspective in Great Britain, there is diminished support for transport subsidies that are specifically directed to those on low incomes and the local transport options used by them.

2.6.3.4 TACKLING TRANSPORT POVERTY INTERNATIONALLY

The Flanders region of Belgium is unique in that it grants residents a right to basic provision of public transport irrespective of where they live (Fransen et al., 2015). The legal basis of these rights lies in the mobility covenant which became law in 2001 as part of a local mobility planning decree (Ameele, 2016). This approach shows similarities to the local transport plans in England, except where the rights to transport provision do not extend to groups at risk of social exclusion (Elvy, 2014).

In Melbourne, Australia under the 'social transit agenda' increases in bus services are directly linked to transport based social exclusion through transport policy (Currie, 2010). This approach aligns to that adapted by local authority in Bogotá, Colombia. The "pro-poor" transport subsidy in Bogotá was launched in February 2014, making use of smart card technology building on experience gained from national poverty targeting schemes, users received 40% subsidies on fares with use of a smart card designed to target demand rather than supply (Mehndiratta, Rodriguez and Ochoa, 2014).

Awaworyi Churchill and Smyth (2019), looked at the impact of transport poverty on subjective wellbeing in Australia using household survey data and found robustly that transport poverty had a negative impact of the subjective wellbeing of Australians. The importance of this finding cannot be underestimated in terms of actually quantifying the link between impacts of transport poverty and wellbeing of those afflicted individuals. It represents a new approach with the potential to be adapted for use in the UK.

Allen and Farber (2019), developed a bespoke methodology for examining urban transport poverty in major Canadian cities, by focusing on levels of accessibility they made use of census and mapping data. The Allen and Farber (2019) study, found that more deprived areas tended to be close to urban centres with relatively good transport links, but a significant minority lived in low-income areas on the outskirts of urban areas with poor transport links. This also represents a methodology with much potential for use with UK, where transport poverty is known to be an issue in the peripheries of the larger towns and cities (Lucas, 2010).

3. METHODOLOGY

3.1 INTRODUCTION

In order to avoid limitations in the data collection phase (Cronin, 2016), this research project incorporated a multiple and mixed methodology in August 2017. Baum (1995), talks about how the nature of complex problems requires researchers to use a mix of quantitative and qualitative approaches. The plan was, therefore, to use quantitative data from a range of secondary data sources on fuel and transport poverty, which would be compared to the qualitative data. The idea behind the use of a multiple and mixed methodology was a plan to use triangulation to look for convergence in the results, and to eliminate any errors that may have occurred during this phase of the research – an approach outlined in (Cronin, 2016). In October 2017, the project included semi-structured interviews with policy decision makers in central and local government alongside focus groups made up of residents from low-income households. The aim was to increase the creditability of the research and to address the research aims linked to the examination of the impact of government policy on fuel and transport poverty.

In November 2017, the focus groups element of the qualitative data collection phase was dropped, due to time constraints around thesis submission and the challenges involved in setting up focus groups with representative demographics. This left the interviews with policy decision makers as the remaining qualitative element to the study and ethics approval was sought to carry out these interviews in November 2017.

The qualitative research was eventually adapted as the main component of the methodology in 2019, due challenges in obtaining high quality quantitative data. This was explored in the pilot study on fuel poverty (1.3.1) and remove due to time constraints around thesis completion.

This study builds on the qualitative research into energy and welfare policy carried out by Butler, Parkhill and Luzecka (2018) and the role of transport in the economic objectives of cities and regions undertaken by Mullen and Marsden (2015). These studies made use of in-depth interviews with officials to gain an understanding of the factors that indirectly impact on the formulation of Government policy at a local and national level. The Butler, Parkhill and Luzecka (2018), study employed interviews with government officials and policy stakeholders in combination with a review of related policy documents to examine fuel poverty policy. The Mullen and Marsden (2015), study interviewed officials involved in transport, planning and the economy at local, country wide and regional organisations.

The research by Butler, Parkhill and Luzecka (2018), found that the links between fuel poverty and general poverty were not being addressed by the government departments responsible for these policy areas. This is finding that is highly relevant in the context of this research and demonstrates the importance of linking interview data and policy documentation in policy analysis. Whereas, Mullen and Marsden (2015), used the interviews to examine the official transport aims and uncovered how the influence of the actions around transport in larger cities impacted on smaller neighbouring cities, who were typically risk averse around issues that were not successful in larger cities (e.g. congestion charges). This again shows how the interview process can be used to uncover the intricacies of the decision-making process that are not always apparent in the documentation.

3.2 QUALITATIVE RESEARCH

Qualitative research is difficult to define in a way that is widely acceptable to all qualitative researchers, while it has developed a distinct identity that differentiates it from quantitative research (Kvale, 2007). Qualitative research signals a focus on the qualities of the subject matter being studied and can be distinguished from quantitative, by not examining the quantity of the subject matter (Denzin and Lincoln, 2003). Kvale (2007), describes qualitative research, as a way of examining the real world to gain a better understanding of social phenomenon.

The qualitative researcher can be viewed as a *bricoleur* who prepares a *bricolage* (Weinstein and Weinstein, 1991). The *bricolage* being a representation that has been put together by the researcher (or *bricoleur*) that evolves to fit into the complexities of the research subject (Denzin and Lincoln, 2003). This research will build a representation of the research that stems from the interview data through the process of thematic analysis.

3.2.1 SAMPLING

The aim in August 2017 was to only interview decision makers in central and local government working on fuel and transport poverty. This was part of an attempt to identify the policy reform needed to eliminate fuel and transport poverty to in order meet the research objectives (1.3). The challenge revolved around the selection of a representative sample from the wider population of individuals working in these fields, so that the research would be able to make generalised statements about the issues applying a substantial criterion (Flick, 2014).

Purposive sampling (Patton, 1990), was identified as the most appropriate approach to meet the research objectives. The project set out to get an exploratory sample as a way of probing these under researched topics to generate ideas and information to better illuminate the current state of fuel and transport poverty in UK (Denscombe, 2014).

3.2.2 PURPOSIVE SAMPLING

Purposive sampling (Patton, 2015), was deemed to be the most appropriate qualitative design strategy for this project. This strategy implies that selection of respondents on the basis that they were “information-rich” and could provide a valuable insight (Patton, 2015), into the phenomenon of fuel poverty and transport poverty. Snowball sampling and Opportunistic sampling, which are both separate categories of purposive sampling

(Patton, 2015), were the approaches used to recruit respondents to the project. These approaches can be categorised as nonprobability sampling, where the decision whether to include particular elements in the sample is at the researcher's discretion (Sekaran and Bougie, 2013). Respondents were selected be part of the sample on the basis of their expertise or experience (Denscombe, 2014). The aim of the selection process was to achieve a reasonably representative sample that was not based on chance (Sekaran and Bougie, 2013). There was an awareness that nonresponses by potential respondents, would create a non-sampling bias if they were not random (Henry, 2009).

3.2.3 SNOWBALL SAMPLING

Coleman (1958), likens the snowball sampling approach to a journalist tracking down leads for a story, from one person to the next. Snowball sampling (also known as chain referral sampling) is a widely used methodology in qualitative sociological research (Biernacki and Waldorf, 1981). Through the process of the researcher asking people who else should be spoken, the snowball gets bigger and bigger as new "information-rich" cases are accumulated (Patton, 1990).

Snowball sampling is reliant on members of a group who have already been identified, to identify other members of their group in the wider population (Fink, 1995b). The approach gets its name from the analogy of a snowball that gets bigger as it rolls down a hill (Morgan, 2008). Biernacki and Waldorf (1981), pointed out that researchers needed to be active in developing the sample, as well as initiating, progressing and terminating the sampling process. In this study, snowball sampling was used to recruit respondents in the field where the respondents were unknown at the start of the process. The aim was to obtain the largest possible sample size in order to meet the research aims.

3.2.4 OPPORTUNISTIC SAMPLING

Opportunistic sampling takes place after data collection has started and takes advantage of new opportunities as they arise during data collection (Patton, 1990). This approach was utilised by inviting respondents to participate during the data collection phase as they were revealed. This enabled the researcher to take advantage of whatever events unfolded as they unfolded (Patton, 1990). Opportunistic emails were sent to a number of potential respondents during the data collection phase, which could not have been planned in advance (Patton, 2015). A number of these approaches led to interviews, which were to the benefit of the project and increased the overall sample size. However, many emails and approaches to participate went unanswered. The aim was to build a sample that was large enough to meet research aims of this study.

3.2.5 SAMPLE SIZE

It was recommended by the UREC representative (University of Greenwich ethics committee) that a sample of 30-35 respondents should be requested within the ethical approval request, which was granted in January 2018 (see Appendices). However, there are no specific rules on sample size in a Qualitative project (Patton, 2015). This meant that an initial sample size of 20 respondents (10 fuel poverty and 10 transport poverty) was chosen. In doing so, it was noted that this was a recognised sample size of PhD projects and was commonly associated with sample saturation (Saumure and Given, 2008).

3.2.6 SAMPLE SELECTION

Snowball sampling was chosen as a way into the fields of fuel poverty and transport poverty where the names of those working in them, particularly for the UK government, are typically not publicly available. Civil servants as a group have high social visibility levels unlike those who use illegal drugs (for example), who have low social visibility levels and are typically the focus of studies utilising snowball sampling methodology (Biernacki and Waldorf, 1981). However, civil servants are often known to each other through formal and informal workplace networks. Eland-Goossenen et al. (1997), recommend that the first stage respondents are selected randomly, so that the sample is as close to being random as possible. Access to civil service networks is a random process which is dependent on members of the network being willing to participate and share contact details of other members. This makes anonymity particularly important in terms of protecting the identity of respondents. It also ensured that they could give open responses in the interview process.

Due to time and resource constraints interviews with respondents in Wales, Scotland and Northern Ireland were not obtained in this project. It should be noted that one of transport poverty respondents gave examples from their time spent working in the Welsh Government, and an unsuccessful attempt was made to secure an interview with a respondent actively working in this field for the Welsh Government.

The sampling process in this project was initiated by a personal contact in the central government department working on housing and energy who emailed on 13 October 2017 requesting support for this project from colleagues across central government. This email led to an onward referral to the respondent Alpha who made contact on 17 October 2017. This started the snowball rolling, as this respondent proved to be very helpful by nominating respondents ***Lima*** and ***Papa*** and providing their email addresses, which enabled contact to be made through a de facto introduction.

The personal contact in central government referred to above also emailed to colleague working in housing for local government on 13 October 2017, which was shared more widely within an established network of approximately thirty local government officials across England and led to contact being established with respondent Bravo by email on 7 November 2017. Respondent ***Bravo*** was the only person willing to participate in this study. It should be noted that respondents ***Alpha*** and ***Bravo*** were contacted prior to the ethics approval for this project being granted on 30 January 2018 in order to optimise the data collection process. They were sent participant information sheets and consent forms after these documents had been approved by the ethics committee. All respondents were sent these documents before the interviews took place.

Respondent ***Charlie*** was recommended by a third sector organisation in the energy sector that had been opportunistically contacted by an email from the researcher on 5 February 2018. Respondent ***Charlie*** replied on 6 February 2018 and was the only person willing to participate from their organisation.

The researcher was given the name of respondent ***Delta*** who works in the transport sector as an academic and consultant, following an email exchange with an academic colleague of the researcher at the University of Greenwich on 6 November 2017. An opportunistic email was sent to respondent ***Delta*** on 22 January 2018 who replied on 27

January 2018 to confirm that they would be interested in participating in the project. Respondent ***Golf*** worked was personally introduced to the researcher by respondent ***Delta*** at the interview on 4 April 2018. The researcher made email contact with respondent ***Golf*** who works in transport for central government on 4 April 2018 and respondent ***Golf*** replied on 6 April 2018 to confirm that they would be willing to participate in the project.

Respondent ***Echo*** works for a third sector organisation in the transport sector and was recommended by a colleague of the researcher who worked in public health. The researcher sent an initial email to respondent ***Echo*** on 26 January 2018, which received no response. A follow up email was sent on 23 March 2018 and a reply from respondent ***Echo*** was received on 26 March 2018 confirming that they would like to participate in the project. Respondent ***Foxtrot*** was recommended by their colleague respondent ***Echo*** at the interview on 9 April 2018. Both respondents were interviewed at their place of work individually on this day.

Respondent ***Hotel*** also works for a third sector organisation in the transport sector was recruited through an opportunistic email sent by the researcher to the organisation where they work on 16 April 2018. Respondent ***Hotel*** replied to confirm that they would be willing to participate on 18 April 2018 and informed the researcher that their Head of Team had advised that they should participate in this project.

Respondent ***India*** was recruited through an opportunistic email sent by the researcher to the regional government transport body where they work on 4 May 2018. Respondent ***India*** replied on 8 May 2018 to confirm that they would be happy to participate in the project. Respondent ***Mike*** was recommended by respondent ***India*** at the interview on 4 June 2018. Respondent ***India*** works for the same body as respondent ***Mike*** and initiated email contact on 4 June 2018, which was followed up by the researcher on 4 June 2018. Respondent ***India*** confirmed that they would be willing to participate on 5 June 2018.

Respondent ***Juliet*** works for a third sector organisation in the energy sector and was recruited through an opportunistic email sent by researcher to the organisation where they work on 1 June 2018. Respondent ***Juliet*** replied on 1 June 2018 to confirm that they would be interested in participating in the project.

Respondent ***Kilo*** works for an energy company and was identified as a potential respondent by the researcher using LinkedIn and an email address found following an internet search, as the researcher was unable to message respondent ***Kilo*** directly on LinkedIn. The researcher sent an opportunistic email to respondent ***Kilo*** on 10 April 2018 and respondent ***Kilo*** replied on 13 April 2018 to confirm that they would be interested in participating in the project. An interview was arranged for 8 June 2018 when the researcher could meet respondent ***Kilo*** in person at their place of work. The researcher asked respondent ***Kilo*** if they could recommend any respondents that could also be potentially interviewed on 8 June 2018. Respondent ***Kilo*** supplied the researcher with a number of leads, which included respondent ***November***.

The researcher made contact with respondent ***November*** who works in energy for local government by email on 4 May 2018 who replied to express an interest in participating in the project on 9 May 2018. Respondent ***November*** was unavailable to meet the researcher in person on 8 June 2018 and a telephone interview was arranged for 26 June 2018.

Respondent ***Oscar*** works in transport for local government and was recommended by one of the leads provided by respondent ***Kilo*** on 1 June 2018. Respondent ***Oscar*** contacted the researcher on 23 June 2018 to express an interest in participating in this research and a telephone interview was arranged for 17 July 2018.

The researcher made contact with respondents **Lima** and ***Papa*** by email on 4 June 2018, which was the date that the email with their details was received from respondent Alpha. Respondent ***Lima*** works on energy for regional government replied to the researcher on 5 June 2018 to confirm that they would be willing to participate in the project and an interview was arranged for 15 June 2018. Respondent ***Papa*** works on energy for non-departmental government body initially signposted the researcher onto other potential respondents within their organisation, which they did on 4 June 2018. No responses were received to these enquiries from respondent ***Papa***. The researcher followed up respondent ***Papa*** on 13 June 2018 and respondent ***Papa*** agreed to meet with the researcher on 29 June 2018 and an interview was arranged for 20 July 2018.

Respondent ***Fremantle*** works for a third sector organisation in the energy sector and was recommended by respondent November on 26 June 2018. The interview took place on 7 December 2018 following a meeting between this respondent and the researcher at a fuel poverty conference in London in November 2018.

Respondent Quebec works for a third sector organisation in the energy sector was recommended by a contact suggested by a colleague within the researcher's department at the University of Greenwich. The researcher emailed to respondent Quebec on 25 July 2018. A reply is awaited (07/08/18). Respondent not interviewed.

The researcher located respondent Romeo, who works for a third sector organisation in the transport sector, following a recommendation about the organisation that employed this respondent from a personal friend. The researcher emailed to respondent Romeo on 27 July 2018 and an out of office reply was received indicating that the potential respondent was on leave until 20 August. A reply is awaited (07/08/18). Respondent not interviewed.

Several other potential respondents were contacted by the researcher during this project and to date (19/08/18) none of these potential respondents have been interviewed yet or have declined to be involved in the project.

Respondent Tango works for a third sector organisation in the energy sector, was recommended by a lead supplied by respondent Kilo on 6 June 2018. The researcher gave respondent Tango time to respond directly and followed up by email on 18 June 2018, which received a response from respondent Tango on 19 June 2018 agreeing to participate and requesting more information. Respondent Tango was sent the additional information requested on 19 June 2018 but did not respond further to the researcher. Respondent not interviewed.

Respondent Uniform works on energy for local government and was recommended by respondent November and email was sent to respondent November to respondent Uniform and the researcher on 26 June 2018, but no expression of interest was received from respondent Uniform. The researcher has yet to follow up with respondent Uniform. Respondent not interviewed.

Respondent Victor works for a third sector organisation in the energy sector and was also recommended by a contact suggested by a colleague within the researcher's department at the University of Greenwich. Contact was made with respondent Victor by email on 16 April 2018, respondent Victor replied on 16 April 2018 and agreed to participate in the project, suggesting an interview date in late May 2018. Follow up emails were sent to respondent Victor by the researcher on 4 and 18 May 2018 and again on 11 June and 20 July 2018. To date no response has been received. Respondent not interviewed.

Respondent Whiskey works for a trade union body and was suggested by the researcher's supervisor. The researcher sent exploratory emails to respondent Whiskey on 19 January 2018, 2 February 2018 and 8 March 2018. To date no response has been received from respondent Whiskey. Respondent not interviewed.

Respondent X-Ray works for a regional government transport body and was recommended by a lead that had been suggested by a personal contact of the researcher. The researcher emailed respondent X-Ray on 27 March 2018 and respondent X-Ray replied on 4 April 2018 with an offer to help if they could do so. The researcher sent respondent X-Ray more information on 4 April 2018 and followed up with a further email on 13 April 2018 when no response was received. Respondent X-Ray replied on 13 April 2018 stating that they had insufficient expertise to assist with the project and was unable to provide any further leads with their organisation. Respondent not interviewed.

Respondent Yankee works for a housing trust and was recommended by a personal friend of the researcher on 13 April 2018. The researcher contacted respondent Yankee by email on 13 April 2018 and respondent Yankee replied on 13 April 2018 agreeing to be interviewed as part of the project whilst they were on leave from their work. The researcher sent respondent Yankee on 13 April 2018 with an offer to participate at a time of their choosing and no further response was received from respondent Yankee. Respondent not interviewed.

Respondent Zulu works for a regional government transport body was recommended by respondent Delta on 4 April 2018 following the interview. The researcher was able to locate and connect with respondent Zulu on LinkedIn. Following the connection from respondent Zulu, the researcher sent messages via LinkedIn on 19 May 2018 and 20

May 2018. No response has been received from respondent Zulu to date. Respondent not interviewed.

Respondent Adelaide works for an energy company and was recommended by a colleague within the researcher's department at the University of Greenwich. The importance of contacting this organisation was also discussed at the researchers transfer viva on 24 October 2017. The researcher sent emails to respondent Adelaide on 5 February 2018 and 19 April 2018. The researcher also connected with respondent Adelaide on LinkedIn and sent a message on 8 April 2018. In addition, the researcher sent emails to a colleague of respondent Adelaide following a phone call with them on 27 April 2018 and again on 18 May 2018. To date no response has been received from respondent Adelaide or anyone else from their organisation. Respondent not interviewed.

Respondent Brisbane works for a third sector organisation in the energy sector and was located on Twitter by the researcher and sent an opportunistic Twitter message on 6 April 2018. A response was received from respondent Brisbane on Twitter on 16 April 2018. The respondent advised the researcher that the message had been passed onto the relevant team and a response would be sent to the researcher as soon as the team were able to do so. To date no response has been received from respondent Brisbane or anyone else from their organisation. Respondent not interviewed.

Respondent Canberra works for an energy company and was recommended to the researcher by a friend. An opportunistic email was sent to respondent Canberra on 23 April 2018. A response was received on 24 April 2018, which advised the researcher to email a different contact within the organisation. A further email was sent to the new contact by the researcher on 24 April and a follow up email was sent on 18 May 2018. To date no response has been received from respondent Canberra or anyone else from their organisation. Respondent not interviewed.

Respondent Darwin works on energy for local government and was sent an opportunistic email by the researcher on 1 June 2018 and a response was received 4 June 2018 advising that there was no resource available to assist with the project due to staff numbers. Respondent not interviewed.

Respondent Geelong works for an energy company and was sent an opportunistic email by the researcher on 1 June 2018. To date no response has been received from respondent Geelong or anyone else from their organisation. Respondent not interviewed.

Respondent Hobart works for a parliamentary oversight body on energy and was recommended by respondent Alpha on 26 June 2018, but contact was dependent on respondent Alpha who to date has not provided the researcher with the means to contact them. Respondent not interviewed.

The table below (table 1) sets out all the code names of all respondents contacted for this project with the sector they work in and whether they have been interviewed. It also includes a brief justification of why they were selected for interview.

The respondents who were approached, but did not participate in the project were contacted by email, often without a prior connection. The reasons for their non-participation have been documented above and mostly relate to unanswered emails. It would not have been ethical to have pursued these potential respondents further. The use of snowball sampling has been beneficial in completing this project. The use of personal connections between respondents has been an important lesson for future interview based research.

Respondent code name	Organisation Type	Sector	Interviewed	Justification
Alpha	Central Government	Energy	Yes	Fuel Poverty Expert
Bravo	Local Government	Energy	Yes	Fuel Poverty Expert
Charlie	Third Sector	Energy	Yes	Frontline experience of fuel poverty
Delta	Academic	Transport	Yes	Transport Expert
Echo	Third Sector	Transport	Yes	Transport Expert
Foxtrot	Third Sector	Transport	Yes	Transport Expert
Fremantle	Third Sector	Energy	Yes	Fuel Poverty Expert
Golf	Central Government	Transport	Yes	Transport Expert
Hotel	Third Sector	Transport	Yes	Transport Expert

India	Regional Government	Transport	Yes	Transport Expert
Juliet	Third Sector	Energy	Yes	Fuel Poverty Expert
Kilo	Energy Supplier	Energy	Yes	Energy Expert
Lima	Regional Government	Energy	Yes	Fuel Poverty Expert
Mike	Regional Government	Transport	Yes	Transport Expert
November	Local Government	Energy	Yes	Energy Expert
Oscar	Local Government	Transport	Yes	Transport Expert
Papa	Government regulator	Energy	Yes	Policy Expert
Quebec	Third Sector	Energy	No	N/A
Romeo	Third Sector	Transport	No	N/A
Sierra	Third Sector	Energy	No	N/A
Tango	Third Sector	Energy	No	N/A
Uniform	Local Government	Energy	No	N/A
Victor	Third Sector	Energy	No	N/A
Whiskey	Trade Union	Energy	No	N/A
X-Ray	Regional Government	Transport	No	N/A
Yankee	Housing Trust	Energy	No	N/A
Zulu	Regional Government	Transport	No	N/A
Adelaide	Energy Industry	Energy	No	N/A
Brisbane	Third Sector	Energy	No	N/A
Canberra	Energy Industry	Energy	No	N/A
Darwin	Local Government	Energy	No	N/A
Geelong	Energy Industry	Energy	No	N/A
Hobart	Parliamentary Oversight Body	Energy	No	N/A

Total list of interview respondents

Table 1

3.3 INTERVIEWS

3.3.1 INTRODUCTION

This section sets out the steps taken to interview the respondents who had agreed to participate in the study. The first respondent (Alpha) was recruited in October 2017 and the last respondent (Fremantle) was recruited in November 2018 and interviewed in December 2018. Oral consent to the recording of the interviews was obtained from all participants. Sample interview scripts for fuel and transport poverty interviews can be found in the (Appendices).

3.3.2 SEMI-STRUCTURED INTERVIEWS

A semi-structured interview was selected as the most appropriate approach to obtain relevant information from respondents with an expertise in policy matters, given that the researcher has a degree of expertise in these areas (Fink, 1995a). This type of semi-structured interview is also known as an "expert interview", where the respondents being interviewed are primarily of interest as a subject matter expert for fuel poverty and/or transport poverty (Flick, 2014). However, many of those interviewed in this project would not be considered "experts" in the sense of their professional role, but rather through the knowledge that they have gained through their active participation, in the issues fuel poverty and transport poverty (Meuser and Nagel, 2009). Flick (2014), advises that the consistent use of an interview guide increases the comparability of data collected using the semi-structure interview technique.

In-depth semi-structured interviews were also utilised in projects with similar aims in relation to policy on fuel poverty by Butler, Parkhill and Luzecka (2018) and transport by Mullen and Marsden (2015). Semi-structured interviews allow the researcher to use their initiative to follow up on answers provided by the respondent with additional unanticipated questions (Sekaran and Bougie, 2013). They allow the researcher to 'probe' the answers given by the respondent to clarify and get more detailed responses (Gray, 2018). Also known as "responsive interviewing" this approach involves selecting knowledgeable respondents, listening to their responses and asking new questions based on these answers (Rubin and Rubin, 2011). This approach enabled the discover new information within a structure that allowed for the themes to be extracted and compared in a systematic way.

3.3.3 INTERVIEW QUESTIONS

The interview questions were prepared as a guide, but there was an acceptance that departures from this were to be both expected and encouraged (Silverman, 2013), by the researcher as the interviews took place. The questions were designed to be straightforward, short and not overly academic. It was important that the questions were understandable to the respondents. The inclusion of thematic and dynamic elements in the questions was another key feature (Kvale, 2007). Open questions were used for the interview. Respondents to are able to use their existing knowledge to answer open questions (Flick, 2014). Closed questions were deliberately avoided. There was a risk that the use of closed questions would limit the range of response options during the interview process (Foddy, 1994).

Lofland and Lofland (1984), define an interview as a directed conversation. One-to-one interviews using a conversational format were used to collect the data for this study. The advantages of one-to-one interviews include ease to arrange and they provide the researcher with a single source of data, with greater ease of control and transcription (Denscombe, 2014). This was particularly pertinent given the researcher's relative lack of experience with this data collection method going into the project. The interviews adapted the 'general interview guide approach' where the questions were outlined in advance, with the guide serving as a basic checklist to ensure that the key topics were covered (Patton, 2002).

Time constraints meant that there was insufficient time to pilot the study, which is generally viewed as a sensible approach (Silverman, 2013). Unfortunately, the impact of this was felt in a very practical sense, as the researcher failed to record the first interview due to a lack of experience with using digital data recorder provided by the University. This oversight had a beneficial outcome, as the respondent granted the opportunity for a second more in-depth interview, where much more information was revealed.

The researcher set out to demonstrate "empathetic neutrality" throughout the interview process in order to remain aware of and deal with any personal biases that may arise (Patton, 2002). The clarity of the questions, according to Foddy (1994), is key to reducing any potential bias. Interviewer bias (Gray, 2018) was minimised by the researcher carrying out all the interviews using a standardised script. Steps were taken to limit "observer bias" by seeking to present a balanced account of data collected from each respondent, through the use of recording and transcription rather than researcher notes alone (Olsen, 2011).

The general questions used for the semi-structured interviews on fuel poverty and transport poverty were agreed by the researcher and the first supervisor at a meeting on the 14 December 2017. The interviews of decision makers sought to cover the following areas of policy practice:

- A – perceptions of fuel/transport poverty.
- B – the evidence base used to tackle fuel/transport poverty.
- C – the definition used and their understanding of that definition (fuel/transport poverty).

The questions for the fuel poverty and transport poverty interviews are set out below.

General questions – fuel poverty

1. Could you please talk about a little bit about your work in relation to fuel poverty?
2. I would be really grateful if you could talk about your perceptions of fuel poverty as an issue and whether these perceptions have changed over time.
3. Could you please talk about the evidence base that is used to examine fuel poverty?
4. Could you please talk about the definitions for fuel poverty, which have changed a few years ago.
5. Have you explored the links between fuel poverty and transport affordability from a policy perspective? Are there any plans to do so (if not)?

General questions – transport poverty

1. Could you please talk about a little bit about your work in relation to transport poverty?
2. I would be really grateful if you could talk about your perceptions of transport poverty as an issue and whether these perceptions have changed over time.
3. Could you please talk about the evidence base that is used to examine transport poverty?
4. Could you please talk about the definitions for transport poverty.

5. Have you explored the links between fuel poverty and transport affordability from a policy perspective? Are there any plans to do so (if not)?

3.3.3.1 SURVEY DESIGN

This section covers the design of the questionnaires and explains how the questions were developed.

The topics chosen as the focus of the general interview questions emerged from the literature on fuel poverty and transport poverty. The first question was designed to be an easy scene setting question (Denscombe, 2014), which allowed the respondent to talk about themselves and their work in a general sense. The second question addressed perceptions the issue as a way of encouraging the respondent to talk about their opinions (Patton, 1990). The downside of this was where the respondent was new to the issue or the role and felt that they could not talk about the issue with any authority. Some of the respondents sought to avoid been seen as an expert and directed the researcher to more “knowledgeable” colleagues, who were not part of the project. The third question addressed experience (Patton, 1990) of the evidence base for the issue in a specific sense, as a way of increasing the focus on the topic.

The fourth question asked for opinions (Patton, 1990) on the definitions as these are critical to how the issues are addressed in the literature, fuel poverty definitions have changed in recent years (Department for Energy and Climate Change, 2013b) and transport poverty is not officially defined (Lucas, Mattioli, et al., 2016). This was a knowledge based question (Patton, 1990) designed to get to the heart of the issue and reveal the views of the respondent, or encourage them to expand on earlier answers as there is a degree of crossover between the questions. The fifth and final general question was designed to look into the links between the fuel and transport poverty (Mattioli, Lucas and Marsden, 2017), to reveal the presence of any links between them from a policy perspective, which could then be explored in more depth.

3.3.4 RECORDING AND TRANSCRIPTION

The use of a digital recorder is regarded as a vital in conducting interviews as it allows the researcher to concentrate on following the interview (Gray, 2018). A Tascam DR-05 Linear PCM Digital Recorder with two microphones (left and right) was used to record all the interviews, with the explicit permission of the respondents. The digital recorder was supplied by the Business School at the University of Greenwich. This device made it possible to record telephone and face-to-face interviews and transfer the data directly to the researcher's University of Greenwich One Drive folder, in line with the terms of the ethics approval for the project. Notes were taken during the interviews as backup in case the digital recorder failed. The notes also serve as a way of noting ideas that came to mind during the interview (Patton, 1990), these ideas guided the follow-up questions and further research of the topic.

Quotations are the raw data gained from interviews, which make full transcripts the most desirable data to obtain data for analysis (Patton, 1990). The transcription can also powerfully affect the way that the interview respondents are understood (Oliver, Serovich and Mason, 2005). This made it important that the researcher took responsibility for manually transcribing the interviews from the MP3 audio files, which were securely saved their University of Greenwich Microsoft One Drive folder. The transcripts were also saved in the Microsoft One Drive folder, to preserve the confidentiality of the personal data.

3.4 DATA ANALYSIS

3.4.1 THEMATIC ANALYSIS

The questions within the semi-structured interviews contained *thematic* and *dynamic* elements, which according to Kvale (2007), are important components of a good interview question. Kvale (2007), defines *thematic* elements as knowledge producing and *dynamic* elements as contributing to the interpersonal relationship between interviewer and respondent. For example, in the opening question – 'could you please talk about a little bit about your work in relation to fuel/transport poverty?' – the invitation to talk about their work is a *dynamic* element and the focus on fuel/transport poverty is a *thematic* element.

The material collected through qualitative research tends to be unstructured and typically consists of verbatim interview transcripts (Ritchie and Spencer, 2002). This meant that a *thematic analysis* methodology could be considered, when analysing the transcripts of the interviews (Boyatzis, 1998).

Traditionally thematic coding forms part of established qualitative research approach such as *Grounded Theory* (Glaser and Strauss, 1967), *Discourse Analysis* (Foucault, 1980) and *Narrative Analysis* (Riessman, 1993). Attride-Stirling (2001), identified a lack of available tools to facilitate a methodological approach to qualitative research, which they argued was necessary to yield meaningful and useful results. It has been argued by Braun and Clarke (2006), that *thematic analysis* is a standalone methodology free from the theoretical constraints of other approaches. This inherent flexibility made it a desirable for this project. The advantages of *thematic analysis* include the ability to detect patterns in within transcripts, which may not be immediately evident and can then be classified or encoded (Boyatzis, 1998).

Thematic analytic techniques were employed by Butler, Parkhill and Luzecka (2018), where they carried out 'in-depth semi-structured interviews' with individuals working on energy and welfare policy in the UK. Their project interviewed officials working on fuel poverty, which meant that it shared some obvious synergies this study.

O'Sullivan et al. (2017) used thematic coding in their mixed methods study looking at the physiological and psychosocial health risks associated with fuel poverty amongst adolescents in New Zealand. Further examples that used *thematic analysis* was a study looking at academic business valuation in Canada, where fifteen semi-structured interviews were analysed using NVivo software (Booker, Bontis and Serenko, 2012). Cicon et al. (2012), used *thematic analysis* to analyse corporate governance codes across the European Union, where they found a thematic convergence towards an Anglo-Saxon model of corporate governance.

Braun and Clarke (2006), point out that the lack of a requirement for detailed theoretical and technical knowledge make *thematic analysis* more accessible for early career researchers. The relative simplicity of *thematic analysis* made it an attractive option for this study. The Braun and Clarke (2006) '*six phases of thematic analysis'* methodology were followed in this phase of the project, which is a recursive rather than a linear process. Maguire and Delahunt (2017), have described this methodology as arguably the most influential approach used in social sciences, because it offers such a clear framework for doing the analysis.

The Braun and Clarke (2006), *six phases of thematic analysis* can be summarised in the following way.

1. *Familiarisation with the data*: this initial step which is part of all forms of qualitative analysis relates to immersion in the data through reading and listening to audio recording of the data.
2. *Coding*: this is a common feature of many qualitative analysis approaches and involves linking the labels (codes) generated to the research questions that guide the analysis.
3. *Searching for themes*: themes are relevant patterns in the data relating to the research question and this step involves coding the codes to identify similarities in the data.
4. *Reviewing themes*: this is a checking to phase to ensure that the themes identified 'work' in terms of telling a story about the data that is both convincing and compelling.
5. *Defining and naming themes*: a detailed written analysis of each theme is a requirement of this theme, where the story of the theme is told arriving at a 'concise, punchy and informative name' for each theme.
6. *Writing up*: this is an *integral* part of the thematic analysis process, where the analytic narrative is woven in with data extracts to tell a persuasive story about the data, in the context of the current literature.

The high degree of individual judgement required to identify codes and themes using the *six phases of thematic analysis* methodology, could present challenges in getting past any pre-conceived ideas held by someone using the methodology (Herzog, Handke and Hitters, 2019). To avoid the influence of pre-conceived ideas, the decision-making process was grounded in the research objectives.

3.4.2 CODING SOFTWARE

There were two main options for coding the data obtained from the transcripts, manually by writing notes on text and highlighting potential patterns (Braun and Clarke, 2006). The extremely large volume of data generated from the 17 interviews was a deciding factor. The use of computer enables the data to be managed more easily, speeding up data retrieval and give more flexibility around coding the data (Lee and Fielding, 1991).

The efficiencies gained from using computer software release time to examine the meanings within the transcripts (Bazeley and Jackson, 2013). However, a computer programme cannot link the theory with the data and define the analytical structure (Pope, Ziebland and Mays, 2006). The decision to use computer software was primarily in the interests of expediency and was taken with an awareness of the limitations.

Text databases supported by computers originated in various research groups in the 1980s, by the 1990s very comprehensive user friendly software packages including ATLAS.ti, MAXqda and NVivo became available with few differences in the coding and retrieval functionality (Kelle, 2004). The decision was made to use NVivo 12 software (QSR International Pty Ltd, 2019) licenced through the University of Greenwich. Some advantages offered by the NVivo software include the ability to manage the data effectively, run queries on keywords, and produce visual representations (Bazeley and Jackson, 2013).

The NVivo training course, organised by the University of Greenwich in November 2018, was a good opportunity to gain an overview of the software and see how it could be used to code the data. The course facilitator provided students on the course with a user handbook for NVivo (Wiredu, 2017). The handbook also contained detailed instructions on how to code the data contained in the transcripts, which was a useful way to reinforce the learning gained from the course.

Two separate projects were created in NVivo for fuel and transport poverty. This was done to avoid unintentionally mixing up the data during the coding process. The results were cross-compared and analysed by the researcher for overlapping themes, commonalities, differences and analytical conclusions.

3.4.3 TRANSCRIPTION

Phase one of the *six phases of thematic analysis* is focused on familiarisation with the data (Braun and Clarke, 2006). The process of manually transcribing each interview took around five to six hours on average. However, some respondents did not speak very clearly, which made accurate transcription more challenging. The transcription process was a key factor in the familiarisation required by phase one, as it informed the early stages of analysis (Braun and Clarke, 2006). This approach is recommended by Patton (2002), who regards full transcription of the interview as the ideal objective.

The transcription of the interviews started in April 2018 and was completed in March 2019, with the transcription of the interviews from July and December 2018. Poland (2002) describes a number of problems with the *verbatim* transcription of interviews namely the capture of interpersonal interaction, non-verbal communication and emotional context – voice intonation, sighs, pauses and laughter – noting that these emotional factors are not easily incorporated into the transcript. These factors were not incorporated into the *verbatim* transcripts, as the focus in terms of analysis was on the content of the responses.

Factors that enhance the quality of the transcription are the knowledge and familiarity with the topic and the use of high quality recording equipment (Poland, 2002). The decision not to outsource the transcription was related to knowledge and familiarity with the topic as well as a need to avoid additional costs. There was a chance that an external transcriber who was less familiar with the topic, may have missed some nuances from the interviews. The use of good quality digital recording device was also an important factor, as it produced a recording of high quality, aiding the transcription process.

The literature on transcription highlights important differences in how transcription should represent language and how researchers should approach the transcription of language (Davidson, 2009). Bucholtz (2000), describes *naturalised* transcription as a process where *literization* is used to make the transcription conform to written discourse conventions like fictional dialogue and newspaper articles, and *denaturalized* transcription which conforms to oral discourse conventions and may appear hard to read. The process of *literization* requires the incorporation of commas, full stops and paragraphs which are not part of spoken language (Davidson, 2009).

Oliver, Serovich and Mason (2005), describe the practice of transcription as taking place across a ‘continuum’ with *naturalised* transcription at one end, in which every detail of speech is captured including pauses and incomprehensible speech and *denaturalized* transcription at the other end where idiosyncratic components such as stutters, pauses and non-verbal elements are removed. The complexities of transcription mean that even transcripts produced with great care and attention to detail are open to conflicting interpretations (Bucholtz, 2000). This study used a more *naturalised* transcription, so that the transcripts would be easier to read, as the clarity of responses was the focus of this analysis.

Reporting of transcription is often neglected in reports of qualitative research studies that appear in final reports and subsequent journal articles (Davidson, 2009). The transcription style used in this study has adhered to naturalised approach as defined by (Bucholtz, 2000), without the level of detail required to meet the naturalised end of the ‘continuum’ according to (Oliver, Serovich and Mason, 2005). The transcripts conformed to written discourse conventions, as features of spoken language like “ums” and “ers” were omitted, in order to make the transcripts easier to read and code (Davidson, 2009).

3.4.4 CODING – FIRST STEPS

The second phase of the *six phases of thematic analysis* involved the generation of initial codes from the data contained in the transcripts (Braun and Clarke, 2006). The process of coding essentially reduces a large section of data, into smaller chunks, which have distinct meanings (Maguire and Delahunt, 2017). Emerging themes (nodes) were created in NVivo in this phase, using descriptive coding. The coding was undertaken manually as there were not a significant number of regularly occurring features in the data, which would have made auto coding a more practical option (Bazeley and Jackson, 2013). The decision to code manually also followed the advice of the first supervisor, who had recommended coding manually in preference to the auto coding option within NVivo.

The impact of this choice was an increase in the time it took to code, but it meant that some nuances within the transcripts were picked up, which could have been missed through auto coding.

3.4.5 SEARCHING FOR THEMES

The third phase of the *six phases of thematic analysis* involves searching for themes within the list of codes that emerged from the initial coding process (Braun and Clarke, 2006). This phase took place in April 2019 after all the coding was completed and was grounded in the research outcomes (1.3).

3.4.6 REVIEWING THEMES

The fourth phase of the *six phases of thematic analysis* involved reviewing the candidate themes and refining them to produce a distinct set of themes (Braun and Clarke, 2006). The review phase was carried out separately for each NVivo project.

3.4.6.1 REVIEWING FUEL POVERTY THEMES

The review of the themes in the NVivo fuel poverty project revealed the following themes.

1. Administration – this is a very significant theme that cropped up in all the interviews. It draws together a number of levels within government administration in the UK ranging from local authorities and London to the devolved administrations of Scotland and Wales[3]. This theme links most closely to the second objective as it addresses the delivery of localised policy, for example, the

[3] The devolved administrations of Scotland, Wales and Northern Ireland are responsible for many domestic policy issues, and local government which in many parts of England consists of 2 tiers: county councils and district borough or city councils that make decisions on local services (UK Government, 2019).

Fuel Poverty Action Plan has an ambitious agenda and seeks to tackle fuel poverty in the Greater London area (Greater London Authority, 2018a).

2. Advice – this is another significant theme that was raised in many of the interviews. It links a range of organisations and approaches that offer advice and support to those suffering from fuel poverty. It links more closely to the second objective as it refers to a number of approaches designed to actively advise and support those living in fuel poverty, such as the Citizens Advice Cold Homes Toolkit (Citizens Advice, 2018a) and SHINE, which is a referral scheme for Londoners (Islington Council, 2017).

3. Approaches – this is theme covers a range of ways that fuel poverty is actually being tackled on the ground, one of the main sub themes is 'tackle fuel poverty' which was a term that was used frequently by the respondents. It aligns more closely to the second theme as it is directly addressing approaches to eradicate fuel poverty (Department for Energy and Climate Change, 2015c).

4. Austerity – the impacts of austerity were raised, which refer to the severe cuts to provision of the welfare state that were put in place by the UK Coalition government from 2010 (Pantazis, 2016).

5. Consumer Costs – this theme links a number of codes relating to the impacts of energy costs on consumers. It links to both objectives as the cost of energy is both part of the causal mechanism as well as being an element of the current UK government fuel poverty definition (Department for Energy and Climate Change, 2013b).

6. Definition – this theme was directly addressed in question four of the interview and covered a wide range of views on how fuel poverty has been defined by the government, it includes a sub theme on indicators. It linked more closely into the second research outcome around policy recommendations.

7. ECO – this theme emerged in a number of transcripts as the Energy Companies Obligation is a flagship component of fuel poverty policy (Department for Energy and Climate Change, 2013c). It also links very closely to the second research outcome around policy recommendations.

8. Energy Companies – this theme is also key and tied into the ECO theme with many distinct distinguishing features. It links into the first research outcome, as the actions of energy companies around energy and switching are a causal factor in fuel poverty (Middlemiss, 2016).

9. Evidence – this theme links directly to third question in the interview which asked about the evidence base and covers a range of responses on this topic. The evidence theme links into all three research outcomes. It is a key facet to understanding household behaviours in relation to energy costs (Mattioli, Lucas and Marsden, 2017) and the policies that make up the current fuel poverty strategy in England (Department for Energy and Climate Change, 2015c).

10. Food Bank – this code stemmed from an interesting initiative called “Fuel Banks” raised by two different respondents where energy providers were linking up with food banks in an innovative way to provide fuel vouchers to those in food poverty (The Trussell Trust, 2019).

11. Fuels – this theme covers the many ways that homes can be heated. It ties in most the first research outcome. The way that household receives its energy is one of the main factors that determines whether it falls into fuel poverty, for example, off gas homes are 1.5 times more likely to be fuel poor than the average household in England (Department for Business, Energy & Industrial Strategy, 2018a).

12. Funds – this was a significant theme which was raised by a lot of respondents and covers a range of ways that funding to tackle fuel poverty has been made available.

It forms a key part of the policy approach for eliminating fuel poverty (Department for Energy and Climate Change, 2015c).

13. Government – this theme brings together a range of approaches that the government has put in place to look at fuel poverty. It strongly links into the second research outcome and includes the work of the Committee on Fuel Poverty an advisory body set up by the government to monitor the progress of the fuel poverty strategy launched in 2015 (Committee on Fuel Poverty, 2018).

14. Health – this was another significant theme that emerged in a number of interviews. It links into the second research outcome, as the impacts of cold homes on health have been well documented (Marmot Review Team, 2011).

15. Homes – this theme was a way of grouping together a number of key recurrent sub themes, foremost of these was energy efficiency. This theme cuts across all three research outcomes, as energy efficiency is one of the three main causal factors of fuel poverty (Boardman, 2010) and major approach for addressing fuel poverty from a policy perspective (Department for Energy and Climate Change, 2015c).

16. Households – this was the most significant theme to emerge through the interview process and encompassed numerous sub themes. It really goes to the heart of the lived experience of fuel poverty. Households are a key part of all three research outcomes, as fuel poverty is experienced at household level (Boardman, 1991). Fuel poverty is also monitored at this level, as 11.1% of households were in fuel poverty in 2016 (Department for Business, Energy & Industrial Strategy, 2018a).

17. Local schemes – this theme picks up ten sub themes and covered a range of approaches used to address fuel poverty at a local level in England. It links most closely to the second research outcome as these initiatives form part of local policy

initiates to address fuel poverty. Local Energy Advice Partnership (LEAP) scheme is a good example of this type of scheme (AgilityEco, 2019).

18. National schemes – this theme includes several sub themes that encompassed a number of former and current national schemes to address fuel poverty in England. This theme link into the second research outcome as it form part of national policy to eliminate fuel poverty. The Warm Front Scheme was set up to tackle fuel poverty under the Labour administration in the year 2000 (House of Commons Committee of Public Accounts, 2009).

19. Ofgem – this theme draws together a range of sub themes that relate to the work of this organisation, which links to their role as the regulator of the energy market in the UK (Ofgem, 2013). This theme again links more closely to the second research outcome. Ofgem have been working closely with the government to support fuel poor and vulnerable customers (Department for Energy and Climate Change, 2015c).

20. Organisations – this theme groups together four charitable organisations that work to tackle fuel poverty within England, some operate at a national level and others at a local level. This theme links into the second research objective. Citizens Advice, for example, have produced the Cold Homes Toolkit to help local authorities tackle fuel poverty (Citizens Advice, 2018a).

21. Payment – this theme link several issues relating to the payment for energy at household level and brings together issues that affect many fuel poor households, such as pre-payment meters. This theme links into the all three research outcomes as self-disconnection of pre-payment meters is an issue affecting households, a focus for government policy and issue in terms of identifying those most affected (Vyas, 2014).

22. Perceptions – this theme stems from the second interview question, which asked about perceptions of fuel poverty and whether these had changed over time – it also includes a sub theme called stigma. This theme relates more closely to the second research outcome, as it picked up views on recent policy objectives such as the Hills Review and the Green Deal (Department for Energy and Climate Change, 2015c).

23. Strategies – this theme covers a range of policy approaches to address fuel poverty, including strategies and targets. The theme comes under the second research outcome, as it includes reference to the target to bring as many fuel poor homes to the Band C energy efficiency standard as practicable (Department for Energy and Climate Change, 2015c).

24. Transport poverty – this comes from the fifth question where respondents were asked if they had explored the links between fuel poverty and transport poverty. This links into the third research outcome as it relates to methodology. Mattioli, Lucas and Marsden (2017), have explored the similarities and differences between fuel and transport poverty in the UK.

25. Welfare reform – this theme incorporates the sub theme of means-tested benefits which was raised in the context of proxy measures used to target schemes such as Affordable Warmth, which are targeted at low-income areas and households (Department for Energy and Climate Change, 2015c). This theme links into the second research outcome as it relates to government policy on fuel poverty.

3.4.6.2 REVIEWING TRANSPORT POVERTY THEMES

The review of the themes in the NVivo transport poverty project revealed the following themes.

1. Accessibility – This theme is essentially about access to transportation including cars and public transport. It links into first and second research outcomes, as it

relates to a poverty of access to goods, services and daily activities (Lucas, Mattioli, et al., 2016).

2. Active Travel – This theme refers to the use of walking, cycling which are collectively known as active travel (Banister, 2008). It relates most strongly to research outcome two as it is an active area of policy for all levels of government.

3. Administrations – This theme refers to administrative levels of government that enact transport policy across the UK. It also relates most closely to the second research outcome.

4. Affordability – This theme is another core area of transport poverty. It represents the inability to pay for transport (Lucas, Mattioli, et al., 2016). It covers all three research outcomes as it is a fundamental aspect.

5. Availability – This theme is also a key factor in transport poverty. It generally refers to gaps in the provision of public transport (Lucas, Mattioli, et al., 2016). It covers all three research outcomes as it is also a fundamental aspect.

6. Buses – This theme looks at a key part of the public transport system. The use of buses represent that largest share of public transport mode (2016/17) across Great Britain (Department for Transport, 2018b). It is most connected to research outcome two as the provision of buses is a matter of government policy.

7. Cars – This theme looks at the most popular mode of transport in the UK. Cars were used to cover 78% of the total distance travelled in 2017 (Department for Transport, 2018b). It is most linked to the second research outcome as use of cars is also a matter influenced by government policy.

8. Definitions – This theme looks at the difficult question of how to define transport poverty. It is an area where agreement on the definition has not yet been achieved

(Lucas, Mattioli, et al., 2016). This is a fundamental topic that relates to all three research outcomes.

9. Demand responsive services – This is a transport mode with enormous potential for growth. Demand responsive transport refers to low capacity vehicles that are more responsive to passenger demand than buses (Davison et al., 2014). This is also linked to the second research outcome as the spread of these services is linked to transport policy.

10. Equity – This theme represents the fundamental issue for transport poverty. Transport equity is associated with accessibility levels (Pereira, Schwanen and Banister, 2017). Like the accessibility theme is also links to the first and second research outcomes.

11. Evidence base – This theme refers to the evidence base for transport poverty as a concept. It has a specific question in the interview process and relates to all three research outcomes. Mattioli, Lucas and Marsden (2017), have explored the evidence for transport poverty and found that it impacts on household expenditure.

12. Fuel poverty – This theme exists as a counterpoint to the transport poverty theme in the other project, primarily as a way of assessing the links between the two phenomena. There are lessons that can be taken from a joined up approach to fuel and transport poverty (Mattioli, Lucas and Marsden, 2017).

13. Funding – This theme looks at how transport is funded, primarily in England. The funding model in England is moving towards a model where is it delivered a regional level often through devolved administrations (Shaw and Docherty, 2019). It links most strongly to the second research outcome on Government policy.

14. Health – This theme explores the health aspects of transportation in England. Health is central to many aspects of transportation, as there are a range of health

impacts associated with inactivity (Fairnie, Wilby and Saunders, 2016). It relates most strongly to research outcome two, as health is a matter of Government policy.

15. Household – This theme relates to the impact of transport poverty on households. Research on whether households can afford on maintain a car is a common example in the field of transport poverty (Mattioli, Lucas and Marsden, 2017). It is a fundamental topic that relates to all three research outcomes.

16. Infrastructure – This theme looks at a fundamental factor influencing transport poverty. Investment in transport infrastructure is connected to effective policy making (Banister and Berechman, 2001). This theme is most strongly linked to research outcome two as it relates to Government policy.

17. Mobility – This theme is one the main factors of transport poverty. It is a key concept in the world of transport, as it relates to travel and transport mode used (Banister, 2018). It cuts across all three research outcomes.

18. Perceptions – This theme stems from the second question. Perceptions of transport poverty are key to a greater understanding of its impact. It also relates to all three research outcomes.

19. Public Transport – This theme arose from general comments about public transport and how it relates to transport poverty. Public transport is commonly aligned with walking and cycling (Mattioli, Lucas and Marsden, 2017). This matches most closely to research outcome two as it is a matter of Government policy.

20. Transport Strategies – This theme arose from comments about various transport strategies. This theme ties into the potential impact of the transport appraisal process on transport poverty (Welsh Government, 2017; Department for

Transport, 2017a). As this is a matter for policy, it aligns most strongly to research outcome two, but is linked to research outcome three at a methodological level.

3.4.7 DEFINING AND NAMING THEMES

The fifth phase of the *six phases of thematic analysis* requires a detailed analysis of each theme resulting in a 'story' about what the theme says about the data (Braun and Clarke, 2006). In Clarke and Braun (2013), they describe this phase as a giving each theme a new name that is 'concise, punchy and informative'.

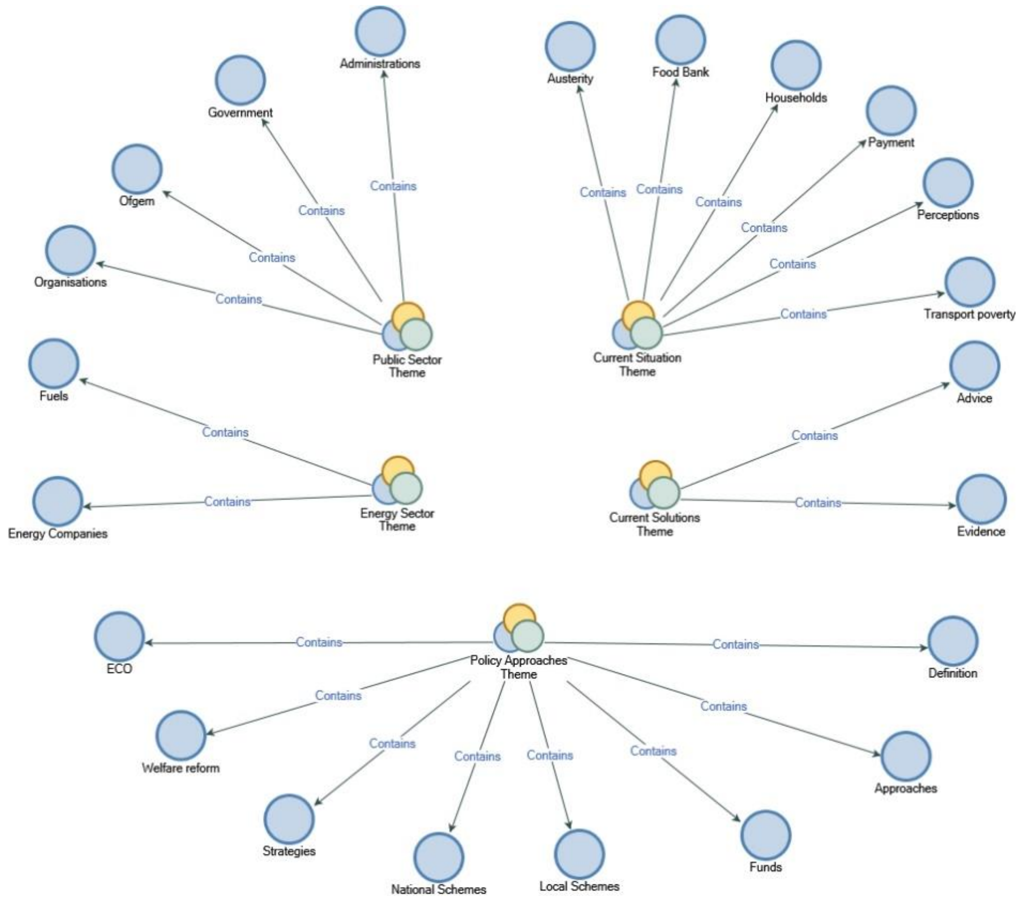
A decision was taken to group the themes into a smaller group of key themes to enhance the narrative by making it clearer for the reader. The inspiration for this step came from a study on men's clothing by Frith and Gleeson (2004), which utilised a thematic analysis approach to great effect in the clear and concise way that it was written up. The challenge in this study was drawing out these themes in a coherent way for each of the projects.

3.4.8 DEFINING AND NAMING FUEL POVERTY THEMES

The first step was grouping the key themes for the fuel poverty project into in a table (Table 2). This step made the data much more manageable. Informative names for the key themes that conveyed the topic were selected.

Public Sector	**Energy Sector**	**Policy Approaches**	**Current Solutions**	**Current Situation**
Administrations	Energy Companies	Approaches	Advice	Austerity
Government	Fuels	Definition	Evidence	Food Bank
Health		ECO		Homes
Ofgem		Funds		Households
Organisations		Local Schemes		Payment
		National Schemes		Perceptions
		Strategies		Transport poverty
		Welfare reform		

Table containing grouped fuel poverty key themes
Table 2



Grouped fuel poverty themes NVivo Project map

Figure 1

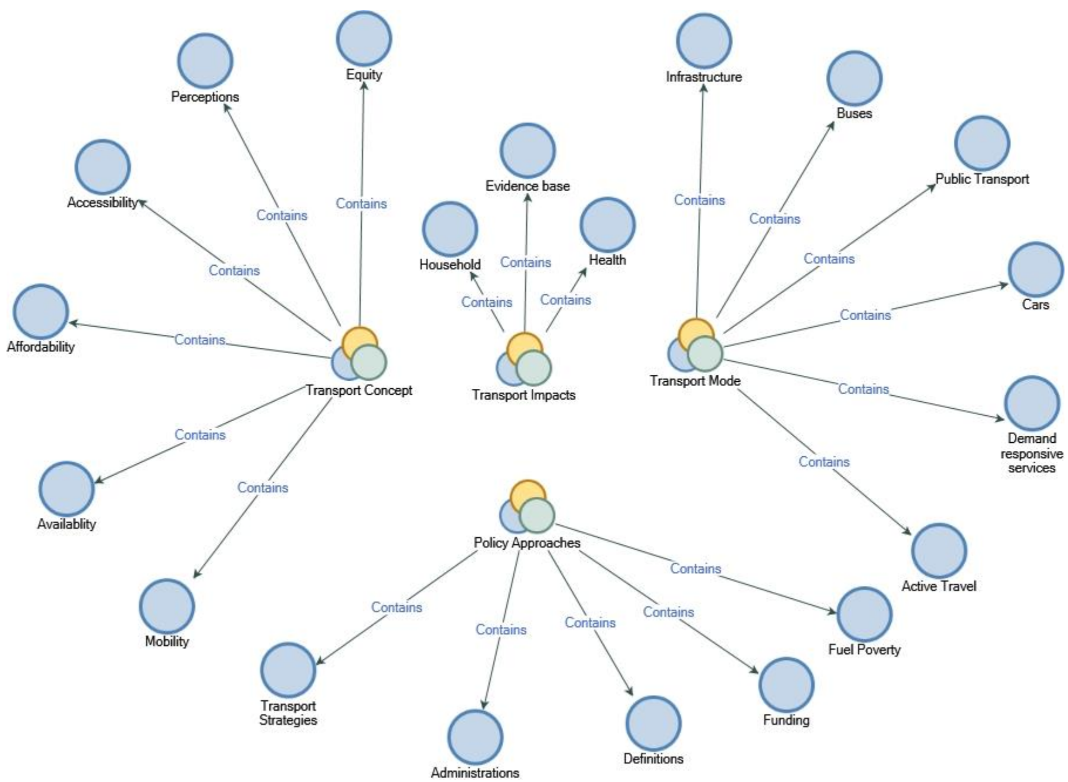
The key fuel poverty themes can be viewed in an NVivo project map (Figure 1). They have been arranged in a way that shows a degree of hierarchy with the theme in the centre with the sub themes located around it in a way that shows the connections. This diagram is useful as it adds a visual aspect to the process and conveys how the five fuel poverty sub themes relate to each other in the wider context of the project.

3.4.9 DEFINING AND NAMING TRANSPORT POVERTY THEMES

The key themes that emerged from this process for the transport poverty project were grouped into a table (Table 3). It made the complex data that emerged more manageable, and as with the fuel poverty project, names were chosen that conveyed the topics in an informative way.

Transport Concept	Transport Impacts	Transport Mode	Policy Approaches
Accessibility	Evidence base	Active Travel	Administrations
Affordability	Health	Buses	Definitions
Availability	Household	Cars	Fuel Poverty
Equity		Demand responsive services	Funding
Mobility		Public Transport	Transport Strategies
Perceptions		Infrastructure	

Table containing grouped transport poverty key themes
Table 3



Grouped transport poverty themes NVivo Project map

Figure 2

The key transport poverty themes can be viewed in an NVivo project map (Figure 2). They have been arranged in a way that shows a degree of hierarchy with the themes in the centre with the sub themes located around it in a way that shows the connections. This process highlights the links between the four transport poverty themes and the subthemes that they contain.

3.4.10 WRITING UP

The data from the fuel poverty and transport poverty projects was written up in the analysis section. The aim of the write up was to convey a ‘coherent and persuasive’ narrative about the two sets of data (Clarke and Braun, 2013). The output of this theme and the *six phases of thematic analysis* (Braun and Clarke, 2006) can be seen in the analysis section that follows. It made sense to deal with the two projects separately in this phase, which is why the analysis chapter is divided into fuel and transport poverty sections. The synergies between the two NVivo projects will be more fully explored in future work.

4. INTERVIEW ANALYSIS

4.1 INTRODUCTION

The qualitative data obtained through the expert interviews carried out in 2018 on the topics of fuel poverty and transport poverty has been analysed in this section. The topics will be addressed separately and the links between them will be explored in detail. The concept of transport poverty, in the British context, has been derived from an analogy of fuel poverty (Mattioli, Lucas and Marsden, 2017).

This is important as policy solutions to tackle transport poverty in the UK significantly lag behind those in place to tackle fuel poverty. This is thought to be a result of a relative lack of interest in transport poverty from an academic and policy perspective (Mattioli, Lucas and Marsden, 2017). Jeekel (2018), points out that neoliberal policy practice in the UK is to blame for the enormous gap between academia and public policy on transport poverty.

4.2 FUEL POVERTY ANALYSIS

The *Six Phase Thematic Analysis Methodology* (Braun and Clarke, 2006), produced five key themes on the fuel poverty topic, each of these themes contains a number of subthemes, which are listed below.

- Current Situation
  - Austerity
  - Food Bank
  - Homes
  - Households
  - Payment
  - Perceptions
  - Transport poverty
- Current Solutions
  - Advice
  - Evidence
- Policy Approaches
  - Approaches
  - Definition
  - ECO
  - Funds
  - Local Schemes
  - National Schemes
  - Strategies
  - Welfare reform
- Public Sector
  - Administrations
  - Government
  - Health
  - Ofgem
  - Organisations

- Energy Sector
    - Energy Companies
    - Fuels

The themes are addressed chronologically throughout this analysis. The analysis starts with the Current Situation theme, as it sets the scene for the fuel poverty topic. The number of files and references (from NVivo) have been included in brackets to give an idea of the prevalence within the data.

4.2.1 CURRENT SITUATION

The impacts of fuel poverty centre around homes (10 files, 67 references), households (11 files, 166 references) and the payment (4 files, 34 references) of energy bills. Homes are the place where the households most affected fuel poverty live and invariably struggle to pay their energy bills. The lived experience of fuel poverty was summarised by a local government respondent in following the quote.

> *"I suppose fuel poverty depends on three different things. The amount of energy that's needed to heat a home, energy efficiency and the other two really are income related. The income of the household and the cost of energy are the big things."* (Local government (***Bravo***) 2018)

This quote from ***Bravo*** is interesting, as it describes fuel poverty in colloquial language. This theme examines the impact of fuel poverty on individuals and households by drawing together a range of sub themes that define the current situation across England and Wales.

4.2.1.1 AUSTERITY

Austerity (1 file, 2 references) was referred to by the respondent ***Fremantle***, as an influencing factor on the current policy situation with fuel poverty.

> *"It definitely feels like fuel poverty policy has taken a big hit through the austerity programme."* (Third sector (***Fremantle***) 2018)

This is a key point, as it demonstrates a perceived link between austerity and fuel poverty policy in England. It aligns with a point made by Middlemiss and Gillard (2017), who have highlighted that the austerity in the UK has led to a failure to invest in meaningful energy efficiency measures.

> *"I think the NICE guideline is really important, because when we had the austerity programme, ostensibly health was being protected."* (Third sector (***Fremantle***) 2018)

In highlighting the protections given to health spending under austerity, ***Fremantle*** made it clear that the health impacts of fuel poverty retained importance to policy makers in England. The impacts of the NICE guidance on fuel poverty are explored further in section (4.2.4.3).

4.2.1.2 FOOD BANK

Food bank (3 files, 4 references) covers a range of comments about the relationship between food and fuel poverty. Starting with the "heat or eat" phenomenon, which was raised by the respondent ***Fremantle***.

> *"I've been aware there have been a lot more examinations around food and fuel, and there's this cliché when people talk about heat or eat. In fact, people tend to ration both. I think there's evidence that in some situations they ration one more than the other."* (Third sector (***Fremantle***) 2018)

The expression "heat or eat" highlights a key paradox for policy makers and it has been included under the food bank sub theme, as an example of the link between food and fuel poverty. There have been a number of studies internationally on this topic. Perhaps the most well-known is by Bhattacharya et al. (2003), they found that poor families in America tended to increase expenditure on fuel for home heating, instead of spending on food, resulting in decreased calorie intake over the winter months.

The energy-related challenges experienced by food bank users were raised by respondent ***Kilo***.

> *“If you're receiving food from a food bank, you're unlikely to be able to heat it up. We can have a universal fuel voucher, we're looking at partnering with one of the food banks in Bristol to do that, hopefully by winter.”* (Energy supplier (**Kilo**) 2018)

This highlights a key dilemma faced by those households living in fuel poverty and represents an example of “heat or eat” here in the UK. Vyas (2014), points out that the inability to heat or cook food is a significant problem for food bank users. The solution proposed in Bristol is an innovative one, with real potential to assist families struggling with their heating bills.

Respondent ***Kilo*** expanded on the importance of differentiating between food and fuel poverty.

> *“You may be suffering from food poverty for instance and it's really important to differentiate, so that you can be provided the right type of support.”* (Energy supplier (**Kilo**) 2018)

The correct provision of appropriate support to households in need is another important aspect for policy makers. Strong (2018), points out that instead of addressing the structural causes of poverty and hunger, austerity has reconfigured the involvement of the state, leading to care and intervention functions being sourced within the communities most affected. Essentially, the point being made here is that the state has taken a step back through austerity leaving a gap in service provision that local providers have felt an obligation to fill.

Respondent ***Papa*** spoke about the work being done to publicise good practice from energy suppliers, which included work with food banks.

> *“So one of the things that we started doing in the last few years has been identifying and publishing the suppliers that haven’t been performing as we expect them to, which you may have seen from this year’s vulnerability report and also we publish good practice examples where we are seeing that some suppliers really do go and do some really good*

things like pairing up with food banks and creative fuel banks." (Energy Regulator (***Papa***) 2018)

The acknowledgment of the connections between food and fuel poverty through the use the use of food banks is an important step by the energy industry and the regulator. The Trussell Trust (2019), has worked in partnership with the energy provider npower to provide fuel vouchers through the fuel banks scheme, which has expanded to 31 food banks helping over 100,000 people in food poverty.

4.2.1.3 HOMES

Homes (10 files, 67 references) covers a range of categories including central heating, energy efficiency, energy performance and housing.

Central heating is a key measure that is currently used to address heating within the home. Respondent ***Alpha*** recalled an example where central heating was successfully installed in the home of an elderly lady.

> *"I remember there an elderly woman who didn't have a central heating system. Her house was a bit of a mess and she'd gone into care. The local authority were of paying for her ongoing care, because she wasn't allowed to go home due to the condition of her cold damp home. The central heating fund and local authority were able to go in and install a central heating system connected to the mains gas grid, working with the Energy Company Obligation on the installation and she was able to move back home, get her independence and have much lower ongoing costs for heating her home."* (Central Government (***Alpha***) 2018)

This is a fantastic outcome for the individual concerned. It highlights the positive benefits that can be gained from installing central heating in homes where it was not present. It also demonstrates the mechanisms whereby fuel poor homes can be positively impacted by policy approaches such as the Energy Companies Obligation. The Energy Companies Obligation is explored further in section (4.2.3.4).

Cold homes tend to be a direct result of fuel poverty. The health hazards associated with cold homes were described by respondent ***Bravo***.

> *"Environmental health is looking at two hazards under the Housing Health and Safety Rating System, and that's damp and mould and excess cold. They're the two related to cold homes and homes with them are classed as category 1 hazards."* (Local government (***Bravo***) 2018)

The housing health and safety rating system is an important tool for local authorities to tackle fuel poverty – particularly in the private rented sector. Cold homes have long been regarded as a health hazard. The Marmot Review Team (2011), found that elderly people living in cold homes were at a higher risk of mortality.

Respondent ***Bravo*** also spoke about the link between cold homes and health.

> *"We tend to look at strengthening that link between health and cold homes, because we think that cold homes discriminate against ill people."* (Local government (***Bravo***) 2018)

The link between cold homes and health is key to tackling fuel poverty. The observation that this situation is discriminatory to individuals in ill health is a important one and ties into the question of their rights. Specifically, the right to live in decent housing (Lefebvre, 1996).

The impact of cold homes on social relationships was highlighted by respondent ***Charlie***.

> *"That's why you see people they rather stay indoors, they become anti-social because their home isn't warm and they felt they can't afford to keep their home warm."* (Third sector (***Charlie***) 2018)

Living in cold homes impacts on ability of those individuals affected to interact with their friends and family. Anderson, White and Finney (2012), found that social isolation is exacerbated by living in cold homes. The shame of living in a cold home is a key factor in social relations capabilities approach to energy poverty, specifically the capability for those affected to have dignity (Middlemiss et al., 2019).

Respondent ***Kilo*** spoke about the “No Cold Homes” initiative in Bristol. The “No Cold Homes” initiative was launched in November 2017, with the aim of tackling fuel poverty in the city of Bristol (Pipe, 2017).

> *“It’s essentially a fuel poverty strategy, but we don’t really like that terminology for various reasons, so we've called it No Cold Homes.”* (Energy supplier (**Kilo**) 2018)

The use of the language such as “No Cold Homes” to describe fuel poverty, is an innovative approach. It has the potential to revolutionise wider thinking on the topic and perhaps represents signals a shift away from language that stigmatises those impacted.

Energy efficiency refers to ability to properly heat homes. Respondent ***Alpha*** spoke about how people heat their homes.

> *“Most people don’t heat their homes properly according to SAP[4]. Probably because they can't afford it.”* (Central Government (***Alpha***) 2018)

This is an interesting observation, as it goes right to the heart of how we define fuel poverty, i.e. the inability to afford adequate warm (Lewis, 1982). It’s also a telling admission that poverty is at the very heart of fuel poverty.

Respondent ***Bravo*** spoke about the impact of household finances on heating homes adequately.

> *“In terms of people affording to heat their homes we've always said really is to improve the energy efficiency of the home, but are finance related [matters] less of an issue?”* (Local Government (***Bravo***) 2018)

This is an example of the understated impact of household finances on the experience of fuel poverty, which as ***Bravo*** points out is often superseded by the debate around energy efficiency.

[4] The Standard Assessment Procedure (SAP) scale is used to rate the energy efficiency homes of homes on a scale of 0 to 100 (Guertler and Preston, 2009).

Respondent ***Fremantle*** felt that academia were placing less emphasis on energy efficiency as a solution to fuel poverty.

> *"I think probably more within academia there is perhaps less emphasis on energy efficiency as a solution. Well they still see it as important, but they talk about all of the other aspects and so on. There's really interesting work around lived experience of fuel poverty and social relations and all those sort of social aspects. I suppose traditionally energy efficiency has been very central to fuel poverty policy and I think it should stay that way, but we need to recognise that there are a lot of other things that we need to understand as well."* (Third sector (***Fremantle***) 2018)

This is an important point and shows how thinking on fuel poverty has evolved in academia. Middlemiss and Gillard (2015), acknowledge the importance of energy inefficiency to the quality of buildings where the fuel poor live, but they also bring in a range of other factors including costs of energy, household income, social relations and ill health to explore energy vulnerability. Energy efficiency is clearly a fundamental issue, but a wider examination of the factors that expose households to energy vulnerability appears to be the direction of travel in recent academic research.

Respondent ***Fremantle*** spoke about a recent energy efficiency initiative in the Republic of Ireland.

> *"I'm really interested in an initiative in Southern Ireland where they basically give people with chronic respiratory conditions quite substantial home improvements. Not just ECO type measures, but €25,000, that's a really major refit and we need to see something on that sort of scale."* (Third sector (***Fremantle***) 2018)

The point that ***Fremantle*** makes about the potential benefits that can arise from Government investment in energy efficiency measures, is an important one. Particularly in the light of fact that England does not have public investment in household energy efficiency measures (Committee on Fuel Poverty, 2018).

Respondent ***Lima*** spoke about the fact that energy efficiency is less of an issue in London than other regions of England.

> *"One thing that stands out for example, is that fuel poverty is highest by tenure amongst social housing tenants, particularly council tenants and that has far more to do with low incomes rather than energy efficiency, because social housing tends to be more energy efficient than average housing."* (Regional government (***Lima***) 2018)

This is an interesting observation, as it highlights how the importance energy efficiency as a solution to fuel poverty varies geographically across England. In London, local authority housing has been found to have the highest proportion of fuel poverty, with 14.2% (57,000 households) living in poverty experiencing higher than average fuel costs (Greater London Authority, 2018a).

However, energy efficiency still remains an issue for many residents in the Capital. The majority of homes in London were built before energy insulation standards came into effect, 830,000 of them were rated as EPC band E, F or G, in addition over 53% of home were built before WWII, with large proportion being solid-walled (Association for the Conservation of Energy, 2016).

Respondent ***Lima*** acknowledged that energy efficiency was still a priority for London.

> *"We're tackling energy efficiency through the Warmer Homes Programme, which is providing grants of up to £4,000 for heating, insulation and ventilation measures. Currently for owner/occupiers and about to be extended to private tenants."* (Regional government (***Lima***) 2018)

This shows the importance of public funding being made available to tackle energy efficiency issues, particularly in older properties in the Capital.

Respondent ***November*** spoke about the impact energy efficiency measures on fuel poverty in Bristol.

> *"If we've gone into a home and we know that they're in fuel poverty when*

we started, so the first thing is identifying if that's the case. Once confirmed we put in insulation, a new boiler and we perhaps use the help of partner organisations to give them support on the way that they're spending their money and put in draft proofing and new windows. It's really hard to tell if that action alone would actually lift somebody out of fuel poverty, because if their energy prices go up massively and their salary doesn't, which is a very basic example then it's not necessarily going to improve things." (Local government (***November***) 2018)

This is an interesting observation and it links into the comments from ***Lima*** in relation to in the impact of high fuel costs. It demonstrates the potential limitations of focusing on energy efficiency, in isolation from the other factors that influence energy vulnerability.

Respondent ***Alpha*** spoke about the fuel poverty strategy (published in 2015) set out how to improve energy performance.

"I was talking about how the fuel poverty strategy set up the framework for how we wanted to tackle fuel poverty and meet the 2030 target. Now since the strategy's been published, the focus has been on the implementation of that ambition and how we're actually going to improve the energy performance of low-income households." (Central government (**Alpha**) 2018)

This is an important statement, as it highlights the central importance of energy efficiency to the Government's fuel poverty strategy. Energy performance, refers to the physical improvements made to homes that make them more energy efficient (Department for Energy and Climate Change, 2015c).

Respondent ***Fremantle*** spoke about the use of Energy Performance Certificate (EPCs) in measuring energy performance.

"Where I think there has been valuable improvements in evidence and data have been on energy performance of homes, as more and more homes get energy performance certificates. That's you know nominally about half of the country now, half of all homes have an EPC. There are

> *lots of problems with EPCs, but that's something that could be improved, it does help and it sort of gives you an idea of where some of the worst housing is. The fuel poor tend to live in the worst housing."* (Third sector (***Fremantle***) 2018)

This is a key point, as EPCs represent a straightforward mechanism for monitoring energy performance. The Government have developed a new methodology to monitor energy performance that is based on the SAP rating that inform EPCs. The fuel poverty energy efficiency rating (FPEER) methodology FPEER methodology generates an energy efficiency rating that can be directly translated into bands G to A in a way that is analogous to SAP ratings (Department for Energy and Climate Change, 2014b).

The monitoring of energy performance is the main way that the Government will be held accountable in its efforts to tackle fuel poverty.

Respondent ***Fremantle*** raised the links between fuel poverty and the wider housing crisis in England.

> *"That's why I say you know we have to recognise those links between the fuel poverty and the wider housing crisis, as it doesn't address the huge demand for affordable housing. The lack of provision for affordable housing, it's going to have a big impact on fuel poverty."* (Third sector (***Fremantle***) 2018)

This point represents the bigger picture in England – where low-income households are unable to access affordable housing they are at greater risk of becoming fuel poor. Low-income tenants in the private rented sector are most likely to spend a high proportion of their income on energy costs (Ambrose, McCarthy and Goodwin, 2016).

4.2.1.4 HOUSEHOLDS

Households (11 files, 166 references) are the unit by which fuel poverty is measured across the UK. In England there were estimated to be 2.55 million households living in fuel poverty in 2016, which represents 11.1% of all households (Department for Business, Energy & Industrial Strategy, 2018b).

The situation for those living in fuel poverty in London, has been succinctly summarised by respondent ***Lima***.

> *"Our understanding of fuel poverty in London is particularly experienced by people's illness, disability, by BME communities and by other groups such as lone-parents."* (Regional government (***Lima***) 2018)

Fuel poverty affects the most vulnerable households living in London, which is why it is such an area of concern for the authorities. One of the challenges for London boroughs, is making sure that vulnerable households are aware of the support that is available to address fuel poverty (Greater London Authority, 2018a).

Respondent ***Alpha*** pointed out that a vulnerable household with long-term disabilities would experience more severe impacts of living in a cold home.

> *"If they're elderly, have young children, long-term disability and long-term aliments or disability than the impacts of living in a cold home are going to be more severe for those vulnerable households."* (Central government (***Alpha***) 2018)

This statement from ***Alpha*** is an acknowledgement of the plight faced by vulnerable households living in fuel poverty across England. This is important as it highlights a need for the rights of the most vulnerable to be front and centre in terms of policy making. The fuel poverty strategy demonstrates an awareness of the additional negative impacts faced by these households (Department for Energy and Climate Change, 2015c).

There are questions as to the effectiveness of current policy measures in terms of safeguarding these groups. The priority services register is a free service provided (and maintained) by energy suppliers and operators to customers who meet the criteria for entry, which is based age, disability, health and vulnerability (Ofgem, 2016).

Respondent ***Kilo*** explained that the information provided by the priority services register with respect to customers with disabilities is very limited.

> *"When we sign up a customer, we have little communication with them unless they register through our priority services register as having a*

vulnerability, which doesn't include the fact that you're unemployed for instance. It just includes the fact that you may have a disability. It's very limited. We realise that we're not experts and we're not social workers. We try our best to support our customers as best we can and partnerships are really key for us, working with people like CSE has raised our understanding." (Energy supplier respondent (***Kilo***) 2018)

This is an important point about the effectiveness of measures like the priority services register. It appears that a more joined up approach might be needed to avoid the risk of vulnerable households falling through the gaps.

Respondent ***Lima*** pointed out that the vulnerability profile in London is different to other regions of England.

> *"It's clear from our data that people like lone-parents, non-pensioners with disabilities and long term illness are severely affected by fuel poverty as well. I think it's unhelpful sometimes to focus too much on pensioners, because we know the adverse impacts on children can be significant and lifelong potentially."* (Regional government (***Lima***) 2018)

This is an interesting observation on age demographics of those affected by fuel poverty – particularly in large cities like London.

Respondent ***Papa*** spoke about the role of the energy regulator in ensuring that there was a special regard to customers in a vulnerable situation.

> *"As an energy regulator one of our core functions is to protect the interests of existing and future electricity and gas consumers and we must have special regard to a series of customer characteristics that might be in a vulnerable situation such as the disabled, chronically sick and those of pensionable age."* (Energy regulator (***Papa***) 2018)

This is an important statement of intent, but leads to questions around how these customers are protected. For example, where one member of the household has a disability there is an increased likelihood of them moving into fuel poverty (Kearns, Whitley and Curl, 2019). The importance of early intervention in the lives vulnerable customers is pressing, but it is not clear whether this is taking place.

The Elderly are the vulnerable group traditionally associated with fuel poverty. Elderly people, particularly those living alone are most likely to be fuel poor and excess winter death statistics generally relate to persons over the age of 65 years (Rudge and Gilchrist, 2005). However, the situation with the elderly population has evolved over time. Sovacool (2015), pointed out that although elderly homeowners are the single largest group that live in fuel poverty, just under one-third of households in fuel poverty are families or single parents with young children. This is evidence that fuel poverty is now affecting a wider demographic.

Respondent ***Bravo*** spoke about the health challenges for elderly people.

> *"Older people – retired people would be one group, but when we talk health, there's two biggies respiratory and cardiovascular illness. They're the two that we know are particularly impacted by cold homes and are linked with excess winter deaths. Clearly the link is there also with the NHS and cost to the NHS of cold homes."* (Local government (***Bravo***) 2018)

This is very important point and links old age with ill health and the negative impacts of living in a cold home. The health impacts of fuel poverty are explored further in section (4.2.4.3).

Respondent ***Kilo*** also spoke about this traditional view of fuel poverty impacting primarily on the elderly.

> *"We know that traditionally it's thought that just elderly and or infirm people are in fuel poverty and that's generally through marketing and campaigns where you have a picture of an elderly lady covered in a blanket sat next sat next to a tiny little electric fire."* (Energy supplier respondent (***Kilo***) 2018)

Interestingly, the Fuel Poverty Action Plan For London features two elderly ladies on the cover (Greater London Authority, 2018a). The Achieving Affordable Warmth through Local Area Agreements: NEA Guidance Note document features several photos of elderly people besides domestic heaters (National Energy Action, 2007). These cover photos feed into the stereotype of elderly people being the principal group impacted by fuel poverty.

Respondent (***Kilo***) added that their company had customers living in a range of different situations.

> *"We have customers who are in very different situations, not just through not being their low income not being able to afford energy, but also through things like dementia, so forgetting to pay and issues like that where we are refused the ability to support that customer our hands are often tied."* (Energy supplier respondent (***Kilo***) 2018)

This is really interesting observation about the impacts of dementia, and it is not something that has been traditionally explored in the literature on fuel poverty. Citizens Advice (2018b), highlighted the importance on building local relationships with dementia teams in their report on the winter resilience partnership.

Respondent ***Lima*** spoke about to the changing face of fuel poverty in London.

> *"I think a lot of the rhetoric around fuel poverty is focused on pensioners, and certainly they are still a valid group from a health perspective. The excess winter deaths and hospital admissions are highest amongst that group, typically over 75s. However, fuel poverty more generally and particularly since it was redefined back in 2013, has been focused more on non-pensioners and certainly the rate of non-pensioner poverty has accelerated with social security changes over the last few years."* (Regional government (***Lima***) 2018)

The link between the definition of fuel poverty and changing demographics of those impacted is a key issue. The role of welfare reform – through changes to social security payments have clearly had a significant impact on the working age experience of fuel poverty.

Respondent ***Alpha*** also spoke about the relationship between welfare support and households in fuel poverty.

> *"...Means-tested benefits system as a proxy for low income and fuel poverty. It's a reasonable proxy, because we do know that 80% of fuel poor households do receive some form of welfare support. However, something we decided as part of the reforms for the scheme in 2017 was that it's not fair that the 20% of those who aren't on any welfare to be automatically excluded from that scheme."* (Central government (***Alpha***) 2018)

The use of proxy measures such as means-tested benefits to determine households, has a long history in policy terms. Fuel Direct, was introduced by the Government in 1976 to recipients of benefits, against a back ground of rising disconnections and increasing energy prices (Department of Trade and Industry, 2001). The other key point is the inclusion of financial support for those not on welfare payments. The Committee on Fuel Poverty (2018), recommended that 25% of the Flex scheme in ECO3 should be spent on both fuel poor households in band F and G rated properties and on the fuel poor not in receipt means-tested benefits.

Respondent ***Alpha*** spoke about the high levels of fuel poverty experienced by those living in band F and G rated properties.

> *"Something like 40%, of those F and G rated privately rented properties are also living in fuel poverty, which is of disproportionately high as about 11% of the general housing stock are fuel poor. So, your four times more likely to be fuel poor if you're in an inefficient privately rented home."* (Central government (***Alpha***) 2018)

This is a important acknowledgement that fuel poverty is significant issue in the private rented sector. This has been acknowledged in London, where the Mayor has committed to targeting the worst homes in the private rented sector (Greater London Authority, 2018a). Data from 2017 shows that 35.1% of households living in the private rented sector are fuel poor (Department for Business, Energy and Industrial Strategy, 2019). The identification of this problem in the private rented sector is an important first step, but policy measures that target this group are urgently needed to prevent the situation getting out of control.

Respondent ***Alpha*** also spoke about tracking the impact of policy measures that target those living in fuel poverty.

> *"It would be quite burdensome to be collecting that through a policy and we would rather ensure that more measures went in and we're improving as many homes as possible. Whilst we want a good number of those to be fuel poor, because fuel poverty is based on both the income and status of the household and the home and people move and people's circumstances change. So we shouldn't get obsessed to the extent that we forget about cost effective delivery about focusing too precisely on those households because there is a lot of churn in the fuel poor population."* (Central government (***Alpha***) 2018)

This is an interesting admission, as it shows that the focus is on large scale rollout of improvements with less concern about whether the fuel poor are actually being included. The idea of 'fuel poverty churn' is also interesting, particularly how it is used by the Government to talk about those living in fuel poverty.

> "Fuel poverty, as defined by the LIHC metric, is a relative measure. The fuel costs threshold and income threshold change year on year, thereby reflecting contemporary trends. The relative nature of the indicator means that the proportion of households in fuel poverty remains, overall, stable over time (between 10-12 percent). Although, importantly, these are not the same 10-12 percent as households move in and out of fuel poverty dependent on their circumstances relative to the population. This movement of households is referred to as fuel poverty churn." (Cavanagh, 2018, p. 88).

This raises an important question about what the Government are doing to prevent this churn in and out of fuel poverty.

Respondent ***Fremantle*** also alludes to this issue of churn, but instead uses the word static to describe those living in fuel poverty.

> *"This static group of fuel poor, well static in the sense that the numbers stay the same not the same people, but static in that sense so it's describing how far behind the rest they are. So that's quite a problem."* (Third sector (***Fremantle***) 2018)

The juxtaposition in language is really interesting, as ***Alpha*** and ***Fremantle*** are clearly both referring to group of households that perennially move in an out of fuel poverty. There are parallels to the dynamic nature of poverty, as described by Walker (1995), who talks about the poor moving in and out of poverty.

Respondent ***Papa*** acknowledged the link between vulnerability and the fuel poor.

> *"However, we acknowledge that when it comes to vulnerable consumers, sometimes you must have a level of prescription to ensure that vulnerable consumer protection includes the fuel poor."* (Energy regulator (***Papa***) 2018)

This is an important point, as it appears to include everyone in living fuel poverty under the category afforded protection as vulnerable consumers.

Respondent ***Alpha*** spoke about policy changes that restricted access to ECO funding to low-income households.

> *"That's the principle we're taking at the moment. We want to improve the inefficient homes and we're restricting ECO – the main subsidy mechanism at the moment to lower income households, on the basis that we want to build a more sustainable market for the rest of the population."* (Central government (***Alpha***) 2018)

This shows the direction of travel in policy terms, towards a singular focus on the lowest income households living in fuel poverty. However, there are critics of this approach. Marchand et al. (2019), point out that households not captured through current fuel poverty measures (LIHC) in England will miss out on capital focussed interventions like

ECO, resulting in likely failure to reduce overall numbers in fuel poverty. The Government would likely argue that the Flex scheme under ECO3 covers those not in receipt of means-tested benefits, but there remains the potential for households to fall between the gaps in schemes.

Respondent ***Bravo*** spoke about the plight of people who are forced to spend long periods of time in their homes.

> *"Again that hits people spending a lot of time in their homes who are inordinately hit by the cost of energy, particularly if they're on a low income."* (Local government (***Bravo***) 2018)

This is a key observation about the impact of fuel poverty on the lives of individuals forced to spend long periods of time at home. Middlemiss and Gillard (2015), point out that housebound individuals need to increase fuel consumption to treat their conditions, thus driving up their energy bills.

Respondent ***Charlie*** spoke about the people who avoided spending time at home to save on energy costs.

> *"I've got a couple of guys telling me that they've come to the library because they could not afford to pay the bills on the house, so they'd rather stay in the library and not go home."* (Third sector (***Charlie***) 2018)

This is a good example of a coping strategy employed by the fuel poor to reduce their heating costs. Anderson, White and Finney (2012), point out that households who cannot afford to adequately heat their homes adapt a range of coping strategies, including intermittent heating and limiting heating to when it they need it most.

4.2.1.5 PAYMENT

The payment theme (4 files, 34 references), covered the variety of payment methods available to consumers.

Respondent ***Alpha*** was asked whether Pre-Payment Meters (PPMs) could be a proxy for fuel poverty in England. This question was prompted by O'Sullivan, Howden-Chapman and Fougere (2015), who found that the use of PPMs was a good proxy for identifying the fuel poor in New Zealand.

> *"Pre-Payment Meters incidence are a poor metric for the UK. The majority in fuel poverty are on direct debit. PPMs couldn't be used as a proxy, as they would exclude the majority of fuel poor."* (Central government (***Alpha***) 2018)

This is an interesting observation about the state of fuel poverty in the UK, and it is supported by the evidence. The Annual Fuel Poverty Statistics Report (2016 data), points out that direct debit is the most common payment type for gas and electricity users in England (Department for Business, Energy & Industrial Strategy, 2018b).

Respondent ***Fremantle*** sounded a note of caution around the immediacy of the feedback provided by smart meters.

> *"All the evidence shows it's [smart meters] only going to have a good impact on low income if there's a good quality advice package as well. There is a worry that getting that more immediate feedback could cause people to ration to dangerous levels. It used to be that the standard bit of advice was always to turn your thermostat down by one degree. Whereas with a lot of people on low incomes you actually want to tell them to turn it up by one degree as they shouldn't be living in cold homes because that's dangerous to their health."* (Third sector (***Fremantle***) 2018)

This is an important observation, as the self-rationing of energy is another coping strategy used by the fuel poor. However, smart meters are often used as part of efforts to support consumers with 'energy advice' following home energy audits (Baker et al., 2019). There is an interesting balance to be struck around the use of smart meters by the fuel poor, and it is key that they should not be used in isolation, but as part of a wider support package.

Respondent ***Kilo*** spoke about a scheme that provided support to customers in social housing.

> *"A lot of small suppliers offer a pre-payment meter tariff and you often find that customers living in social housing, for instance, or rented accommodation of poorer quality have pre-payment meters in them. So offering pre-payment meter tariff was really important to us from the outset and we also have a smart metering strategy that prioritises the delivery of smart meters to pre-payment meter customers first and foremost, so we're targeting those customers to begin with."* (Energy supplier (***Kilo***) 2018)

The provision of smart meters to consumers on PPMs is an interesting approach that offers significant potential for them to make savings on energy bills. The Committee on Fuel Poverty (2018), point out that the roll out of smart pay as you go meters are a key focus of the energy market, as they permit the identification and assistance from suppliers to customers who self-disconnect.

Respondent ***Kilo*** explained that their customers liked using PPMs.

> *"We find that a lot of customers on pre-payment meters actually like it, because it means that they can budget."* (Energy supplier (***Kilo***) 2018)

This is an important point around the use of PPMs and budgeting. Vyas (2014), also found that the majority of PPM users are happy using them, as it helps them with budgeting. The control over budgeting is something that cannot be underestimated about PPMs, and means that they are likely to remain part of the payment mix.

Respondent ***Kilo*** spoke about the challenges involved with switching suppliers for vulnerable consumers.

> *"You know these people have often been betrayed in the past. Vulnerability, a lot of them are vulnerable and we didn't have a pre-payment meter offering, which was specific to this at the time, which made it difficult to accept those customers."* (Energy supplier (***Kilo***) 2018)

The treatment of vulnerable consumer by energy suppliers, and the observation that many have not been treated well in the past are important points. The challenges of switching vulnerable consumers are well known in the industry, they are regarded as ‘sticky’ by some suppliers and face barriers to switching (Sustainability First, 2017).

Respondent ***Papa*** spoke about the data from suppliers that is collected by the regulator.

> *“Data is collected from suppliers on a quarterly and annual basis and that includes a series of data indicators such as how many customers do they have in debt; how much is the debt once a repayment plan is set up; how many customer do they have in arrears or not yet on a repayment plan, which are important indicators; what kind of repayment rates are they setting. That’s also broken down by the available repayment method – is it a budgeting scheme? is it by deductions from social security benefits, sometimes called fuel direct? is it through a pre-payment meter?”* (Energy regulator (***Papa***) 2018)

The provision of accurate data on debt to suppliers, is a key element in finding and assisting households living in fuel poverty. Thomson and Snell (2013), found that households experiencing arrears on utility bills, was a strong indicator of fuel poverty.

Respondent ***Papa*** spoke about the link between PPMs and fuel poverty.

> *“We also look at pre-payment meter installations and we know that in terms of pre-payment meters, we are aware that those in fuel poverty might be more likely to be on pre-payment meters.”* (Energy regulator (***Papa***) 2018)

It is interesting that there is an awareness of the link between PPM use and fuel poverty, even though the majority of fuel poor are on direct debit payments. A larger proportion of low-income households pay their gas and electricity bills through PPMs, which decreases in line with increases of the income decile (Department for Business, Energy & Industrial Strategy, 2018b). This demonstrates the importance of supporting consumers who use PPMs, to help them avoid falling into fuel poverty.

Respondent ***Papa*** spoke about the protections for vulnerable groups around the installation of PPMs.

> *"Last year we modified some licence conditions with regards to warrant costs, and in some instances banned altogether, the possibility of installing pre-payment meters under warrant for particularly vulnerable consumer groups."* (Energy regulator (***Papa***) 2018)

It is Electricity Supply Licence Condition 28B that relates to pre-payment meters and other supplier actions to recover debts, it contains the aforementioned protections for vulnerable consumers (Ofgem, 2019b). This change to the licence conditions is a key protection for the most vulnerable consumers from the perils of fuel poverty.

4.2.1.6 PERCEPTIONS

The perceptions theme (9 files, 21 references) encompasses a wide range of ways that the respondents view the issue of fuel poverty.

Respondent ***Alpha*** spoke about how their perceptions of fuel poverty had changed over time.

> *"There is a misconception about low income social housing – this has increased in quality and is much better now. The private rental sector is the new priority."* (Central government (***Alpha***) 2018)

This is a really important point, as the Government is now focused on tackling fuel poverty in the private rented sector. Social housing tends to be better insulated than owner occupied and private rented properties (Department for Business, Energy & Industrial Strategy, 2018b).

Respondent ***Bravo*** raised concerns about the LIHC fuel poverty indicator.

> *"We're doing this here's the output, here's everything we're doing. Oh, look that's fine, because it's moving the fuel poverty indicator like we thought it would, but that doesn't happen. I don't feel that anything we do is going to shift that fuel poverty indicator. I may be wrong, maybe it will, but I have no faith that it's doing that."* (Local government (***Bravo***) 2018)

This statement has identified a fundamental issue with the LIHC indicator. The LIHC indicator is a relative measure of fuel poverty, which means that the proportion of households living in fuel poverty under this measure remains stable over time (Department for Business, Energy & Industrial Strategy, 2018b). Therefore, ***Bravo*** is absolute correct in reporting that nothing they do leads to changes in the LIHC indicator over time.

Respondent ***Charlie*** explained how their view of fuel poverty had been changed by their role.

> *"I felt in the UK compared to where I come from people that people don't experience fuel poverty, but by the time I started working I realised that a lot of people are going through this situation."* (Third sector (***Charlie***) 2018)

This is a really important observation as it reflects how of fuel poverty is measured in the UK. Boardman (2010), links its measurement back to politics, as politicians determine the definitions, which in turn determine the number of people who are officially fuel poor.

Respondent ***Fremantle*** spoke about changes in the level of priority given to fuel poverty since 2010.

> *"I think there's a view that generally within England that it doesn't have the same priority as it used to. Although some feel like it has improved a little bit in the last couple of years. I think certainly when the Coalition Government came into power, fuel poverty policy suffered quite substantially along with welfare policy."* (Third sector (***Fremantle***) 2018)

This is an important observation about the role of Government in fuel poverty, as it comes from someone who has been involved in fuel poverty policy over many years. This change in focus has also been discussed in academia. Middlemiss (2016), identified a 'shift in the problematisation' of fuel poverty in 2010, from a phenomenon that should be eradicated to one that could only be alleviated.

Respondent ***Fremantle*** spoke about some of the changes that had taken place in fuel poverty policy since 2010.

> *"So, in 2010 along with a whole suite of changes, cuts were made to welfare provision one of which was Warm Front grant and it was cut quite substantially over the next three years and then abolished altogether in 2013, but the government did see a role for the supplier obligation to provide some form of energy efficiency help to low-income households along with other households."* (Third sector (***Fremantle***) 2018)

This is a key observation, as ***Fremantle*** has described the abolition of publicly funded fuel poverty reduction measures (Warm Front) in England since 2010. The Warm Front Home Energy Efficiency Scheme ran from 2000 to 2013, and took 2.36 million households out of fuel poverty (Sovacool, 2015). The supplier obligation (ECO) is explored in section (4.2.3.4).

Respondent ***Juliet*** provided a personal insight into the changing awareness of fuel poverty.

> *"When I started here 25 – 30 years ago. It was very difficult to engage third party organisations on the issue of fuel poverty. Whereas, over the last sort of 5 to 10 years fuel poverty has been raised in terms of its profile, whilst that is probably a reflection of the number of people that it affects. Sadly, it's also a reflection a change in our views on social issues, so in some respects that has made our work slightly easier in that we don't have to start our conversations with potential new partners to explain what fuel poverty is, because many people now do understand or have their own perception of what fuel poverty might be."* (Third sector respondent (***Juliet***) 2018)

This is a really interesting point about the higher profile of fuel poverty in the UK and it has facilitated this research into the phenomena. Walker and Day (2012), attribute the routine reporting of fuel poverty statistics (since 1996), as a key factor in the media coverage, which has kept fuel poverty on the national agenda.

Respondent ***Kilo*** spoke about the issue of vulnerability with respect to fuel poverty.

> *"I'm trying to think of us a business, but also me as well. I think vulnerability as an issue more generally has increased in recognition and prominence, over the last year in particular and I don't know if that has stemmed from the press and the political angle. I suppose given the pedestal that vulnerability in Energy has had, obviously the price cap is very politically relevant at the moment."* (Energy supplier (**Kilo**) 2018)

This is a key point, as the increased focus of vulnerable consumers by the industry and the regulator (see ***Papa***), represent an important step in tackling fuel poverty. The energy price cap, which came into effect on 1st January 2019 aims to protect vulnerable consumers (Ofgem, 2018a).

Respondent ***Lima*** spoke about their perceptions of fuel poverty in London.

> *"I can talk about perception of fuel poverty in a London, a lot of it is due to the type of housing stock that we have. London has a lot of older properties. We also have a lot of properties that are not on the gas mains. We have the second highest rate of off-gas properties of any English region and that is largely due to population density and a large number of high-rise flats. So, obviously after Ronan Point [collapsed in 1968 due to the gas explosion] there was no ability to put gas at pressure into high-rise properties. They typically are electrically heated, or in some cases they will be served by communal heating."* (Regional government (***Lima***) 2018)

This observation shows the difference between London and the rest of the country, with respect to housing and energy consumption – key factors influencing fuel poverty. In London, there are estimated to be 594,000 households are off gas, which increases the likelihood of fuel poverty by 50%, compared to on-gas properties (Greater London Authority, 2018a).

Respondent ***November*** highlighted the challenges of gaining access to residents living in fuel poverty.

> *"I haven't been in this sector for very long, it'll be a year in September, so less than a year and I come from a renewables background. I understood it from the sense of what you see in the papers, which is rising energy prices, but my perception has changed massively with respect to the issue surrounding accessing people who are in fuel poverty, because surprisingly people who are in fuel poverty don't like to say that they're in fuel poverty. I think my massive perception on that note has been that somebody needs to rebrand fuel poverty and call it something else, like struggling to heat your home."* (Local government (***November***) 2018)

This is a really interesting observation about the stigmatising effect of being labelled fuel poor. The idea of 'energy vulnerability' (Bouzarovski and Petrova, 2015), represents a wider approach to thinking about fuel poverty. There is potential for this kind of terminology to move the conversation away from fuel poor and fuel poverty.

Respondent ***Papa*** felt that offering a personal perception to the phenomenon of fuel poverty was not applicable to them.

> *"Fuel poverty is defined by government, it's not something of a personal perception that is available, because the definitions are out there."* (Energy regulator (***Papa***) 2018)

This is an understandable stance as fuel poverty is not the responsibility of the regulator. Interestingly, ***Papa*** was much more forthcoming on the concept of vulnerability.

4.2.1.7 TRANSPORT POVERTY

The transport poverty theme (9 files, 20 references) was a wide-ranging theme. All respondents were asked for their views on the links between fuel poverty and transport poverty.

What became clear from the interview process was that the respondents had not done any work around the links between fuel poverty and transport poverty. When asked this question directly all of the respondents replied “no” or words to that effect. However, many were able to offer some interesting commentary on transport poverty.

Respondent ***Alpha*** spoke about how transport poverty was not in scope for them.

> *“Transport poverty not seen immediately in my scope… Some stakeholders have mentioned it.”* (Central government (***Alpha***) 2018)

This quote was taken from notes of the first interview with ***Alpha***, which was not recorded. It is particularly interesting to note the comment that some stakeholders had mentioned transport poverty. On reflection, it would have been useful to have explored this answer further.

Respondent ***Bravo*** spoke about the idea of transport poverty from a rural context.

> *“So, transport poverty – struggling to pay for your transport would just be another one of those and again in rural areas you'll start to see a bigger hit I guess, because there tend to be ways of moving round the city more easily. Not perfectly but more easily than if you've got to pay for a car and things like that. Yeah, where you've got fuel poverty. You've got all different kinds of poverty.”* (Local government (***Bravo***) 2018)

The idea that fuel and transport poverty, are just two out of lots of different kinds of poverty is interesting in the wider context of poverty in the UK. Alston (2018), highlights a need for the UK Government to know about the extent and character of poverty, in order to address it in a systematic and effective way.

Respondent ***Charlie*** spoke about a request for advice on transport costs from local students.

> *“A couple of college students that came, they said that they couldn’t afford to pay how much going to school. That they couldn’t afford that. He said can I advise them or sent them to where they probably get maybe like a reduction on what they pay on their transportation. It was some couple of*

> *university student that came to the café and I told them that what we do is. We just advise on energy we don't talk about anything on transportation."* (Third sector (***Charlie***) 2018)

This is an interesting example of the impact of silos on the cross cutting nature of poverty in the UK. It demonstrates how fuel and transport poverty are given different focus and priorities at a local level.

Respondent ***Fremantle*** spoke at length about differences between urban and rural car ownership.

> *"Transport costs, for instance if you own two cars in a city you generally would just be regarded as being affluent, whereas for a lot of people in rural areas they're seen as a necessity because those people in low-paid jobs they need a car to get to work."* (Third sector (***Fremantle***) 2018)

This is an important observation about the levels of car ownership in urban and rural communities in the UK. In rural areas, where car ownership is viewed as a necessity, 90% of households have access to a car (Sustainable Development Commission, 2011).

Respondent ***Fremantle*** also spoke about the location of the areas most affected by transport poverty.

> *"I would identify it as a problem on council estates. Classically the big post war council estates where they were built there's a lot of problems about the cost of transport."* (Third sector (***Fremantle***) 2018)

This is an interesting observation on the impact of housing location on transport poverty in the UK. The accessibility problems that have been associated with low income housing estates located on the outskirts of urban areas, can be attributed to poor public transport provision (Social Exclusion Unit, 2003).

Respondent ***Fremantle*** commented on the transport situation in London.

> *"If a job is very low paid and you have to factor in high transport costs, it certainly feels like London really stands out from other cities. I would imagine transport poverty is less of an issue because you have a much*

better transport infrastructure and compared with other cities it's relatively cheap." (Third sector (***Fremantle***) 2018)

This observation indicates that transport poverty is less of an issue in London, as a whole. However, the proportion of residents living in poverty is greater in outer London, and research has revealed that 18% of commuters to central London choose their commute based on the cost of travel, as opposed to convenience (BDRC Continental, 2015).

Respondent ***Kilo*** spoke about the travel situation in Bristol.

> "*We are very aware that not everybody can get to the city centre, particularly if you're in the most deprived areas of the city which are in the south of Bristol. You would have to get a bus, because a lot of people don't have access to their own personal transport. Bristol buses aren't great. They're getting cheaper and they're getting better and they're getting more energy efficient, but they are still not the preferred choice of transport for everybody. And they're still not free for people who can't afford to get the bus all of the time. We attend pretty much every event that we can attend and set up a stall to provide advice. We're also looking at how we can drop into those local areas."* (Energy supplier (**Kilo**) 2018)

This is an interesting summary of the impact of poverty and the location of housing, on the limited transport options available to low income households living on the outskirts of Bristol. The Campaign for Better Transport (2018), reported that commercial decisions to reduce the cost of buses in Bristol, has seen an increase in usage by passengers who are required to pay for their travel.

Respondent ***Lima*** spoke about some research on transport affordability, undertaken for London Councils in 2015.

> *"I'm aware that London councils did your work a few years ago. I don't know if you've seen it into affordability in London and they were taking into account things as you mentioned. So, fuel, energy, transport and childcare."* (Regional government (***Lima***) 2018)

This was a useful research tip, as the "Living on the edge" report (BDRC Continental, 2015) is an interesting examination of transport poverty in London. It provided a powerful insight into the travel situation faced by low income residents in the Capital.

Respondent ***Lima*** spoke about the Hopper bus fare in London.

> *"The Mayor has introduced the hopper fare where you can get on as many buses as you like in the space of an hour for one fare."* (Regional government (***Lima***) 2018)

This was an interesting observation about a measure designed to promote public transport use in London. The Hopper fare was introduced in September 2016, and extended on 31 January 2018 to permit unlimited bus and tram journeys in one hour, permitting tube and train journeys between bus journeys (Greater London Authority, 2018d).

Respondent ***Lima*** spoke about the potential impact of the Hopper fare on transport users in London.

> "*I think that makes a difference to people at the bottom end of the job market particularly. You've got people who they're on low incomes they have to live quite far away from their place of work. I mean, the example always given is cleaners. It's not just cleaners, it's security staff, it's catering staff, it's people who are on low fixed incomes who can't afford to live close to the centre. The underground is too expensive. So, they have to use buses, but before each fare was mounting up. We can't necessarily address the fact that as it takes them a long time because they're relying on buses, but we can make it more affordable. I'm selling the Hopper fare. We have no doubt it has a big impact on people's lives. That's potentially several pounds a day that people are saving, which if you are on a low income or on minimum wage, it's going to be very helpful. I think it's a very progressive move."* (Regional government (***Lima***) 2018)

This is an interesting insight into transport poverty in London, where the lives of workers on low incomes are adversely impacted by the high costs of travel. There are however, wider impacts to transport availability in London that are likely to arise from the Hopper scheme. The BBC News (2018), reported that the Hopper scheme would cost £35 million a year and predicted that the Mayor was planning big cuts to buses, by moving bus services to outer London after the arrival of Crossrail, which will reduce the frequency of bus services.

4.2.2 CURRENT SOLUTIONS

The two sub themes that emerged in the current solutions theme were Advice and Evidence. They focus on the ways that fuel poverty was currently being tackled.

The following comments from respondent ***Fremantle*** succinctly sum up the nature of advice able for the fuel poor.

> *"I guess it's mostly about trying to increase the amount of energy advice we cover and seeing that as part of what we call holistic advice practice."*
> (Third sector (***Fremantle***) 2018)

The key word here is holistic and it represents a wider approach to advising those affected by fuel poverty. Grayburn (2017), describes holistic support to customers who self-disconnect from PPMs, as a way of understanding some of the interrelated issues in their lives, such as low income, financial insecurity and debt.

4.2.2.1 ADVICE

The Advice (8 files 14 references) sub theme covers mechanisms for providing advice to households in fuel poverty or at risk of becoming fuel poor. The Committee on Fuel Poverty (2018), has recognised that agencies providing benefits checks to eligible households, alongside advice on energy efficiency, are they in a position to offer a holistic service.

Respondent ***Alpha*** spoke about a well-known advice scheme in London.

> *"Islington have a famous one called SHINE, which offers a whole range of different services to households in Islington."* (Central government (***Alpha***) 2018)

The Seasonal Health Intervention Network (SHINE) is a fuel poverty referral network and energy advice service based in Islington, it was expanded in 2016 to provide for these services across London (Islington Council, 2017). The SHINE scheme is an important example from the London area. An attempt was made to interview officials working on the SHINE scheme, but they did not have the time to participate.

Respondent ***Bravo*** spoke about recording outputs from the energy advice work.

> *"I tend to record outputs for example the number of boilers installed in different properties plus insulation in our council housing, cavity wall insulation across our council housing and pounds saved in terms of warm home discounts and things from our energy advice officers who are going round our council housing. For energy advice I can pull off a number of different outputs that show the benefits to the tenants of their role."* (Local government (***Bravo***) 2018)

An interesting point is made by ***Bravo***, about the use of outputs to measure the performance of work to deliver energy advice to council tenants. The outputs show the success of measures to tackle fuel poverty in the community.

Respondent ***Bravo*** highlighted the importance of making the service offered more holistic.

> *"A single point of contact and referring everybody there, it's great because that's more of a holistic service and that's really important. We're building up that service to try and make that more holistic to try and get more help referring in to that, because what we're saying is that they are the people that really need it. People referred to the service by health professionals will get the biggest benefit."* (Local government (***Bravo***) 2018)

The use of a single point of contact for fuel poverty referrals is an important point, as it represents a key challenge, namely finding and providing advice to the fuel poor. The importance of a single point of contact in fuel poverty referrals have been highlighted a case study about Wigan Council's Affordable Warmth Access Referral Mechanism (AWARM), which has seen multiple benefits including increased thermal comfort and financial savings for healthcare services (Public Health England, 2019). The use of the term holistic service is also of interest, as it fits in with the idea of adapting a holistic approach to the provision of advice.

Respondent ***Bravo*** also spoke about the challenges they faced in their work with people living in fuel poverty.

> *"People living in fuel poverty generally can be difficult to deal with, they can have many different things that mean it's hard to communicate with them. It's quite hard to provide a service for people in this situation that meets their needs entirely."* (Local government (***Bravo***) 2018)

This is really important point, as it highlights that providing support to people living in fuel poverty is not a straightforward process. These comments link into an examination of the role of emotions in supporting, or hindering the provision of support to those living in fuel poverty (Longhurst and Hargreaves, 2019).

Respondent ***Charlie*** spoke about advising vulnerable consumers to switch energy suppliers.

> *"It's quite clear, quite straightforward, and that's why we use 'my utility genius' and from my own experience I've seen, well people that are vulnerable, who really don't know about it."* (Third sector (***Charlie***) 2018)

This quote highlights an important area of energy advice – advising consumers to switch energy providers. Whilst it is generally a positive step to switch suppliers, research shows that it comes with its own set of challenges for the fuel poor. Middlemiss and Gillard (2015), found that switching supplier could be an unpredictable process with minimal gains for those living in fuel poverty.

Respondent ***Fremantle*** spoke about the fuel poor switching suppliers.

> *"So you can give them as much information as you want and perhaps they're behaving quite rationally in not switching, because the savings aren't there."* (Third sector (***Fremantle***) 2018)

This is an important point about advice to switch energy providers. An evaluation of the Big Energy Savings Network, found that the extent of the benefits of participation in the switching scheme were difficult to estimate, and it was not clear if they would be enough to lift participants out of fuel poverty (Ambrose, Eadson and Pinder, 2015).

Respondent ***Juliet*** spoke about some work that their organisation had been doing on energy advice.

> "*Our project in Coventry has been running for a number of years. We provide front line fuel debt, fuel bill advice and energy efficiency advice for fuel poor householders."* (Third sector respondent (***Juliet***) 2018)

This is a good example of a local initiative to tackle fuel poverty, that is embedded in the community. The Committee on Fuel Poverty (2018), recommend that local community groups and charities are supported in the provision of detailed, personalised energy advice that is relevant to the recipient.

Respondent ***Kilo*** spoke about a trial tariff called Warm Homes Plus.

> *"We launched a trial tariff at the end of last year called Warm Homes Plus and it was an off website tariff. It was only available to customers that were referred to us through support organisations. These included local debt charities, CSE and Citizens Advice. We created a zero margin tariff for customers suffering from fuel poverty that made us no profit. Customers were referred onto this tariff with the caveat that they would stay for a year and we would as far as reasonably practicable support them and help to alleviate their fuel poverty. It was a somewhat unsuccessful trial as we had a target of 1,000 customers and we got*

> *about 10 from 40 referrals, but we got a lot of learning from the experience."* (Energy supplier (**Kilo**) 2018)

This is really interesting example, as highlights the challenges around finding and supporting individuals and households that are living in fuel poverty. During the interview ***Kilo*** shared a presentation with the learning from the experience of the Warm Homes Plus tariff. The key findings were that an inability to provide the Warm Homes Discount, along with a lack of access to ECO funding were key reasons why the tariff failed. It perhaps shows why large energy suppliers have such a strong hold over the UK energy market, as they are not hindered by these constraints.

Respondent ***Lima*** spoke about the situation in London around benefit claims.

> *"People aren't claiming the benefits that they're entitled to and when they are in dispute with the DWP, their appeals over PIP or Tax Credits, etc. A lot of people go without money for extended periods. We're funding four boroughs to run fuel poverty advice and referral services. These are, Islington, Lewisham, Kingston and Croydon."* (Regional government (***Lima***) 2018)

This is an interesting example of a situation that can compound fuel poverty, particularly in London where the cost of living is much higher than the rest of the UK. ***Lima*** is referring to the pan-London referral network, which is involved in the allocation of £250,000 grant funding to the boroughs of Croydon, Islington, Lewisham and Kingston (Greater London Authority, 2018a).

Respondent ***Lima*** highlighted the issue of welfare rights provision across London.

> *"It used to be the case that most boroughs had a welfare rights unit that could either in house or commission from Citizens Advice, for example. That could give people advice on what benefits they're entitled to and support them through any appeals, etc. That's been cut back due to austerity when arguably it's needed more than ever, because of the increasing complexity and sanctions and everything else."* (Regional government (***Lima***) 2018)

Welfare rights are an important issue, as fuel poverty is so interlinked with the benefits system. Fletcher and Wright (2018), point out that since 2012 the dominant approach to welfare in the UK has become more punitive, with a move to mandatory self-help in combination with benefit sanctions and minimal levels of claimant support. The need for welfare rights provision is essential, where so many people living in fuel poverty are reliant on benefits. The proportion of benefit claimants living in fuel poverty is greater than those not in fuel poverty, with fuel poor households experiencing lower employment rates (Department for Business, Energy & Industrial Strategy, 2018b).

Respondent ***November*** spoke about fuel poverty referrals to the WHAM service in Bristol.

> *"If somebody rings us and we think you know what you could do with some support from talking money or from WHAM or from we care repair. Then we refer them on."* (Local government (***November***) 2018)

This is good example of a local initiative to tackle fuel poverty through advice to those affected. WHAM is a four year project, that was set up as an innovative model for Bristol residents to get advice on energy, finances and home repairs (Centre for Sustainable Energy, 2017).

4.2.2.2 EVIDENCE

The Evidence theme (10 files, 86 references) was another highly prevalent theme, which stemmed from the fact that all respondents were asked about the evidence base for fuel poverty.

Respondent ***Alpha*** spoke about a range of evidence challenges associated with fuel poverty.

> *"The Challenge is to quantify the health aspects. The understanding of the issues is constantly evolving. The fuel poverty research network evidence base is evolving."* (Central government (***Alpha***) 2018)

This is an key point, as it highlights the need to better understand the links between fuel poverty and health. Citizens Advice (2018b), have reported that the negative impact of cold homes on health is well established. The acknowledgment that these issues are constantly evolving is interesting, as it reflects the realities of fuel poverty policy making and research.

Respondent ***Alpha*** also spoke about the changes to the definition of fuel poverty and its impact on measurement.

> *"Many things are out of our control. This was part of rational for changing the measurement matrix. There were huge fluctuations with the former 10% measure of fuel poverty. The numbers increased to five million and decreased to one million under this measure. It was difficult to make measurable process."* (Central government (***Alpha***) 2018)

This is a candid admission of the challenges presented by the former fuel poverty measure. The estimated number of households living in fuel poverty in the UK, reduced from 6.5 million in 1996 to 2 million in 2003, and increased to 4.5 million in 2008 (Department for Energy and Climate Change, 2010). Liddell et al. (2012), attributed the fluctuation to the use of data from 1988 to establish the 10% threshold measure for fuel poverty in the UK, whereas the 2001 twice median spend on energy was in fact 7%, which led to an under estimate in the mid-2000s. The Government have attributed energy price rises with the increase in fuel poverty from 2004, with price rises outweighing increases in household incomes and the installation of energy efficiency measures (Department for Energy and Climate Change, 2010).

Respondent ***Alpha*** described the some of the work being done, to improve the targeting and identification of fuel poor households.

> *"One thing that we've been talking to some organisations about is, what tools can be used to better help target and identify fuel poor households. More of the data side of things. Machine learning is very in vogue at the moment, so we're looking at how it can be used. There's reasonable amounts of data on the building stock in MHCLG. DCLG published 16 million EPCs last year. So a good bit of data there and then we have our own National Energy Efficiency Database known as NEED. ECO will feed*

into NEED and update what homes have been supported under government schemes and give an up to date assessment of the housing stock." (Central government (***Alpha***) 2018)

This work is important as it holds significant potential to improve the ways that the fuel poor are targeted and identified by Government agencies. However, Foulds and Powell (2014), have pointed out that there been limited research into the potential of the NEED database. More recently, the Department for Business, Energy and Industrial Strategy (2017a), investigated the potential for combining the NEED database with machine learning, to provide a mechanism to identify fuel poor households in England. This is a novel approach, which shows some promise for the future.

Respondent ***Alpha*** spoke about the application of innovative machine learning research.

"Some organisations have been looking at some really interesting stuff about using the English Housing Survey and other surveys about peoples income, to match that data about the housing stock and training a computer to learn the correlations to predict the likelihood of homes being in fuel poverty. There's some quite interesting stuff emerging about how can we target fuel poverty." (Central government (***Alpha***) 2018)

This is an important step, as the use of computing technology has massive potential for improvements in the targeting of household living in fuel poverty. The Committee on Fuel Poverty (2018), have reported that machine learning algorithms using random forest classification, have the potential to identify households with low EPC ratings.

Respondent ***Bravo*** explained, how they had been working to obtain local evidence of fuel poverty.

"I've been working around ECO. I do a lot of staged work, looking at different forms of data at the council that we can use. Basically the data tells us who's likely to be in fuel poverty. Energy performance certificate data, anything really that we can use. We've also got benefits data which

we can use in different ways for targeting households that are potentially struggling." (Local government (***Bravo***) 2018)

This is an interesting piece of work that combines local and national data to better target fuel poor households in a specific geographic area. The EPC dataset provides data down to postcode level (Public Health England, 2019). Access to accurate data at a local level is essential to the support of local efforts to tackle fuel poverty.

Respondent ***Bravo*** also related the challenges of monitoring fuel poverty levels in rural areas.

> *"We've always been very suspicious of any of the governments indicators and how they relate to us, because they've never really aligned with our devised areas for example. There may be a number of different reasons for that. I would say that I've got absolutely no idea whether fuel poverty has increased or decreased or whether it's stayed fairly static."* (Local government (***Bravo***) 2018)

This is key criticism of the national approach to data on fuel poverty, which extrapolates modelled data at a local level. It leaves local officials unclear about the prevalence of fuel poverty in their areas. Robinson, Bouzarovski and Lindley (2018), found that the LIHC indicator has led to a reduction in fuel poor households compared to the 10% indicator, which means that geographically the fuel poor are more likely to be concentrated in urban areas, due to higher housing costs.

Respondent ***Bravo*** explained, how they used outputs to monitor performance around fuel poverty.

> *"We generally measure in terms of output. At the Health Improvement Board we achieve this from the county wide Affordable Warmth network, where we record the work of our environmental health teams and our home improvement agency."* (Local government (***Bravo***) 2018)

This is a good example of work being carried out across different agencies to tackle fuel poverty at a county level. Health and Wellbeing boards, have been required to develop a strategies to address the health consequences of living in cold homes under the NICE

Guidance (NG6) (NICE, 2015). The links between fuel poverty and health are explored further in section (4.2.4.3).

Respondent ***Bravo*** spoke about how they tried to develop their own local fuel poverty measure.

> *"I think it's worth recording that there's a bit of frustration locally. We actually tried to create our own fuel poverty measure looking at our own data, but it actually was incredibly hard and difficult to do. In part because you can't really get energy data, so you don't know what energy people are using. We've found the targeting of fuel poverty, other than people who are on benefits to be incredibly difficult."* (Local government (***Bravo***) 2018)

This is a really good example of the challenges faced by local authorities trying to get accurate data on the prevalence of fuel poverty. Other local authorities have also documented challenges around fuel poverty data. The Royal Borough of Greenwich, noted a number of instances, where data from utility companies could not be made available to them (McCann and Butler, 2016).

Respondent ***Fremantle*** spoke about some of the challenges around the fuel poverty gap measure.

> "*This is the problem now, it's sort of like everybody still quotes the indicator, but it's not tremendously helpful. People who work in fuel poverty might place more emphasis on the gap. The problem with the gap is, although it's useful, it's still tarred with the same flaws as the main indicator, so only describing how far behind the rest they are, as defined by the indicator."* (Third sector (***Fremantle***) 2018)

This is an interesting point about the usefulness of the fuel poverty gap, which is part of the LIHC indicator. The intention was for the fuel poverty gap to provide a greater level of sophistication around the understanding of fuel poverty (Department for Energy and Climate Change, 2015c). Emden, Murphy and Lloyd (2018), pointed out that the fuel poverty gap at that time was £353, but the average fuel poverty gap was much worse in homes with low EPC ratings (E, F and G), at £645.

Respondent ***Fremantle*** spoke about the usefulness of EPCs for identifying areas with energy efficient housing.

> *"Nominally about half of the country now, half of all homes, have an EPC. There are lots of problems with EPCs, but that's something that could be improved, it does help and it sort of gives you an idea of where some of the worst housing is."* (Third sector (***Fremantle***) 2018)

This links in with many of the other comments about EPCs. It is important in the sense that it supports the view that EPCs hold the potential to identify households in fuel poverty. This is particularly important in relation to the private rental sector, where landlords are no longer permitted to rent out properties that are below EPC band E (Department for Energy and Climate Change, 2015c).

Respondent ***Fremantle*** also gave their views on the fuel poverty targets, contained within the fuel poverty strategy.

> *"Part of the reason we went for the EPC Band C target, was it gets minimum standards. I think the flaw is, is that all the evidence now is you have to achieve really high standards before people actually stop having to struggle with energy bills."* (Third sector (***Fremantle***) 2018)

This is a crucial observation about impact of the fuel poverty target, currently in place for England[5]. The point being made by ***Fremantle*** is that the only way out of fuel poverty is getting homes to band C or above, as any anything less will leave households struggling with high energy bills. Based on current rates of progress, this is going to be a challenging target to meet within the next decade.

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[5] The requirement for as many fuel poor homes, as reasonably practicable to achieve a minimum energy efficiency rating of Band C, by 2030 (Department for Energy and Climate Change, 2015).

Respondent ***Juliet*** spoke about the way that evidence is used to identify the fuel poor.

> *"In terms of the evidence base certainly and on a practical basis with the projects that we develop and deliver, we rarely use that very stringent fuel poverty definition in order to determine who we would help. Our evidence would come from practitioner who deals with people on a more daily basis."* (Third sector respondent (***Juliet***) 2018)

It is interesting to see from these comments, how the current definition of fuel poverty is being by-passed in order to facilitate support to those in need. The idea that local practitioners working with the fuel poor, are able to compile evidence of fuel poverty without recourse to the official definition, is a powerful one. The Committee on Fuel Poverty (2018), have recognised that the LIHC definition is not easy to use, they point to the difficulties experienced by energy suppliers in locating fuel poor households under the ECO scheme.

Respondent ***Juliet*** explained, how they target areas known to be experiencing fuel poverty.

> *"We target our events and our efforts at areas where there are high clusters of people in fuel poverty. We are targeting the areas where people are poorer and what we would suggest is that anybody who comes forward for help on their fuel bills, or in terms of energy efficiency are not likely to be very affluent."* (Third sector respondent (***Juliet***) 2018)

This is an interesting approach to the identification of fuel poor households, by using area clusters as proxies for fuel poverty. Dubois (2012), has pointed out that the use of proxies like receipt of benefits, can lead to imperfect matching for fuel poverty. Ultimately, the key point here is that people coming forward for help, are highly likely to be deserving, regardless of whether they meet the definition.

Respondent ***Kilo*** spoke about the challenges of targeting those who are vulnerable and lead chaotic lives.

> *"The inability to scale up existing resources and difficulty in accessing data on people who may be in vulnerable situations. You can't help everybody. A lot of people suffer chaotic lives. They may move in and out of fuel poverty, so being able to ensure that they never move back into fuel poverty is actually very resource intensive."* (Energy supplier (**Kilo**) 2018)

This quote highlights a major issue around assisting vulnerable individuals and households living in fuel poverty. The movement in and out of fuel poverty links back to the issue of churn, and the importance of finding ways to prevent it. The decision to increase the eligibility criteria for ECO3 to cover 6.6 million low income and vulnerable households, arose from concern about fuel poverty churn (Committee on Fuel Poverty, 2018).

Respondent ***Kilo*** spoke about the vulnerable customer strategy at their company.

> *"It [the strategy] sets out our commitments to our vulnerable customers. Along with the types of activity that we will try to ensure that we are doing, so we need to improve the way that we're identifying customers and make sure that they are able to communicate with us. We also need to look at how we can be innovative in the way that we deliver services to our customers."* (Energy supplier (**Kilo**) 2018)

This is an important step to ensuring that vulnerable consumers at this energy supplier are treated appropriately. It is interesting to note that they have identified a need to improve the identification of and communication with this group of consumers. Ofgem (2018b), have raised concerns about the low numbers of priority services register customers at some small and medium sized energy suppliers, as this could indicate issues around the adequate identification of vulnerable consumers.

Respondent ***Kilo*** spoke about how the priority services register works in reality.

> *"When we sign up a customer we have little communication with them unless they register through our priority services register as having a*

vulnerability, which doesn't include the fact that you're unemployed for instance." (Energy supplier (**Kilo**) 2018)

This highlights an issue with the process of registering consumers on the priority services register. The definition of vulnerability is key to this process. National Energy Action (2018), have asked Ofgem to address a number of issues with the priority services register, such as anomalies with the eligibility criteria and the need to enhance monitoring, reporting and auditing arrangements.

Respondent ***Kilo*** explained that debt was a key evidence base, which they used to monitor customers.

> *"Mainly through debt, inability to pay is the main evidence base that we have to examine our customers."* (Energy supplier (**Kilo**) 2018)

This is a key point, as highlights a way to identify vulnerable customers who may be at risk of fuel poverty. Customers who are in debt to their energy suppliers are a key focus for Ofgem, as indebted customers often have physical and mental health difficulties (Ofgem, 2018b).

Respondent ***Lima*** spoke about the different experiences of fuel poverty in London, in comparison to the rest of England.

> *"There are quite a few differences in the way that fuel poverty is experienced in London compared to the rest of the UK. Fuel poverty is highest by tenure amongst social housing tenants, particularly council tenants and that also has far more to do with low incomes rather than energy efficiency because social housing tends to be more energy efficient than average. We have a very large private rented sector in London and a very expensive private rented sector a lot of the fuel poverty is a combination of the fact that a lot of the private rented sector is not in very good condition, but also the residual incomes of people living in it can be quite low after they have paid their extortionate rents."* (Regional government (***Lima***) 2018)

This raises an interesting point about the influence of the housing costs on fuel poverty rates in London. Approximately, 27% of the population in London live in poverty after housing costs, compared to 21% in the rest of England (Trust for London, 2017). This demonstrates that poverty has a significant impact on the levels of fuel poverty in London.

Respondent ***Lima*** spoke about the unique demographic and data challenges found in London.

> *"The fuel poverty data in London does vary from the rest of the country, in that social housing is worse and because we have a relatively young population it does tend to refocus a lot of the stats on non-pensioners. It's the sheer weight of numbers, as opposed to a rural area where there's a lot of older people. Mostly we're very interested in the data at regional level and we have a lot more information in terms of targeting people, but it's a lot more interesting to have data at local authority level. However, all we have from the national statistics is how many households are believed to be in fuel poverty in a given area and local authority. It doesn't tell you a great deal about the characteristics at that level, so we have an ongoing job to produce more data on that."* (Regional government (***Lima***) 2018)

This demonstrates how data availability is a key issue for the authorities in London. The inability to obtain national statistics at local area level, is a significant challenge in terms of targeting those in fuel poverty. The Mayor of London had plans to make an open source data model (using EPC data) available for use across London, so that local authorities can plan long term interventions at property level (Greater London Authority, 2018a).

Respondent ***Lima*** spoke about the drawbacks of the open source data model (using EPCs) and the plans to improve data quality.

> *"At the moment we have an open access Energy Performance Certificate map. You could indeed overlay that onto other data sets. However, it's not good enough. So, we are in the process of commissioning a building stock model, which will overlay energy efficiency data onto socio-*

> *economic data where possible. It's not going to be as granular as we would like because of data protection issues. We've been working at putting on various overlays, for example at local super output areas, where you're likely to see a lot of vulnerabilities coinciding and then we work with the boroughs to try and target them. It's tricky as London is a diverse area. You go out to other regions and you'll find more consistency at a local level whereas London is a hodgepodge, which can at ward level, for example, tend to average things out, because you've got everyone living cheek by jowl. You don't get that much variation. You have to go down quite far and ideally to household level, because in London you can people with very differing socio-economic characteristics living in the same building let alone the same street, which is a challenge for us trying to use data."* (Regional government (***Lima***) 2018)

This is an interesting summary of the data issues around fuel poverty identification, as they are experienced in the densely populated urban area that is London. It shows that there are no easy answers to these identification issues, particularly where the fuel poor live in such close proximity to wealthier households in many parts of the city.

Respondent ***Papa*** spoke about the data collected by the regulator related to debt and repayment plans.

> *"We collect data from suppliers on a quarterly and annual basis and that includes a series of data indicators around debt and repayment plans. We look at all of those metrics and publish an annual report. The 2018 report is currently available. Where we see that that there is quite a big problem in one area such as - debt journey – or it could be a series of indicators saying something is going quite wrong. We use our regulatory tools to ensure compliance."* (Energy regulator (***Papa***) 2018)

This is an important function, in terms of actively monitoring the number households who could be in, or at risk of fuel poverty. The report from Ofgem (2018b), revealed that in 2017 there were less customers repaying debts to suppliers and fewer PPMs being installed to repay debts. This level of monitoring is an important tool for the regulator to ensure that energy suppliers are looking after their most vulnerable consumers.

4.2.3 POLICY APPROACHES

The Policy Approaches theme covers the following subthemes: Approaches, Definition, ECO, Funds, Local Schemes, Strategies and Welfare Reform. The theme covers a range of elements that are currently subject to policy measures by the UK Government, in their efforts to tackle fuel poverty.

4.2.3.1 APPROACHES

The Approaches sub theme (7 files, 47 references), covers a number of the different approaches to tackle fuel poverty. These include: the national fuel poverty strategy, a focus on energy behaviours, working with external partners and energy efficiency measures.

Respondent ***Alpha*** summed up the essence of this theme through their comments on the fuel poverty strategy.

> *"I was talking about how the fuel poverty strategy of set up the framework for how we wanted to tackle fuel poverty, and meet the 2030 target, and now since the strategy's been published the focus has been on the implementation of that ambition and how we're actually going to improve the energy performance of low-income households."* (Central government (***Alpha***) 2018)

The implementation of the fuel poverty strategy (2015) in England is an important step for the Government. The main focus of the Government's approach, is improving the energy efficiency of the homes occupied by low income households.

Respondent ***Bravo*** gave an example of what can happen on the home visits to those living in fuel poverty.

> *"We've got home visits and they can help them with their energy behaviours, for example, they can give them small energy efficiency*

> *repairs like soundproofing the radiators and energy saving light bulbs and then they can refer them to someone."* (Local government (***Bravo***) 2018)

This is an important example of straightforward measures that can have a significant impact on the fuel poor. It demonstrates that providing assistance to those in fuel poverty does not have to be expensive measures, such the installation of new boilers and loft insulation. Bouzarovski and Petrova (2015), have highlighted the importance of an energy services approach to fuel poverty, which includes looking at the impact of space cooling, lighting, appliances and IT that are used in the home.

Respondent ***Fremantle*** spoke about the approach taken by the Scottish Government.

> *"It certainly feels in the Scottish Government that there's been a lot more willingness to listen to what outside organisations consider is the way forward. I guess one of the key changes they brought in, was the introduction of area based programmes to tackle fuel poverty."* (Third sector (***Fremantle***) 2018)

This is an interesting observation and shows that the Scottish Government are open to proven approaches to tacking fuel poverty. In England, the Kirklees Warm Zone is a well-known example of a successful area based approach (2007-2010) to tackling fuel poverty that was led by the local authority (Liddell, Morris and Lagdon, 2011).

Respondent ***Juliet*** spoke about the approach to tackling fuel poverty taken by their organisation.

> *"We have a large operations directorate where we work with third party organisations to understand how best to tackle fuel poverty and we run demonstration projects, so we can basically sample what might and might not work in terms of tackling fuel poverty and disseminate learning from that."* (Third sector respondent (***Juliet***) 2018)

This is an interesting approach to project delivery around tackling fuel poverty. It also shows the importance of trialling an approach to see if it works, before rolling it out at a larger scale.

Respondent ***Juliet*** also spoke about the impact of schemes on fuel poverty.

> *"The greater impact that we had was where our local partners were far more engaged and there is some research from some years ago, where the phrase 'willing individual' came out and it's basically because there is very little in terms of legislative drive for local authorities and other agencies to get involved in tackling fuel poverty. Those areas where there tends to be a person who really understands the agenda and really drives the agenda and can see that in tackling fuel poverty you can see the greatest impact."* (Third sector respondent (***Juliet***) 2018)

This is an interesting observation. It highlights the importance of engaging with people who will have the ability to deliver objectives at local authority level. Emden, Murphy and Lloyd (2018), point out that many councils lacked the funding capacity to deliver energy efficiency projects, and have recommended the formation of a national delivery body.

Respondent ***Kilo*** gave an example of partnership working in Bristol to tackle fuel poverty.

> *"We set up an event jointly with CSE and Western Power Distribution who are the local network here to engage with anybody across the city that was interested working together to tackle fuel poverty. We wanted to bring everybody together, so that was in November 2017. Following that event we have established a steering group in the city. With the support of Bristol's mayor this won't be just a local authority thing. It's very much a city thing, and it's not run by the council in any way, but we are working with a big group of organisations and individuals on pulling together a 10 year action plan."* (Energy supplier (**Kilo**) 2018)

The steering group being referred to by ***Kilo*** is the 'No Cold Homes' Initiative, which was launched in November 2017 (Pipe, 2017). This is a very interesting example of cross sector partnership working, which holds significant promise for the city of Bristol.

Respondent (***Lima***) spoke about the London Fuel Poverty Partnership.

> *"Fuel Poverty Partnership. It had its first meeting about 3 weeks ago and it's a pretty high level partnership, which is dedicated to bringing a lot of organisations in London together to tackle fuel poverty holistically."* (Regional government (***Lima***) 2018)

This is an example of a more formal partnership approach, with a wide range of stakeholders. It is interesting to see that this partnership aspires to a holistic approach, to tackling fuel poverty.

Respondent ***November*** spoke about the work being carried out in Bristol, to reduce carbon emissions and alleviate fuel poverty.

> *"Our two remits are to reduce CO2 emissions in the city, there's a target in the city to be carbon neutral by 2050 and to help alleviate issues of fuel poverty. We currently do that through any means necessary, we directly install energy efficiency measures into private housing in Bristol, so anybody in the city regardless of background can come to us and get a boiler or boiler upgrade, or insulation in their houses."* (Local government (***November***) 2018)

This is a good example of a combined effort to tackle carbon emissions and fuel poverty. Carbon reduction is key driver behind energy efficiency improvements. Since the interview with respondent ***November*** the corporate carbon reduction targets in Bristol have been exceeded in 2017/18, with a 71% reduction in carbon emissions (against a 2005 baseline) (Bristol City Council, 2019).

Respondent ***November*** also raised the issue of those living in fuel poverty, who were not in receipt of benefits.

> *"So that a lot of people who are in fuel poverty aren't necessarily struggling and claiming benefits. They are hardworking people who are just not earning enough to be able to meet their needs, especially as energy price rise. I think that a lot of fuel poverty work is aimed at people in social housing and people who are on benefits, but actually there's a really big chunk of people who are just falling through the net because*

> *they're not necessarily accessible in that way. We know who are the people on benefits and not in employment and living in social housing, but we don't know people who are renting places and just not earning enough to make ends meet."* (Local government (***November***) 2018)

This is an important observation, as it highlights the issue of fuel poverty among households outside the benefits system. These households typically occupy the private rented sector. The Government (***Alpha***) have also acknowledged that fuel poverty is a significant issue in the private rented sector. Ambrose, McCarthy and Goodwin (2016), found that tenants in the private rented sector did not prioritise energy efficiency, which meant that cold homes were often accepted, as they were more affordable.

4.2.3.2 DEFINITION

The definition sub theme (9 files, 31 references) looked at how the definition of fuel poverty has changed in recent years. The Government's change in definition (applied to England only) followed the final report from the Hills Fuel Poverty Review in 2012. The Hills Fuel Poverty Review (2012), found that fuel poverty was a distinct and serious national problem, and recommended that the government should move from the 10% indicator to the LIHC indicator and fuel poverty gap.

Respondent ***Alpha*** spoke about the LIHC indicator and fuel poverty gap measures, which are used to monitor fuel poverty.

> *"LIHC was not designed to reduce fuel poor households, it was designed to be static until we reach the target. You should see a decrease towards 2030. It's very difficult to state the numbers in fuel poverty. The fuel poverty gap should also fall over time."* (Central government (***Alpha***) 2018)

This is a very interesting statement, which explains a key issue that has been raised with the LIHC measure. The LIHC measure is relative as it uses national income and national median energy costs, which results in the proportion of households in fuel poverty (10-12%) remaining stable over time, whereas the fuel poverty gap measures the direct impacts of fuel poverty over time (Department for Business, Energy & Industrial Strategy, 2018b).

Respondent ***Alpha*** advised that the LIHC indicator was unlikely to be changed.

> *"No thoughts move away from LIHC indicator even though it isn't perfect, because the 10% measure was not working."* (Central government (***Alpha***) 2018)

This statement shows the intent by the Government to stick with the LIHC (relative) measure, as it is felt to be more reliable than the 10% (absolute) measure. Boardman (2012), points out that the 10% measure was an absolute measure, which made the eradication of fuel poverty possible, but meant that it did not vary with fuel price rises, income changes or improvements to energy efficiency in homes.

Respondent ***Bravo*** spoke about the usefulness of the 10% measure in practical terms.

> *"I think the main impact [of the LIHC indicator] is that it's less easy to understand. To communicate the low income high cost definition I've tended to use a little bit of the initial guidance from the government, but I kind of agree that the 10% didn't make an awful lot of sense because there's no cap on it, but the 10% is useful. I'm not entirely convinced by either of the definitions, because it's not just about the definitions."* (Local government (***Bravo***) 2018)

This is an important statement, which shows that the easy of understanding afforded by 10% measure made it useful. This highlights the challenges faced by the Government when adapting new definitions. It's interesting to note that ***Bravo*** was unconvinced by the value of either definition. Middlemiss and Gillard (2014), found that the way that households view fuel poverty, does not always match the way it is framed within the official definitions.

Respondent ***Fremantle*** spoke in detail, about their contribution to the work of the Hills review into fuel poverty.

"In 2012 there was the huge review of fuel poverty which looked at the definition and broadly at the policy. It was mainly focused on the definition, that was the Hills review, so we engaged with that quite extensively. An awful lot of work went into trying to influence it. I hope that we played a fairly useful role in making the argument that fuel poverty was a distinct issue separate to general poverty. We came up with a way of conceptualising what the difference was, which Hills has adapted. I'm not sure how much we were credited but I know it's a definition that we first coined, which then got adapted by the European Commission as well. There was a lot of analysis within the Hills review which was very useful, but he did come up with a definition which was very unhelpful." (Third sector (***Fremantle***) 2018)

This is an incredible insight into the behind the scenes work that influenced the Hills review, which in turn informed the Government's approach to fuel poverty from 2013. The distinction between general poverty and fuel poverty is a key finding of the report. Hills (2012), argued that fuel poverty was a distinct and serious national problem. However, it is clear that ***Fremantle*** was not in agreement, with the definition that subsequently arose from the Hills review.

Respondent ***Fremantle*** spoke about the LIHC indicator and the impact that it has had on fuel poverty.

"I think a lot of people who work in the fuel poverty world don't really find it very helpful and there is a view that it's contributed towards a de-prioritisation of fuel poverty as a policy issue, because it's produced a definition which doesn't change much." (Third sector (***Fremantle***) 2018)

This is an interesting point, and it explains why ***Fremantle*** felt that the LIHC indicator had produced an unhelpful definition. Middlemiss (2016), argues that focusing on the LIHC indicator and fuel poverty gap, will mean that vulnerable households outside the low income high cost priority group, will fall through the gaps.

Respondent ***Fremantle*** elaborated on the nature of the relative definition of poverty.

> *"It's not because it's a relative definition. I come from a poverty background and that's always been an understood approach. You have a relative definition of child poverty, which still makes it possible to abolish child poverty. You have a relative definition of fuel poverty, which makes it virtually impossible to abolish it because they set the threshold at median, so you will always have 50% affected, so it's a particular way they set the threshold for distinguishing between those defined as fuel poor and not fuel poor."* (Third sector (***Fremantle***) 2018)

This is a key point around the impact of relative definitions to poverty policy making. The comparison with child poverty is an interesting one, as they are interconnected issues. ***Fremantle*** is not alone in criticising the use of median thresholds in the LIHC indicator. Boardman (2012), pointed out that the use of a median threshold for fuel costs was a major disadvantage, as it meant that too few households met the definition of fuel poverty.

Respondent ***Fremantle*** spoke about the relationship between the LIHC indicator and the fuel poverty gap.

> *"It's a big problem and there was a lot of people. Hills and the civil servants who worked on it argued that the LIHC indicator, will become less important than the fuel poverty gap measure, which will be the one you use for trying to ascertain whether the policy is having an impact. Basically it's sensitive to changes in prices, policies and programmes, nobody takes any notice of it, or very few people. It's referred to by politicians and Treasury. They always focus on how many people are there in fuel poverty, so you end up discussing movements, small movements which can be put down to statistically anomalies."* (Third sector (***Fremantle***) 2018)

This is an interesting observation about the impact of the fuel poverty gap. The focus on the number of households affected by fuel poverty by politicians and the media, certainly appears to have made the fuel poverty gap less prevalent. Boardman (2012), highlighted the risk of the fuel poverty gap being forgotten, as it represented an additional element to the relative LIHC indicator.

Respondent ***Fremantle*** spoke about the practicalities of using the LIHC indicator, at a small area scale.

> *"To my mind there were so many people who were probably very unhappy with it and I'm working with councils now trying to look at what it tells them at a small area level. They're saying it's just nonsense half the time. It will really flag up large student areas for instance, so some of the most prosperous areas in Bristol would have a mix of students but also very affluent people in big old Victorian and Georgian houses and they are being identified as some of the most fuel poor areas in Bristol."* (Third sector (***Fremantle***) 2018)

This is an important point about the application of the LIHC indicator, as it highlights a significant challenge with applying it at small area level in urban areas, with mixed populations. ***Lima*** also spoke about a similar issue in London, with challenges of identifying fuel poverty in densely populated neighbourhoods.

Respondent ***Fremantle*** gave more detailed comments around the LIHC indicator and fuel poverty gap.

> *"It feels like if we have an indicator which doesn't show that the policy is going anywhere, well why put any effort into policy. The gap measure you know it fails another key requirement of indicators, in that they should be easily comprehensible. This is the problem, as everybody still quotes the indicator. People who work in fuel poverty might put more emphasis on the gap. The problem with the gap, although it's useful, it's still tarred with the same flaws as the main indicator, by only describing how far behind the fuel poor are as defined by the indicator. So that static group of fuel poor, well static in the sense that the numbers stay the same, not the same people, but static in the sense it is describing how far behind the rest they are. That's quite a problem."* (Third sector (***Fremantle***) 2018)

These are key points about the fuel poverty gap. The fact that the fuel poverty gap is not easy to understand, might well explain why the LIHC indicator is preferred. ***Fremantle*** also points out, the fuel poverty gap is affected by the relative nature of the LIHC indicator. The point made by ***Fremantle*** about the people affected not being the same was acknowledged in the Hills Review. Hills (2012), was relaxed about people moving in and out of fuel poverty as their circumstances changed over time, expressing a preference for targeting outside the eligibility criteria for fuel poverty.

Respondent ***Juliet*** spoke about the impact of the change in fuel poverty definition.

> *"There is the definition of fuel poverty that has changed relatively recently, which is very difficult for practitioners to use in terms of identifying people who are in fuel poverty. On a practical level what tends to happen is that many organisations who are seeking to help the fuel poor will look to a very broad means rather than a kind of truish definition. In terms of the evidence base certainly and on a practical basis, the projects that we develop and deliver rarely use that very stringent fuel poverty definition in order to determine who we would help."* (Third sector respondent (***Juliet***) 2018)

This is further evidence that the LIHC indicator has not been used to determine whether people are in fuel poverty. This organisation have chosen to use a different set of variables to identify the fuel poor, and appears to have worked for them. This wider approach also appears to be what Hills intended. Boardman (2012), sounded a note of caution, by pointing out that monitoring proposals like the LIHC indicator, do not work as criteria to identify households in fuel poverty.

Respondent ***Juliet*** spoke about how the LIHC indicator provided a benchmark to measure fuel poverty.

> *"I think in terms of how it records people in fuel poverty. It does give a benchmark, there is no getting away from that, but I think on a practical level, many practitioners are unable to use that because it is very complex. It does give overall benchmark so that the government can monitor year on year how fuel poverty levels appear to be doing, but there*

are so many factors that influence that." (Third sector respondent (***Juliet***) 2018)

This is an interesting view of the LIHC indicator, as shows that practitioners see it in terms of being useful for the Government. They do not appear to find the LIHC indicator useful in their day to day work with the fuel poor, due to it's complexity. Moore (2011), points out that research has found the LIHC indicator to be overly complex, as it equivalises energy costs.

Respondent ***Kilo*** spoke about plans to develop a new definition of fuel poverty specifically for Bristol.

> *"We as a City, as part of our No Cold Homes work have a view and the council is re-writing their Joint Strategic Needs Assessment. For the first time it was decided to include a chapter on fuel poverty, which is fantastic news and we have been involved in the drafting of that chapter. We've had as a group long conversations about whether Bristol should employ its own definition of fuel poverty. Talking about how the low income, high cost actually tends to exclude quite a lot of people. It probably excludes more than the 10% did. Whereas the 10% if anything included more people than it needed to. It [LIHC indicator] excludes households with lower than average fuel costs, so people in smaller homes. They may be new builds for instance, so quite energy efficient, but it also ignores the differences in the heating needs of different groups."* (Energy supplier (**Kilo**) 2018)

The fact that the No Cold Homes steering group in Bristol have contemplated their own definition, is further proof that the LIHC indicator is not working. It is interesting to see that the exclusion of households living in smaller homes, has been identified as an issue. Moore (2012), explains that smaller households are excluded because the LIHC indicator uses total, rather than (£/m^2) fuel costs.

Respondent ***Lima*** spoke about the LIHC indicator in relation to London.

“The current definition. In England anyway is low income high cost, whereby if someone is earning under 60% median income and spending more than the average on energy then they're considered fuel poor. Now that's a huge oversimplification, of what is a very wonkish and very detailed definition. There's also a direct equivalisation after hidden costs and what not. That's a significant change from the old definition and the one that's still applied in Scotland and Wales, whereby someone is considered fuel poor if they spend more than 10% of their income on energy. London used to use a third definition, which is 10% of the housing costs, recognising that housing costs are way in excess of any other part of the UK. So, we moved away from that. The new Fuel Poverty Action Plan doesn't consider that it uses the national English definition, but you know I retain concerns over it because the median energy bill in London is lower than it is for the rest of the country, because our properties are smaller.” (Regional government (***Lima***) 2018)

The size of the median energy bill in London is an important consideration, as it links back to the issue of smaller properties not being considered fuel poor under the LIHC indicator. The question of measuring fuel poverty before or after housing costs is a key issue for London, which explains why housing costs had been a major factor in their definition.

Moore (2012), used data from the English Household Survey (2008) to demonstrate the impact of using before housing costs (BHC) and after housing costs (AHC) for an average London family – in this example BHC was 6.8% compared to AHC at 14.9%. This puts the family outside the 10% measure under BHC, whereas they qualify for support under the 10% measure under AHC. The example illustrates the issues with a one size fits all approach for the country.

4.2.3.4 ECO

The ECO sub theme (11 files, 115 references) encompasses comments on the Energy Companies Obligation (ECO) scheme, which was set up by the Government in England. ECO is the current scheme, which obligates energy suppliers to fund energy efficiency measures for homes categorised as ‘difficult to treat’, and inhabited by those ‘most in need’ (Hough, 2017).

Respondent ***Alpha*** spoke about the ECO scheme, and how it has changed since the fuel poverty strategy was published in 2015.

> *“I spoke about ECO, which is the largest scale energy efficiency scheme in Great Britain. So, at the time of the strategy it was a larger obligation. It was originally £1.3-1.4BN when it was set up in 2013. It was reduced in size, so essentially funded by consumer bills. Government will set legislation it will set a target in law for the energy suppliers are required to meet. We'll estimate the costs of that, so the original cost estimates were in the range of £1.3-1.4BN in 2013 prices and then the suppliers are under an obligation to go out and deliver on that ambition and then they'll pass that cost onto their customers. As part of a focus on the costs of energy particularly over 2014 there was a decision that the obligation should be reduced in size to reduce the costs to consumers and this was part of a package to work to reduce the costs of energy policies on bills by £50. The obligation was reduced from that £1.3-1.4BN to £860M. So, it was reduced in size, but the main point is back then the obligation was primarily focused on carbon abatement.”* (Central government (***Alpha***) 2018)

This is an interesting summary of funding changes to ECO since 2013. The key point is the move from a scheme that was focused on carbon abatement, to one which was more focused on low-income and vulnerable households. This was done to lower the cost to the consumer through reduced charges on energy bills.

Respondent ***Alpha*** spoke about the links between the carbon reduction schemes and affordable warmth schemes, that preceded the current ECO scheme.

> *“It was divided into three parts, so one part of the scheme was called CERO or the Carbon Emission Reduction Obligation and that was open to the entire population. No eligibility criteria. Another part of the scheme*

was focused on area based delivery, which was the Carbon Based Saving Communities Obligation CSCO and then there was Affordable Warmth, which was the part of the obligation that used means-tested benefits as eligibility criteria and is really the part that was focused on low-income and vulnerable households. They were not exactly the same but roughly equal in terms of their size. If we say that they were about a third of the obligation each and that was based on the original £1.4BN. When the obligation was reduced in size that Affordable Warmth Obligation was safeguarded and the CERO and CSCO were reduced in size and then the obligation was further reduced in 2015 again to of reduce pressure on bills and I believe that was announced in the 2015 Comprehensive Spending Review and then as part of that, so that was reduced to £640M, so again reducing the costs on bills." (Central government (**Alpha**) 2018)

This summarises the steps involved in the policy shift from carbon reduction to affordable warmth. The driving force has been a desire to reduce the amount that consumers were obliged to contribute through their energy bills. Hough (2017), points out that energy bill contributions were reduced by £50 under ECO1 (announced in 2014), and again by £30 under ECO2 (announced in 2015). The use of ECO to fund domestic energy efficiency measures has been described by Middlemiss (2016), as a potential false economy, because it hits the disposable income of low-income households. The impact of these policy changes, has been a significant reduction in the amount of funds available to implement energy efficiency measures. Emeden, Murphy and Lloyd (2018), point out that the political sensitivities in ECO fund raising, are a limiting factor on the overall size of the scheme.

Respondent ***Alpha*** elaborated on the move to Affordable Warmth, within the ECO scheme.

"That's another way that the obligation is delivered and historically the Affordable Warmth side of the scheme would have always relied on the means-tested benefits system, as that of proxy for low income and proxy

> *for fuel poverty and it's a reasonable proxy because we do know that 80% of fuel poor households do receive some form of welfare support."* (Central government (**Alpha**) 2018)

The link between Affordable Warmth and means tested benefits, is interesting as it is reliant on benefits being a good proxy for fuel poverty. Emden, Murphy and Lloyd (2018), argue that the use of benefits is ineffective as a proxy for identifying fuel poor households, as up to 20% of fuel poor households do not receive, or are unaware that they qualify for benefits.

Respondent ***Alpha*** set out the steps were being taken to address the needs of households not in receipt of means tested benefits.

> *"Something we decided as part of the reforms for the scheme in 2017 was that it's not fair that the 20% of those who aren't on any welfare are automatically excluded from that scheme and it's also true that some households might just be the wrong side of an income line to receive a certain benefit that they might still be struggling with the cost of keeping warm and it might be the case that some of those households might be particularly vulnerable."* (Central government (**Alpha**) 2018)

This is important for improving the fairness of access to ECO support, for fuel poor households not receiving benefits.

Respondent ***Alpha*** spoke about the Local Authority Flex Scheme, which had been designed to target households outside the Affordable Warmth criteria.

> *"So, we introduced what we call LA Flex or Local Authority Flexible Eligibility and this was essentially trusting local authorities to make the right decisions and use their existing schemes to target homes that they felt needed support….Up to 10% of that obligation could be met through this other route where we're just trusting local authorities to work with suppliers to identify homes that they think need support."* (Central government (**Alpha**) 2018)

The local authority flexible eligibility appears to be a pragmatic solution to the fairness gap in the Affordable Warmth criteria, around the receipt of benefits. The Government see the 10% flexible eligibility mechanism, as an appropriate level, to test the mechanisms that local authorities and suppliers use to identify fuel poor households (Department for Business, Energy & Industrial Strategy, 2017b). Emeden, Murphy and Lloyd (2018), reported that the 10% flexible eligibility target has never been met by local authorities, due to a lack of capacity and understanding of the mechanism. This demonstrates that there is space for improvement in terms of delivery.

Respondent ***Alpha*** elaborated on the plans for the new ECO 3 scheme, following a recent consultation.

> *"We have now consulted on our proposals for the next ECO scheme which is due to run from later in 2018 through to 2022. So, still at £640M a year and our proposal is that it's going to be 100% Affordable Warmth."* (Central government (**Alpha**) 2018)

This is an important statement of intent, with regards to the directional focus of ECO 3 scheme. The focus on Affordable Warmth has the potential to improve the lives of those households that meet the eligibility criteria. The Committee on Fuel Poverty (2018), have concerns, that only 30% of households eligible for support under the Affordable Warmth Obligation live in fuel poverty. This highlights the targeting issues at the heart of fuel poverty policy.

Respondent ***Alpha*** spoke about the obligations for landlords in the private rented sector, under the ECO 3 scheme.

> *"The proposed approach is that those in the private rental sector will be included within the ECO eligible group, alongside ECO there's the Private Rented Sector Regulations, which we consulted on earlier in the year and are due to give our response on soon, which is. So, their regulations are effective now, as of 1st April 2018 landlords aren't able to let out F or G rated properties….So, the consultation proposal was that landlords would have to face costs of up to £2,500 to improve the energy performance of*

> *those homes. There are other options presented as well with larger cost caps or no cost cap, so we're waiting on that and then we'll have to make amendments to the legislation. So, we're hoping to do all of that this year.”* (Central government (**Alpha**) 2018)

This highlights the impact of incorporating the private rented sector into the ECO 3 scheme. The fact that landlords are going to be prevented from letting Band F and G properties, is an important step towards eliminating fuel poverty in the sector. Since the interview with ***Alpha***, it has been reported by the Committee on Fuel Poverty (2019), that the energy improvement cost cap for landlords has been set at £3,500. It remains to be seen how these measures will impact on the lives of fuel poor tenants.

Respondent ***Alpha*** spoke about the potential impact of the Affordable Warmth obligation and how this would be monitored.

> *“So, at the moment at least we have more of an approach around low-income households through the Affordable Warmth and we'll have a cost effective policy that delivers hundreds of thousands of measures each year, so that generally speaking the energy performance of the homes improve especially for low-income households and then we're of reducing the number of inefficient homes that people could live in – in the future, but what these tools could do is give an estimate of the likelihood if that home is living in fuel poverty, which could be a useful tool for capturing and projecting those future statistics. Ultimately what we'll be recording will be you're more likely to be judged upon those basis from both the Committee for Fuel Poverty and Parliament are going to have that official government record, but it will be useful to be able to project based on policies like ECO.”* (Central government (**Alpha**) 2018)

This is important, as it sets how the Government view the likely impact of the Affordable Warmth Obligation. It shows how reducing the number of energy inefficient homes is at the core of the Government’s approach to tackling fuel poverty. The judgement of the Committee on Fuel Poverty is a key point here. Especially, as they have expressed their disappointment that their advice on focusing ECO 3 on the fuel poor, as opposed to low-income households, was not followed (Committee on Fuel Poverty, 2018). In hindsight, this appears to have been a missed opportunity to direct the policy focus of the Affordable Warmth Obligation on fuel poverty prevention.

Respondent ***Bravo*** gave an observation based on their experiences with ECO funding.

> *"The ECO funding can be useful if you can get it in the right kind of way, but it isn't the answer to everything and in the private rented they want everything free."* (Local government (***Bravo***) 2018)

This shows that there are limits to the effectiveness of using ECO funding to tackle fuel poverty. The point about the private rented sector is interesting. Emden, Murphy and Lloyd (2018), found that the main barrier to engagement was with landlords rather than tenants, who were often unwilling to fund work to improve their properties.

Respondent ***Fremantle*** spoke about their impressions of ECO funding.

> *"There has been, what has changed with ECO when the energy companies obligation was first introduced. It was a programme for both the better off and lower income. It's now become a programme just for low income, but really all they've done is just cut the bit that was for the better off."* (Third sector (***Fremantle***) 2018)

This is an interesting observation. ***Fremantle*** accurately summarises the change in policy focus and budget reduction for the ECO scheme, which were discussed in detail by ***Alpha***. The House of Commons Energy and Climate Change Committee (2016), heard evidence from Dr Jan Rosenow - who stated that the reduction in ECO funding, would leave a big gap between the Government's fuel poverty targets, and the funding available under ECO. The ability of Affordable Warmth to tackle fuel poverty in a meaningful way, is clearly a concern for fuel poverty experts.

Respondent ***Fremantle*** commented on differences between the ECO and Warm Front schemes.

> *"The government Warm Front scheme - love it or loath it. It at least had very fixed and firm parameters and what happened with ECO was that*

many clients didn't know what they would get or whether they would get anything. There was a more complex kind of application process and so that made ECO rather difficult for a lot of people. You know one person down the street would get, but another person down the street wouldn't get it. So, ECO has had its problems, but if we thought somebody would be eligible, we would certainly refer them." (Third sector (***Fremantle***) 2018)

This is an important point, about who is actually eligible for support under the ECO scheme. The Warm Front scheme initially used income and disability benefits as qualifying criteria (2001), which changed in 2011/12 to include a living in a thermally inefficient property before the scheme closed in January 2013 (Sovacool, 2015). The eligibility for these schemes is the key feature. This is not surprising when the criteria are changed by different political administrations.

Respondent ***Juliet*** echoed the point on complex the eligibility criteria for ECO.

"The problem with ECO of course was always that it was complex. It wasn't a straightforward eligibility type arrangement. Before we had that, we had kind of more robust parameters for projects. We had the Warm Front Scheme." (Third sector respondent (***Juliet***) 2018)

It is very interesting to see two fuel poverty experts (***Fremantle*** and ***Juliet***) make similar points, about the complexities around the eligibility of the ECO scheme. This complexity appears to be significant challenge to tackling fuel poverty using Affordable Warmth.

Respondent ***Kilo*** spoke about the potential impact of ECO on small energy suppliers.

"They're going through a consultation at the moment for the new round of ECO and I know that the Big Six are pushing to remove the barrier and you know if it was removed it would obviously provide an opportunity for us, but it would also be of detriment to a lot of smaller suppliers, because it does increase your cost base dramatically to be able to offer that to those customers." (Energy supplier (**Kilo**) 2018)

This is an important point about the impact of the ECO threshold on small suppliers. ***Kilo*** is employed by a small supplier that is exempt under ECO 3. However, a further supplier obligation beyond ECO 3, is likely to have no minimum threshold (Department for Business, Energy & Industrial Strategy, 2018d). If this decision is realised then it could have a significant on the ability of small suppliers to operate in the market.

Respondent ***Lima*** raised an issue about the share of ECO allocated to London.

> *"The fact that we have the Warmer Homes Fund to go back to it briefly is you know. A lot of the reason that was set up, was because of the shortfall in London's share of ECO was significant. Now we have 13% of the GB population, as ECO doesn't cover Northern Ireland, and we only get 7% of the money back…. So, we estimate that we're paying in £80M a year more than we get back, because every household has to pay it. It's a fixed amount, but we're not getting it back."* (Regional government (***Lima***) 2018)

This is an issue of fairness for London energy consumers. The response from the Mayor of London, has been a call to the Government to devolve ECO funding to London, for dispersal through the Energy for Londoners energy efficiency programme (Greater London Authority, 2018a). The devolution of ECO funds, appears to be a pragmatic solution to the issue of underinvestment in London.

Respondent ***Lima*** elaborated on the devolution of ECO funding to London.

> *"So, our position is that we should have at least equal powers to Scotland. What it says in the Fuel Poverty Action Plan is that the ECO funds should be devolved to the Mayor and he can spend them alongside Warmer Homes."* (Regional government (***Lima***) 2018)

This raises a fundamental issue around the way that the devolution of political power operates in the UK. The Scotland Act 2016, gave the Scottish Government powers to design how 'supplier obligation' schemes (such as ECO) are implemented, to control the way that funding is targeted (Hough, 2017). It is apparent from ***Lima's*** comments that the

Mayor of London would like similar powers, which would set an interesting precedent if granted.

4.2.3.5 FUNDS

The funds theme (6 files, 42 references) refer to the funding needed to tackle fuel poverty. In the UK funds are typically allocated from central government to local authorities.

Respondent ***Alpha*** spoke about a specific fund to tackle fuel poverty.

> *"So, the strategy announced a £25 million fund specific to English local authorities that became the central heating fund. It was a competition that local authorities could bid into and they'd present proposals for how they were either going to connect households that didn't have a central heating system…. So, that was a small pilot project really that ran over 2015 / 2016 and the delivery was completed by March 2017."* (Central government (***Alpha***) 2018)

This is an interesting example of funding made available to tackle a specific aspect of fuel poverty, namely a lack of central heating. It is important to clarify that this fund was targeted at 8,000 low-income off-grid households, who are worst affected by fuel poverty (Department for Energy and Climate Change, 2015c).

Respondent ***Alpha*** spoke about the targeting issues that impacted on one local authority, involved in the central heating fund.

> *"So I think they were looking to do a project in the range of a £1 million and we had to claw back some of that money cos they were unable to find enough low-income households that didn't have a central heating system. So, we were able to recoup that funding and so lots of learning and I've been feeding that into some of the work that we're doing now on the national programmes."* (Central government (***Alpha***) 2018)

This is an important admission that central heating fund did not proceed as planned. It is promising to see that lessons have been learned from the experience. Dubois (2012), points out that there are political and economic obstacles associated with the precise targeting of fuel poverty, high levels of precision are not necessarily optimal from a costs perspective.

Respondent ***Bravo*** spoke about the funding links between different types of poverty.

> *“We link fuel poverty with other forms of poverty. So, for example I work quite closely with our welfare reforms team. They're all people who deal with people who are about to be affected, or inordinately affected by benefit cuts and things like that. So, they deal with the people who are on the breadline and one of the things that's come out of that is initially I just worked on building based initiatives. I still primarily do, but integrate with finance based initiatives and with the teams. What I normally just say is that fuel poverty is an issue, but it doesn’t exist in isolation it's just like all the other forms of poverty that people are dealing with.”* (Local government (***Bravo***) 2018)

This is an interesting point and links into comments made by ***Lima*** about the impact welfare reform (4.2.1.4). The link between welfare reform and household incomes has been a key factor in recent fuel poverty levels. The changes that took place under the Welfare Reform Act 2012, have been a significant factor in destabilising household incomes, these include the under-occupancy change and Universal Credit (Middlemiss and Gillard, 2015). It is promising to see that the rights of those impacted by poverty and fuel poverty, are being considered holistically.

Respondent ***Bravo*** spoke about the scale of funding changes, that have taken place in recent years.

> *“The problem is that your dealing with a system that is so limited in what it can offer and what you can get funding in for. Once upon a time you could offer everyone who has put low income loft insulation. You could do this, you could do that. Now there's very limited funding out there and we try and maximise boilers and they are targeted against people who are on certain incomes. So we're certainly getting closer to that. I think because it's not large scale it’s not making a sizeable hit yet, but that's in*

> *part because there's not a lot there. You need to do proper – to really help people with their energy bills you need bigger measures that you're putting in and there isn't the funding there for that.”* (Local government (***Bravo***) 2018)

This an important point about the scale of funding available to local authorities, when now compared to previous years. Sovacool (2015), pointed out that the Warm Front scheme demonstrated that there were massive financial benefits, from Government investment energy efficiency measures. The comment from ***Bravo*** highlights the need for renewed state investment in large scale energy efficiency measures.

Respondent ***Bravo*** spoke about the challenges involved in meeting the fuel poverty target by 2030.

> *“If we could get all homes - I should know this off by heart – if we could get all homes to a [band] C by 2030 and if it's EPC, that's great, but if that's not supported by funding we can't have anything. That is something that is tangible. That would be like – okay we've improving these home and we can work that target here we go. Now we obviously can't because we just wouldn’t have the funding or the money to do that as a council, but if that kind of thing needed something a bit more tangible and also there needs to be the kind of, you can't just have a target and then nothing to support you behind it. It's kind of we can do what we can for that target in improving the efficiency of homes, but you know it's not a failure from our side if there's no budget there for it.”* (Local government (***Bravo***) 2018)

This comment from ***Bravo*** re-iterates the need for more funding be made available to local authorities, in order to meet the fuel poverty targets currently in place. It echoes concerns raised by ***Fremantle***, about the abolition of public funding for energy efficiency projects in England (4.2.1.6). The Committee on Fuel Poverty (2018), estimated that the overall funding needed to meet the Band C target by 2030 has increased to £17.1 billion, due to slower progress by the Government than forecast.

Respondent ***Fremantle*** spoke about the desire to see improved funding for low-income households, within ECO.

> *"So, lots of people wanted to see it being much more focused on lower income assuming that the low income bit would expand to the same size as what used to be provided for the better off. I mean it has grown a tiny bit, if you look at the bit that was allocated to the lower income. It might have been something like £400 million allocated to low income and £600 million to the better off. It's something like £600 million now for the low income, but it is a programme now just for the fuel poor."* (Third sector (***Fremantle***) 2018)

This is an important observation about the reduction in ECO funding. The explanation for this reduction and the impact are explored in more detail in the comments from ***Alpha*** and ***Fremantle*** in the ECO section (4.2.3.4).

Respondent ***Lima*** spoke about the need for increased Government funding to tackle fuel poverty.

> *"I mean ECO was nowhere near as much as it should be and there should be a taxpayer funded programme for all of England, we're very clear on that, but in the absence of either of those things happening then we're doing our best."* (Regional government (***Lima***) 2018)

This is key point about need for new taxpayer funded programmes to tackle fuel poverty in England. This point has also been made by ***Bravo*** (above) and ***Fremantle*** (4.2.1.6). It is not surprising that the Mayor of London has called on the Government, to provide improved funding support for fuel poverty programmes (Greater London Authority, 2018a). Funding to tackle fuel poverty is a major issue that is going to remain prominent for the Government, as we approach the target delivery date of 2030.

4.2.3.6 LOCAL SCHEMES

The local schemes sub theme (5 files, 34 references), explores a number schemes that tackle fuel poverty at a local or regional level across England.

Respondent ***Bravo*** spoke about the Better Housing Better Health scheme.

> *"We pay into Better Housing Better Health, which is a single point of contact for local residents entering into to access funding services… What we try to do is use the Better Housing Better Health service as a single point of contact. That's recommended by the NICE guidelines – clinical guidelines."* (Local government (***Bravo***) 2018)

This is a good example of a local scheme that provides support for the fuel poor. The Better Housing Better Health scheme provides a range of services, including energy advice, local support along with funding for home improvement and repairs in the English counties of Buckinghamshire and Oxfordshire (Better Housing Better Health, 2019). The provision of energy advice to individuals and households living in fuel poverty, is an important component of the scheme.

Respondent ***Bravo*** also spoke about a project called LEAP.

> *"You have to bear in mind there's a number of different services that we carry out, one of them the LEAP project that's very helpful."* (Local government (***Bravo***) 2018)

This is another good example of a local scheme that addresses the needs of the fuel poor. The Local Energy Advice Partnership (LEAP) is an energy and money saving service that offers a free of charge home visit with a home energy advisor, with eligibility requirements designed to households that are already in fuel poverty or at risk of falling into fuel poverty (AgilityEco, 2019). Again the provision of energy advise is a key attribute of the scheme.

Respondent ***Kilo*** spoke about the No Cold Homes initiative in Bristol.

"So, we're in very early days, but focusing on five key areas. Looking at home energy standards, but specifically in the private rented sector which is extremely bad in Bristol. Bristol has a lot of private rented homes that are often over populated, in the most deprived areas of the city." (Energy supplier (**Kilo**) 2018)

The private rented sector is a key area of concern, not only in Bristol but across the rest of the UK. The issue with the private rented sector is recognised by the Government – see comments from ***Alpha*** (4.2.1.4). In England, the latest data to be published (from 2016) shows that the rate of fuel poverty in the private rented sector was 19.4%, compared to the owner-occupied sector which was 7.7% (Department for Business, Energy & Industrial Strategy, 2018b). Ambrose, McCarthy and Goodwin (2016), have found a lack of research into the lived experience of tenants in the private rented sector. Improving this situation is essential to understanding the impact of fuel poverty in this sector.

Respondent ***Lima*** spoke about the use of the Warmer Homes Fund in London.

"The fact that we have the Warmer Homes Fund to go back to it briefly is you know. A lot of the reason that was set up, was because of the shortfall in London's share of ECO was significant. Now we have 13% of GB population, which is ECO doesn't cover Northern Ireland, and we only get 7% of the money back." (Regional government (***Lima***) 2018)

There is an interesting point by ***Lima***, about the link between the Warmer Homes Fund and the wider issue of the ECO shortfall for London (see ***Lima's*** comment in 4.2.3.4). The Mayor of London's Warmer Homes scheme was launched in 2018 to deliver energy improvements to eligible London households, and it will be seeking matching funding from the ECO scheme (Greater London Authority, 2018a). It is promising to see that steps have been taken to level up the ECO imbalance in London.

Respondent ***November*** spoke about impact when local schemes fail, using the example of Warm Up Bristol.

> *"I think that the biggest impact was reputational damage for us which was had made people a bit nervous about anymore council run schemes, but any event that I go to there's always one who says "well isn't it a council scheme couldn't that council scheme go horribly wrong etc.," which wasn't the case. Warm up Bristol suffered as a consequence of government policy like everything else."* (Local government (***November***) 2018)

This is a really interesting example, as it demonstrates the local impact of national policy changes. The Warm Up Bristol scheme was launched in 2014 to help residents improve their homes and it utilised Green Deal funding from the central government (Bristol City Council, 2018). The Green Deal Finance scheme was started under the Coalition Government in 2013, but it was closed in July 2015 following the election of a Conservative Government, due to low take up and controversy around delivery standards (Hough, 2017). In 2017, it was reported that the Warm Up Bristol scheme had failed, resulting in the city council returning £3.3 million of Green Deal funding to the government (BBC News, 2017). The BBC News (2017), reported that the failure of two firms contracted by Bristol City council to carry out the home improvements, left hundreds of households with unfinished work.

The removal of the Green Deal finance scheme clearly had a significant impact on the delivery of the Warm Up Bristol scheme. The Bristol City Council have since adapted an in-house approach to the delivery of energy efficiency measures to residents, as described by ***November*** in (4.2.3.1).

4.2.3.7 STRATEGIES

The Strategies sub theme (5 files, 33 references), encompasses comments relating to the fuel poverty strategies that successive governments have put in place in the UK.

Respondent ***Alpha*** spoke about the Government's Fuel Poverty Strategy, which was launched in 2015.

> *"So, I was talking about how the Fuel Poverty Strategy set up the framework for how we wanted to tackle fuel poverty, and meet the 2030 target, and now since the strategy's been published the focus has been on the implementation of that ambition, and how we're actually going to improve the energy performance of low-income households. So, alongside the strategy itself, which was published in March 2015. We focused on strategy as one of the priority areas for action."* (Central government (***Alpha***) 2018)

This is a key statement of intent regarding the Government's ambition to deliver the targets, that were set out in the Fuel Poverty Strategy. It is clear from this statement, that the Government's strategy is focused on improving the energy efficiency of fuel poor households. The Committee on Fuel Poverty (2018), have pointed out that progress towards the targets for band D properties was promising between 2015 and 2017, but declined in 2018. It is important that the Government continues to prioritise those most affected by fuel poverty.

Respondent ***Fremantle*** spoke about the changes in the approach by the Government, since the first Fuel Poverty Strategy.

> *"So we've had a fuel poverty strategy that was put in place in 2001 and the government put in a number of programmes to meet its fuel poverty targets. Its flagship programme was the Warm Front programme which you know was scrapped for energy efficiency and so on, but it also had supplier obligation. The obligation of fuel companies to put money into energy efficiency measures into people's homes. The supplier obligation was originally its main aim was to reduce carbon, so that was seen as a supplementary programme to Warm Front. Later on in the Labour Government we had the introduction of the Warm Home Discount, which was in effect a response to what people like myself and a lot or organisations say that fuel companies in the old system social tariffs was a bit ad hoc and a bit messy, because it was dependent on who the fuel supplier was. Fuel companies were in effect setting social policy, so*

> *there's an argument that government should set social policy in people's homes."* (Third sector (***Fremantle***) 2018)

This is an interesting commentary about the impact of the strategy change by the Government of the day, on the delivery of support to the fuel poor. The Warm Front Home Energy Efficiency scheme operated between 2000 and 2013, reducing fuel poverty across 2.35 million homes in that period (Sovacool, 2015). The Warm Home Discount scheme started in 2011 and offered a rebate on electricity bills from the supplier for eligible consumers, it has been extended to 2020/21 (Hough, 2016). Interestingly, ***Fremantle*** spoke about the association between the Warm Home Discount scheme and the Labour Government. Hough (2016), explained how the original Warm Home Discount scheme replaced voluntary social tariffs, origination from a proposal from the Labour Government, but was introduced by the Coalition Government. The interesting point here, is that one scheme survived austerity and the other did not. It should also be noted that the Warm Home Discount scheme, shares eligibility criteria with the ECO scheme (Hough, 2017). This is probably why it has survived so long.

Respondent ***Fremantle*** spoke about the importance of the energy efficiency targets, in the current fuel poverty strategy.

> *"Try and bring fuel poor housing up to higher energy efficiency standards. I still think it's really important. That should be a central focus of fuel poverty policy. I mean in a way it's a much easier target than the old fuel poverty target was, because the old fuel poverty target was about pricing, income. This one it's a much more tangible thing about performing houses up to a certain level, but I think it's a thing that a lot of people get. MPs like and so on. Part of the reason we went for it was it gets standards minimum standards. I think the flaw is, all the evidence now is, you have to achieve really high standards before people actually stop having to struggle with energy bills."* (Third sector (***Fremantle***) 2018)

The key point here is the importance of home energy efficiency standards, which echoes the comments by ***Alpha*** around the Fuel Poverty Strategy. It is interesting to see that

Fremantle has highlighted the need for homes to be brought up to really high energy standards. There are funding shortfall around the milestones (Band E 2020 and Band D 2025) for the target that have been highlighted by the Committee on Fuel Poverty (2018). By way of contrast, ***Lima*** has pointed out in that, high housing costs in London impact on ability to pay energy bills in social housing that is already energy efficient (4.2.1.3).

Respondent ***Kilo*** spoke the shift in terminology about fuel poverty in Bristol.

> *"Essentially a fuel poverty strategy, we don't really like that terminology for various reasons, but we've called it No Cold Homes. So, we want to ensure, so sort of alongside one of CSEs objectives no one is suffering a cold home in the city by 2028."* (Energy supplier (**Kilo**) 2018)

The idea conceptualised by 'No Cold Homes' is integral to the desire eradicate fuel poverty, without the stigma attached to being labelled fuel poor. Sovacool (2015), pointed out that social attitudes were amongst factors that prevented the Warm Front scheme from meeting its targets, as many households did not want to be identified as fuel poor.

4.2.3.8 WELFARE REFORM

The welfare reform sub theme (6 files, 17 references) looks at the links between fuel poverty and welfare reforms and includes comments on means-tested benefits.

Respondent ***Alpha*** explained how means-tested benefits, were used as a proxy for fuel poverty.

> *"We have the proxy that we – if it's from the means-tested benefits route we know of the maximum income, because they're means tested on their benefit. We don't know that those of. There'll be an income threshold for each benefit and there'll be different income thresholds for each of those benefits. We don't know what their exact income is within that scale and we don't know necessarily know or collect theoretical energy costs of heating that home and you of course need both to know, and the low income high cost indicator is an indicator and it isn't really intended to be used as that type of prescriptive tool."* (Central government (***Alpha***) 2018)

This is an interesting comment about the Government's use of means tested benefits, as a proxy indicator for fuel poverty. The Committee on Fuel Poverty (2018), were critical of the use means tested benefits as criteria for eligibility, as they estimate that around a third of the fuel poor are not picked up under this approach. The admission from ***Alpha*** that the LIHC indicator is not intended to be prescriptive tool for measuring fuel poverty is also important. This is reflected in the annual fuel poverty figures with the proportion of households in fuel poverty remaining stable over time, at between 10% and 12% (Department for Business, Energy & Industrial Strategy, 2018b).

Respondent ***Bravo*** spoke about their work with the welfare reform team.

> *"We link fuel poverty with other forms of poverty. So, for example, I work quite closely with our welfare reforms team. They're all people who deal with people who are about to be affected, or inordinately affected by benefit cuts and things like that."* (Local government (***Bravo***) 2018)

This is good example of the implementation of a holistic approach to fuel poverty, by aligning with other work around poverty prevention. The Coalition Government's approach (2010-2015) to welfare reform speeded up the pace of reform, alongside substantial cuts to the social security budget, which saw the value of many benefits fall in real terms (Patrick, 2014).

Respondent ***Lima*** also spoke about the impact of changes to the welfare system.

> *"There have been a lot of changes the social security system over the last few years since 2010 and a lot of people are struggling. So, there's two factors behind that. Some people don't know what's available. The levels of uptake on pension credit and tax credit and housing benefit isn't 100%. We want make sure that people know that they can claim some benefits and as an extension that may get them access to things like the Warm Home Discount, which is a social tariff on our energy bills…. I'm not a welfare rights expert. So, we have to commission people who know what they're talking about and hopefully that'll be up and running by the*

winter to sit alongside the fuel poverty advice service." (Regional government (***Lima***) 2018)

These are really important points about the links between welfare reform and fuel poverty. The need to support low-income households with access to benefits, is a key factor in the prevention of fuel poverty. The Fuel Poverty Action Plan for London, has a commitment to boost the incomes of those living in fuel poverty by supporting uptake of benefits, along with referral and advice programmes (Greater London Authority, 2018a). This commitment presents a real opportunity to improve the lives of fuel poor Londoners.

4.2.4 PUBLIC SECTOR

The public sector theme covers the following subthemes: Administrations, Government, Health, Ofgem and Organisations.

The theme brings together a range of public sector bodies that have a statutory role in tackling fuel poverty across England and Wales, as many of the respondents are employed in this sector.

4.2.4.1 ADMINISTRATIONS

The Administrations sub theme (10 files, 61 references) and encompasses local, regional and national government in England. These are the bodies with a statutory responsibility to take steps to tackle fuel poverty.

Respondent ***Alpha*** spoke about a pilot project that utilised 10% of the Affordable Warmth obligation.

> *"So, Affordable Warmth is probably about £450M a year, of that obligation suppliers could work with local authorities to say rather than using this strictly evidenced means tested benefits eligibility route. They could work with local authorities. Effectively a £45M pilot is what is it. Up to 10% of that obligation could be met through this other route where we're just trusting local authorities to work with suppliers to identify homes that they*

> *think need support. We're collecting of evidence on how that's been going."* (Central government (***Alpha***) 2018)

This is a really interesting pilot project, as it utilises the experience and knowledge local authorities to identify fuel poor households that fall outside the normal means tested benefits criteria. A recent report to the Committee on Fuel Poverty, highlighted that welfare reform mean that many households potentially at risk of fuel poverty, no longer qualify for the benefits that would make them eligible for support (Bridgeman, Thumim and Roberts, 2018). The role of local authorities in identifying these households, by other means, is crucial to ensuring that they receive the appropriate support.

Respondent ***Bravo*** spoke about local authorities that had linked up with energy suppliers to deliver ECO.

> *"For the local authorities it's quite difficult, because with that I see the local authorities that are having a lot of success they've kind of got an installer on board and they're going out and doing stuff, but we're quite careful because these people are in effect cold calling and how do you go through without actually securing them go through, and check that what they are carrying out is good. So there's a lot of complexities tied in with that."* (Local government (***Bravo***) 2018)

This is an interesting point, as it demonstrates the predicament faced by local authorities in delivering the ECO scheme. Emden, Murphy and Lloyd (2018), have recommended that the ECO scheme should be reformed, so that it is led by local authorities rather than energy suppliers.

Respondent ***Fremantle*** spoke about the differences in public funding for fuel poverty programmes.

> *"So, they've continued to provide publicly funded grant programmes for low-income households, so in England all we have now is the Energy Company Obligation whereas in Scotland and Wales they have that and publicly funded grants, because they have publicly funded grant programmes suppliers have been more willing to run schemes in Wales*

and Scotland because there's more of an infrastructure there for their programmes." (Third sector (***Fremantle***) 2018)

This is a key observation, about the way that public funding is used to fund fuel poverty programmes across the UK. The Committee on Fuel Poverty (2018), have also drawn attention to the fact, that England is the only country, without publicly funded energy efficiency measures in the UK. Recent initiatives like the Fuel Poverty Challenge Fund, which is a £1.08 billion fund, are starting to change the funding situation in England (Committee on Fuel Poverty, 2019).

Respondent ***Fremantle*** spoke about the work around the implementation of the area based approach in Scotland.

> *"So I think particularly Scotland and I say this about the other key things. I think there was a lot more scepticism about whether green deal would work in Wales and Scotland whereas more what do you call it, more gradual change sort of you know not sweeping everything away but looking at what's and improving upon that and so on and it certainly feels in the Scottish Government there's been a lot more willingness to listen to what outside organisations consider is the way forward. I guess one of the key changes they brought in was the introduction of area based programmes to tackle fuel poverty."* (Third sector (***Fremantle***) 2018)

This is an important point about the way that the Scottish Government have approached fuel poverty. The Draft Fuel Poverty Strategy for Scotland, details the gains from the Area Based Schemes between 2013 – 2016: where 81,000 energy efficiency measures were installed across 77,000 households with a subsequent gain to household incomes estimated to be £488 million (Scottish Government, 2018a). These are impressive results, which demonstrate the impact of area based schemes in Scotland.

Respondent ***Fremantle*** compared the fuel poverty policy in Scotland and England.

> *"I mean proportionately they've [Scotland] got a bigger problem, but England you know is like everything else is a lot more unequal. You know so for people who are suffering they are in a much worse position and*

> *you know I think Scotland you're seeing policy again having an impact. You know the proportion of homes that are EPC C now are really quite you know are much much higher than England. Now it is partly because of the nature of the housing stock they have a lot more flats and so on. So that makes the job easier, but also you know they have made dramatic improvements. It is interesting that they are now, they're sort of. They're having to embrace wider policy areas because they said we've done a lot on energy efficiency, but we still have a big fuel poverty problem."* (Third sector (***Fremantle***) 2018)

This is highlights a key point around inequality in England when compared to Scotland, where there is clearly a difference in aspiration by the respective administrations. The Scottish Government have given a commitment to promote a fairer and more equal society by addressing fuel poverty (Scottish Government, 2018b). In England, there is an aspiration that the fuel poor should benefit from a fair and functioning energy market (Department for Energy and Climate Change, 2015c). These are very different perspectives on what is ostensibly the same issue.

Respondent ***Juliet*** spoke about the impact of cuts on the resources of local authorities.

> *"They just simply don't have the resources to be able to do it and so whilst it looks really great on paper in practice the housing health and safety rating scheme is a great example of that. When that came in a number of years ago, we were quite excited about the fact that fuel poverty was one of the hazards that was listed, but what happened in practice was that local authorities didn't have the resources to be able to follow up on any, where they came forward."* (Third sector respondent (***Juliet***) 2018)

This is a key point regarding the ability of local authorities to deliver on the fuel poverty agenda. Greer (2018), reported that many local authorities were doing very little around the enforcement of Housing Health and Safety Rating scheme, with many adapting a reactive instead of a proactive stance. The Committee on Fuel Poverty (2018), have also expressed disappointment that the Government did not enact their recommendation to review the Housing Health and Safety Rating scheme guidelines. There is clearly an issue with the use of the Housing Health and Safety Rating scheme, to tackle fuel poverty in England.

Respondent ***Juliet*** spoke about the effectiveness of landlord registration schemes.

> *"The poorer landlords don't, and won't stick their heads above the parapet just in case and that's where we've got the issue, really. Some local authorities for instance have things like. They'll have a registration scheme and that sort of thing, but what you find is it's the good landlords who join and the poorer landlords who don't."* (Third sector respondent (***Juliet***) 2018)

This is an important comment about the ability for local authorities to effectively regulated the Private Rented Sector in England. Especially, as ***Alpha*** has acknowledged that the Government are prioritising this sector (4.2.1.6). Rugg and Rhodes (2018), have recommended (to the Committee on Fuel Poverty) the introduction of a combined landlord and letting agent register, as a legal requirement to rent properties. This will require the provision of adequate resources, if it is to be successful in reducing fuel poverty in the sector.

4.2.4.2 GOVERNMENT

The Government sub theme (2 files, 7 references), covers some wider points made about the relationship between the Government and fuel poverty.

Respondent ***Fremantle*** spoke about the move from the Fuel Poverty Advisory Group, to the Committee on Fuel Poverty.

> *"So I suppose the other thing that I've noticed. There used to be more sort of forums for dialogue between the government and stakeholders, for instance the government had a formal advisory body, a public advisory group which had quite wide representatives from quite a few different sectors fuel companies, advice sectors, housing, health and so on and that was quite useful forum for raising issues and raising problems providing a check on what the government was doing. That got replaced*

with the fuel poverty committee, I'm not knocking it, it plays a very useful role, but I don't think it has the breadth of stakeholder involvement that the old fuel poverty advisory group had." (Third sector (***Fremantle***) 2018)

This is an interesting commentary on the impact of a change in Government administration, on the nature of the advice it is given on the topic of fuel poverty. A review into the Fuel Poverty Advisory Group, revealed that were concerns that the impartiality of the group could be undermined if they were seen to have political leanings (Department for Energy and Climate Change, 2014a). This might well explain why the Committee on Fuel Poverty, no longer has membership from organisations that campaign on fuel poverty issues.

4.2.4.3 HEALTH

The health theme (7 files, 25 references) examines the links between fuel poverty and health.

Respondent ***Alpha*** spoke about the health criteria guidance, developed with Public Health England.

> *"So we set out some guidance. We worked with Public Health England to look at the health criteria. There'll be some health conditions that could be particularly exacerbated by living in a cold home. So, local authorities might want to think about cardiovascular and respiratory conditions. Whereas some of the health conditions might not be as relevant."* (Central government (***Alpha***) 2018)

This is an important point about the links between cardiovascular and respiratory physical health conditions, and life in a cold home. The links between living in a cold home and poor health outcomes are supported by strong evidence, with all age groups experiencing an increased risk of morbidity and mortality (Public Health England, 2019). Mental health conditions are the obvious omission from this statement. Kearns, Whitely and Curl (2019), found that mental health conditions (stress, anxiety and depression) increase the likelihood of moving into fuel poverty.

Respondent ***Bravo*** also spoke about the links between cold homes and health.

> *"What we tend to look at is strengthening that link between health and cold homes, because we think that cold homes discriminate against ill people, and those people whose illnesses are exacerbated by cold homes inordinately. So, if you can help people who have to spend a lot of time in the home and have health problems the benefits are much huger."* (Local government (***Bravo***) 2018)

The point about cold homes discriminating against those in ill health is key, as it sets the stage for a discussion about their right to live in a warm home. This in turn opens the discussion of cold homes up to a wider reading of rights, including the right to the city (Lefebvre, 1996). There are also interesting links to the No Cold Homes campaign in Bristol, as discussed by ***Kilo*** in section (4.2.3.2).

The Cold Homes Toolkit (2018a), has been launched to help local authorities and health trusts across England tackle fuel poverty, by sharing best practice and resources. It is promising that steps are being taken to address this important aspect of fuel poverty, but it is clear that more needs to be done.

Respondent ***Fremantle*** spoke about fuel poverty and health, from a historical policy perspective.

> *"The landmark publication was originally the fuel poverty strategy back in 2001 and even back then it talked about how fuel poverty had an impact on health you know the association with poor health."* (Third sector (***Fremantle***) 2018)

This is an interesting commentary about the origins of the links between fuel poverty and poor health outcomes. The UK Fuel Poverty Strategy, highlighted the direct effects of the fuel poverty on health, highlighting the risks across all age groups, including the disabled and those with long-term illnesses (Department of Trade and Industry, 2001). The impact of these policy decisions is reflected in current public health guidance. Public Health England (2019), has published guidance for local authorities on the implementation and monitoring of progress on the health outcomes that arise from living in cold homes.

Respondent ***Fremantle*** spoke about the historic health programmes, targeted at fuel poverty.

> *"I suppose my only caveat I feel would be if we did used to have a health programme called 'healthy people healthy homes' or something, and it achieved an awful lot. It was very much small-scale local initiatives, but I think also it the importance of something like that it a way of making sure you get Department of Health, NHS involvement. It's the significance of having Department of Health actually you know paying for a programme, as soon as there are budgets involved in more interesting, more involvement and so on. I would never advocate that we see money being spent – you know NHS money being spent on improving housing, but I do think the only significant way. I do think it ought to be a little bit of budget."* (Third sector (***Fremantle***) 2018)

This highlights the importance of using the funding from health programmes to address some of the structural causes of fuel poverty. There are huge costs to the NHS relating to poor housing in the UK. Nicol (2013), estimated that it costs the NHS £600 million a year to treat health conditions arising from poor housing, specifically from homes with a Category 1 hazard under the Housing Health and Safety Rating scheme. The comment about the use of NHS money, highlights the dilemma faced by policy makers seeking to address the health impacts of living in cold homes.

Respondent ***Fremantle*** commented on the NHS boilers on prescription scheme in Sunderland.

> *"Well, that's the famous boiler on prescription scheme. That's what Sunderland were well known for. It's a tiny initiative. It's got an awful lot of interest. More broadly they now talk about warmth on prescription. That's boilers and insulation, but the fact of the matter is that there aren't many grants for boilers, anyway. So, it's more difficult and though boiler on prescription wasn't coming from NHS budgets – not that I've ever heard of. There have been a few small scale examples, but I think it were other budgets that actually paid for the boilers. It was just the GPs*

recognising that you know their patients were part of the problem because of the fact that they were living in cold homes with inefficient heating systems." (Third sector (***Fremantle***) 2018)

The key point here is the observation that NHS money was not utilised to fund the boiler on prescription scheme. Carrington (2014), explains that the Sunderland boiler scheme was a pilot study funded by the Gentoo social housing and sustainability group, covering twelve homes where the occupants were living with COPD, with positive outcomes for the six homes that received energy efficiency measures. The use of General Practitioners (GPs) to identify fuel poor households is an interesting approach. Public Health England (2019), have recommended that the health data held by GP practices could be used to identify local populations, vulnerable to the health impacts of living in a cold home.

Respondent ***Kilo*** spoke about a health related project running in Bristol called SPHERE.

"How that can play into safeguarding health, so for instance Bristol Energy at the moment is looking at how we can be linking the internet of things for instance and other devices to ensure that customers are able to stay in their homes for longer through monitoring or sensoring and University of Bristol has a project called SPHERE and they're looking into that at the moment, so we're working with them and other organisations." (Energy supplier (**Kilo**) 2018)

The use of technology to monitor the conditions in the homes of vulnerable residents is an interesting idea. SPHERE is a collaborative project that is developing a series of sensors in the home to assist in the management of long term health conditions, including obesity, depression, diabetes, strokes and falls outside the hospital setting, as these conditions contribute the rising healthcare costs (SPHERE, 2018). There are links into the wider impacts of health conditions on the elderly population that stem from this work, which have the potential to alleviate fuel poverty.

Respondent ***Kilo*** expanded on the relationship between fuel poverty and health.

"The improvements that can be made from alleviating fuel poverty are vast, not just through health, but through education, educational

outcomes and social and mental health and that's why we're constantly trying to encourage people to think about how they can be helping a customer that may be in fuel poverty, you know even just through the winter period for instance." (Energy supplier (**Kilo**) 2018)

The encouragement of individual consumer responsibility around fuel poverty is an powerful idea. It is promising to see an energy supplier thinking about the issue in these terms. Ofgem (2018b), have identified that an increased number of consumer are going to be vulnerable in the future. This makes it all the more important that the wider public becomes engaged, in thinking about how they can help vulnerable consumers to avoid fuel poverty.

Respondent ***Lima*** highlighted the importance of partnership working with NHS organisations.

> *"Like getting the NHS to find people whose health is affected by fuel poverty. You know those things can be done better in partnership."* (Regional government (***Lima***) 2018)

This is an important point, as partnership working is key to addressing the health impacts of fuel poverty at a regional level. In London, several partnerships have been established to tackle fuel poverty, with perhaps the most prominent being the Fuel Poverty Partnership, which includes a wide range of stakeholders, including health, social care and local government (Greater London Authority, 2018a).

4.2.4.4 OFGEM

The Ofgem sub theme (5 files, 9 references) explores comments about the work of Ofgem. Ofgem – the Office of Gas and Electricity Markets are a non-departmental public body, who act as an independent National Energy Regulator and function to protect the interests of the consumer (Ofgem, 2013).

Respondent ***Alpha*** spoke about Ofgem's role in monitoring the ECO scheme.

> *"Ofgem monitors the ECO scheme. Historically suppliers have had obligations under ECO for the past 20 – 25 years. Ofgem take*

> *enforcement action if suppliers are not meeting targets."* (Central government (***Alpha***) 2018)

This is a key element to ensuring the success of the ECO scheme. Ofgem sets suppliers set the designated ECO suppliers a number of ECO points, as a national target, with the points being linked to the number of customers served by the supplier (Hough, 2017). Interestingly, Ofgem are only able to hold the ECO suppliers rather than the ECO installers to account, which has been viewed as a failure to provide an effective supply chain (Emden, Murphy and Lloyd, 2018). This is an important point as ECO is the only scheme delivering energy efficiency measures in England. Questions will surely be asked if installers are not delivering quality measures.

Respondent ***Charlie*** recommended that Ofgem find a way to promote smaller energy suppliers.

> *"Electricity or gas as well, but there are smaller companies that I think Ofgem really need to give them some kind of leverage so you can know them as well. I wouldn't know the relationship with the new company and Ofgem, but I think that Ofgem should be able to come up with a policy that allows the smaller companies to be able to be out there for them to be much more open and for them to be much more exposed so that people could be able to know about them. I think people should be able to switch to them, because I realise that the small companies they're not really out there."* (Third sector (***Charlie***) 2018)

This is an interesting point about the role of small suppliers and the impact of switching suppliers on household energy bills. The Big Energy Saving Network (BESN) was set up to empower vulnerable consumers to switching supplier or tariffs, with oversight from Ofgem (Ambrose, Eadson and Pinder, 2015). This demonstrates that Ofgem are indirectly taking an interest the ability of smaller suppliers to offer cheaper deals to consumers. Middlemiss and Gillard (2015), have expressed concerns that switching suppliers is not always in the best interests of vulnerable consumers, as it often yielded unpredictable outcomes.

Respondent ***Lima*** spoke about Ofgem in relation to the Fuel Poverty Action Plan for London.

> *"We've got a number of asks of government in the final Fuel Poverty Action Plan, most of which were in the draft one, so you may possibly have seen them and only BEIS and Ofgem can address quite a few of them, but in terms of your operational stuff like for example getting energy suppliers to spend more money in London."* (Regional government (***Lima***) 2018)

This is an interesting comment about the role of Ofgem. The Fuel Poverty Action Plan for London, includes requests for Ofgem to improve debt management by energy suppliers and the formalisation of an industry pledge not to disconnected vulnerable customers (Greater London Authority, 2018a). This demonstrates the impact that Ofgem have on the lives of those living in fuel poverty across the country, along with the importance of their role in protecting vulnerable consumers.

Respondent ***Papa*** spoke about the development of policies for vulnerable consumers.

> *"Policies that the government have put in place include registering free energy efficiency of housing, such as the energy companies obligation scheme, financial assistance for example the warm homes discount and as the economic energy regulator it's important that we also take steps to support those people who are on low incomes and in other vulnerable situations, because fuel poverty in terms of energy regulations it could be an indicator of fuel poverty but it is not the definition of vulnerability. So when we are developing our policies we take that into account. We take into account how our policies will support those on low incomes also those in vulnerable situations, but in terms of fuel poverty it's mainly a matter for government."* (Energy regulator (***Papa***) 2018)

This is an interesting comment, as it shows the distinction between fuel poverty policy making and policies to support vulnerable consumers. This raises a question around the status of non vulnerable households that fall into fuel poverty. Dubois (2012), points out that in the UK there are demonstrable differences between fuel poor, poor and vulnerable households. Ofgem's role is focused on monitoring how well energy companies support vulnerable consumers on an annual basis (Ofgem, 2018b). The challenge therefore lies in ensuring that non vulnerable households, do not fall into the policy gaps between the Government and Ofgem.

4.2.4.5 ORGANISATIONS

The Organisations sub theme (5 files, 15 references) covers a range organisations typically in the third sector across the UK, which have an interest in tackling fuel poverty.

Respondent ***Charlie*** spoke about the work of their organisation.

> *"South East London Community Energy is that we give energy advice, because we realise that there are several homes that are energy poor and we felt that is okay to give energy advice."* (Third sector (***Charlie***) 2018)

The provision of energy advice, as discussed in (4.2.2.1), has an important role in tackling fuel poverty in a holistic way. South East London Community Energy (SELCE) works across Lewisham and Greenwich in London, to support individuals and households in reducing their domestic energy bills (SELCE, 2019). Martiskainen and Speciale (2016), found that partnership working with local authorities and the NHS, could enable better targeting of interventions by the SELCE energy café. This is an important consideration, as it highlights the need for a holistic approach to tackling fuel poverty.

Respondent ***Fremantle*** spoke about the work of the Eaga Charitable Trust.

> *"Eaga Charitable Trust, before that [2001] even was sponsoring the search looking for the breakthrough."* (Third sector (***Fremantle***) 2018)

This is an important comment on the historic role of this organisation in supporting research into fuel poverty. The Eaga Charitable Trust have donated £3.3 million into fuel poverty research in the UK and internationally, since they were founded in 1993 (Eaga Charitable Trust, 2019a). However, the Eaga Charitable Trust reported in 2019 that they had taken the decision to close at the end of the year, leaving the Fuel Poverty Library as a legacy project (Eaga Charitable Trust, 2019b).

Respondent ***Juliet*** spoke about the work of National Energy Action (NEA).

> *"We've been in operation 30 some years back. 36 years now. We started out as a local neighbourhood charitable organisation, which was started by Durham University students and has gradually grown over the years from that. Our main principles are to campaign for policies to help eradicate fuel poverty and in doing that we have a number of different strands in our organisation. We have a very strong campaigning and policy team. We also have a training team who look develop resources for professionals who would be looking to tackle fuel poverty. We have a large operations directorate where we work with third party organisations to understand how best to tackle fuel poverty and we run what we tend to refer to as demonstration projects, so we can basically sample what might and might not work in terms of tackling fuel poverty and disseminate learning from that. We also have our own research team and they will work alongside us on all our activities, whether that's campaigning or whether that's practical project development and delivery. To evaluate the effects of what we're actually doing."* (Third sector respondent (***Juliet***) 2018)

This is an interesting summary of the work that NEA have done to tackle fuel poverty. NEA have highlighted the lack of financial resources available to meet the statutory fuel poverty targets, as the most pressing issue facing the Government (National Energy Action, 2019). This is a key point and echoes similar calls from the Committee on Fuel Poverty see (4.2.3.5).

Respondent (***Kilo***) spoke about the work of the Centre for Sustainable Energy (CSE).

> *"So, a big part of us being set up was to help alleviate fuel poverty in the city and Bristol has a very active support community in that regard, so from different organisations, charities and you may know NEA's*

counterpart the Centre for Sustainable Energy who I think I mentioned to you. Them and NEA have an agreement that CSE work very intensively here in the South West and NEA do the rest of the UK, basically. So, they do work outside of those areas but they have their own of intensive areas for working." (Energy supplier (**Kilo**) 2018)

The agreement between NEA and CSE is a really interesting revelation, which explains why CSE lead of the fuel poverty work originating from Bristol. CSE have been commissioned to write the Bristol Fuel Poverty Action Plan (Centre for Sustainable Energy, 2019). Bridgeman, Thumim and Roberts (2018), at CSE were commissioned to carry out research into the impact of current household energy policies on the statutory obligations contained in the Fuel Poverty Strategy. It is clear that CSE and NEA have an important role to play in informing fuel poverty policy makers over the next decade.

4.2.5 ENERGY SECTOR

The Energy Sector theme covers the following sub themes: Energy Companies (8 files, 85 references) and Fuels (7 files, 31 references).

This theme encompasses a sector that is at the heart of fuel poverty. Energy companies impact their consumers living in fuel poverty directly through energy pricing. The type of fuel used by consumers has a significant impact on their experiences of fuel poverty.

4.2.5.1 ENERGY COMPANIES

The Energy Companies sub theme (8 files, 85 references), encompasses the comments that were made about various aspects of energy supply.

Respondent ***Alpha*** described how energy companies deliver ECO obligations.

> *"What'll often happen is different suppliers will have different delivery models, so some will have an in-house delivery arm and they'll just go out and try to find eligible customers. Often they will subcontract their obligation to others in the supply chain, so they could agree with an installer or a managing agent that represents several installers and I've got X bill savings. I've got a million pounds of bill savings to go out and*

find eligible households to deliver that and then they'll agree a cost of meeting that, so then the supply chain will be going out into local communities and they could be knocking on doors." (Central government (***Alpha***) 2018)

This is an interesting insight into the interactions in the ECO supply chain. Search costs are incurred by the supplier in finding ECO eligible households and represent the second largest component of the costs (Department for Business, Energy & Industrial Strategy, 2018c). Emden, Murphy and Lloyd (2018), have recommended that the ECO supply chain should be primarily led by local authorities, in part as a way of reducing the high search costs. Currently the Flexible Eligibility Scheme is the preferred route to involve local authorities in the search for ECO eligible households, which was discussed in (4.2.3.4).

Respondent ***Charlie*** spoke about the delivery of advice, on switching between energy suppliers.

"So, I always advise anybody that comes to the café that when you are done. If you switch now this year what you lead to is at the end of the year when your plan is finished for the supplier then you switch again, because for every year new companies are coming out and new deals are coming up as well." (Third sector (***Charlie***) 2018)

This is an interesting comment about the benefits of switching suppliers. London where ***Charlie*** is based, has lower levels of switching than all the other areas of the UK for gas, and lower than the national average for electricity (Greater London Authority, 2018a). An evaluation of the Big Energy Saving Network, which provides the funding for energy advice workshops, found that around a third of participants contacted their supplier to discuss their tariff, switching or an ECO assessment, with 8% switching on the day of attendance (Ambrose, Eadson and Pinder, 2015). This demonstrates that the work that ***Charlie*** and other volunteers have been doing is having an impact.

Respondent ***Fremantle*** gave an alternative view on switching between energy suppliers.

"So you can give them as much information as you want and perhaps they're behaving quite rationally in not switching, because there aren't

> *the savings there and so on. They're not the products. So in my organisation, the energy advice that we provide, is that people check before they start switching."* (Third sector (***Fremantle***) 2018)

This is an interesting view on switching behaviours in vulnerable consumers. There are additional challenges for consumers in debt to their energy supplier. Households have been prevented from switching if they are in debt to their energy supplier (Middlemiss, 2016). The challenges around switching suppliers for the fuel poor are also discussed in section (4.2.2.1).

Respondent ***Fremantle*** also spoke about the messaging around switching and energy efficiency.

> *"So yes I think it has an advantage, but it is basically a very low cost cheap and cheerful method of trying to get the energy out and it's quite useful in that sort of outreach approach, but the message is very much about engaging people with markets and seen as a quick win, you know you switch supplier you know you save…. There is supposed to be education available about getting people to recognise that this is something that they need to do every year. I would prefer it to see more emphasis around energy efficiency and energy saving and also about just the importance of why, because you want to stop people from rationing you know if that's going to damage to their health."* (Third sector (***Fremantle***) 2018)

This comment raises an interesting point about the short term nature of switching in the current energy market. Thomas (2008a), points out that an efficient energy market would remove the need for consumers to constantly switching suppliers, as companies would be forced to offer their best price to avoid losing their market share. The educational message around switching therefore will need to be continually reinforced with consumers, until there is genuine market reform.

Respondent ***Juliet*** spoke about the impact of energy debt on switching energy suppliers.

“Particularly if people haven't switched supplier yet there can be benefits, but people who are fuel poor will think there are issues, particularly around if they've got a debt they can't switch supplier and so on, so it's making sure they understand whether they can, or whether they can't switch supplier. So, there is inertia as well in that there are people who think they've got bigger fish to fry and in actual fact budget planning would make a big difference for them. So, we've come across who haven't and don’t.” (Third sector respondent (***Juliet***) 2018)

This highlights a key point about the choices involved in switching. The need for individual consumers to understand whether they are able to switch, is key to the whole process of delivering appropriate advice. Barnes et al. (2014), found that there was a knowledge gap around the impact of financial assets and debt, on the behaviour of households at risk of fuel poverty. Barnes et al. (2014), also reported that households gave a number of reasons why they were reluctant to switch or had chosen not to switch, which included inertia (too much hassle to switch), uncertainty, previous bad experiences and a lack of trust in the energy suppliers. This makes the work being carried out by organisations providing advice to the fuel poor, all the more urgent.

Respondent ***Kilo*** spoke about the formation of a municipal energy company by Bristol City Council.

“Bristol City Council were involved in a project that was funded by the European Union called an ELEA programme, which is European Local Energy Assistance and that was funded by the European Investment Bank, as part of that funding grant that we received there was an intention for Bristol at some point to start up a municipal energy company. So, the initial focus of the project was to bring in new employees from outside the council and to work with external organisations to look at feasibility studies for renewable energy and energy efficiency projects across the city and to develop those assets essentially. So, that team now is very huge.” (Energy supplier (**Kilo**) 2018)

This is an interesting insight into the formation of a new municipal energy company. Bristol Energy is a gas and energy supplier owned by Bristol City Council (Bristol City Council, 2018). Roelich and Bale (2015), point out that municipal energy companies have many potential economic, social and environmental benefits, and explain that they can address fuel poverty by engaging in energy supply and using this to control unit charges, reducing consumer costs. The reality of addressing fuel poverty using municipal energy companies is more challenging, as discussed by ***Kilo*** in section (4.2.2.1).

Respondent ***Kilo*** spoke about the customer profile of Bristol Energy.

> *"Everywhere, so about 80% of our customers are from outside of Bristol actually, which often surprises people, but if you look at proportionally for a national company, that's quite average for us to only have 20% in Bristol, but considering we are a Bristol company a lot of councillors and things would like it to be higher than that, but obviously you can't force people to switch. There are many different reasons for wanting to switch as well."* (Energy supplier (**Kilo**) 2018)

This is an interesting revelation about the location of the customer base of Bristol Energy, which is a national municipal energy company. Bristol Energy has increased its residential customer base from 120,752 in 2018 to 165,000 in 2019, which represented its third year of trading (Bristol Energy Limited, 2019). Ofgem (2018b), has commended the Bristol Energy Hub, which is a permanent physical location in Bristol, where customers can access support to manage their energy and ask questions about switching suppliers, energy efficiency advice and energy bills.

Respondent ***Kilo*** spoke about the social projects that Bristol Energy supported.

> *"On fuel poverty awareness day, which is in February. We launched a fuel good fund, so this was a fund that we have set up where if a customer switches to us with a certain marketing code, which is 'fuel good'. If you go to our website and type in 'fuel good' then you can basically donate per fuel £15, so £15 of electricity and £15 gas into this fund. If you are a Bristol customer and you switch to us through our website that money*

> *automatically goes into the fund anyway, so that's of an additional benefit for people to switch to us. So, we have so far raised £25,000 for that fund. We're expected to double that by the end of the year and at the moment this will only benefit Bristol based people, but as the fund grows there is the ability for that region to expand."* (Energy supplier (**Kilo**) 2018)

This is a good example of the social benefits that a municipal energy company can deliver. The fuel good fund incentivised switching to Bristol Energy using the "FUELGOOD" marketing code by donating £30 to the fund, which was set up to provide healthier homes for the 20,000 fuel poor households in Bristol (Bristol Energy, 2018).

Respondent ***Kilo*** spoke about the customers that were switching to Bristol Energy.

> *"So, we have had a lot of people, generally in the older age bracket to be perfectly honest coming in and switching."* (Energy supplier (**Kilo**) 2018)

This is an interesting comment on the types of energy consumers who are switching through the Bristol Energy Hub. In households with older people, switching energy suppliers was found to be fairly common (Wright, 2004).

Respondent ***Lima*** spoke about the Energy for Londoners supply company.

> *"Now prices we're tackling through setting up an energy supply company. Energy for Londoners supply company which will be in place by next year sometime. It's going to be a white label plus arrangement, so we won't have a full license. We will be working with an existing supplier to offer our own tariff. The idea being that the Mayor's weight is enough to sculpt that tariff, or those sets of tariffs more than the single councils that have been doing it up to now like Islington and one of the Cheshire authorities, Liverpool etc... and you know we're going to use our clout to get a better deal. It's fair on prices. We're not promising lower prices, because I don't think any company anywhere can do that and I think the taxpayers of London wouldn't necessarily recognise as well through promising a loss making company, but certainly fairer prices, more transparent. So, that's*

*how we're talking about tackling prices." (Regional government (**Lima**) 2018)*

This is an interesting insight into the plans for the Energy for Londoners supply company. London Power was launched on the 13th January 2020, as a partnership between the Mayor of London and Octopus Energy (Greater London Authority, 2019). It represents a novel approach for London and it will be interesting to see how it develops.

Respondent ***Papa*** spoke about the application of energy supplier licencing obligations.

> *"So, there are licence obligations by suppliers, so we grant suppliers their licences and there are, we call it the rulebook, certain rules that suppliers must follow. In specifically with regards to customers in payment difficulties it is where a supplier becomes aware, or has reason to believe that a customer is in actual potential payment difficulty they must offer them a series of repayment methods. Now, initially of course the question is well how do they become aware and how do they have reason to believe. Well somebody misses their payment of perhaps something is going wrong. This is where we expect a supplier to step in and engage that customer. If a series of payments have been missed we expect suppliers to engage with their customers more effectively before the debt builds up."* (Energy regulator (***Papa***) 2018)

These licence obligations have an important role to play, in addressing the early warning signs of fuel debt. Ofgem (2018b), have decreed that energy suppliers should place as much importance on debt prevention, as debt management and recovery. Lomax and Wedderburn (2009), point out that fuel debt tends to be more related to aspects of financial behaviour than low household income and high energy costs. This is where energy advice has an important role in addressing financial behaviours, that if left unchecked could lead to fuel poverty.

Respondent ***Papa*** spoke about some examples of best practice amongst energy suppliers.

> *"So one of the things that we started doing in the last few years has been identifying and publishing the suppliers that haven't been performing as we expect them to, which you may have seen from this year's vulnerability report and also we publish good practice examples where we are seeing that some suppliers really do go and do some really good things like pairing up with food banks and creative fuel banks."* (Energy regulator (***Papa***) 2018)

This is an interesting example, as it highlights the interconnected nature of different types of poverty. The fuel bank scheme developed by npower and The Trussell Trust network of food banks, was reported to have assisted 44,000 consumers using PPMs in 2016 (Ofgem, 2018b). Universal fuel vouchers, which were mentioned by ***Kilo*** in section (4.2.1.2) represent a similar approach to challenges presented by food and fuel poverty.

Respondent ***Papa*** spoke about disconnections in Great Britain.

> *"So that is where a supplier disconnects a customer, so we monitor that very carefully because if somebody is without supply we have grave concerns depending on the circumstances that they are in. So, we do monitor that quite carefully and in 2017 disconnections had hit an all-time low. If I am not mistaken they I am not mistaken, there were 17 disconnections and when you think about the GB market 17 disconnections."* (Energy regulator (***Papa***) 2018)

This is a key statement of intent about the priorities of the regulator in ensuring continuity of energy supply. Ofgem (2018b), reported that the number of disconnections in 2017 were 92% lower than 2016, with 17 in total across 5 suppliers and for the first time there were no disconnections in Scotland. This is a sea change from the situation in the mid-1970s and the early 1980s, when fuel poverty rose to prominence as a distinct issue. Lorant (1981), reported that in the year 1976 there were 114,331 electricity disconnections across England and Wales, which by the year 1980 had increased to 122,702 electricity disconnections. It's extremely promising to see that disconnections are being so closely regulated in the current climate, which demonstrates how much the situation has changed.

4.2.5.2 FUELS

The fuels sub theme (7 files, 13 references) covers the many ways that consumers, particularly those living in fuel poverty, can obtain energy to power their homes. Boardman (2010), notes that households in the UK normally utilise gas for heating and hot water, with electricity being used for lighting and appliances and cooking.

Respondent ***Alpha*** spoke about some work that was undertaken with off grid consumers.

> *"So, they might have been using electricity or say like an old coal fire to heat their home and could they either connect them to the mains gas grid. So, working with the gas distribution networks or if they were too far away from the mains gas grid to connect would they then install things like ground or air source heat pumps."* (Central government (***Alpha***) 2018)

This is an important issue, as having a connection to the mains grid is a crucial factor in the experience of fuel poverty. It was reported that 80.8% of fuel poor households (in 2016) were connected to the gas grid, with off grid households being 1.5 times more likely to be fuel poor (Department for Business, Energy & Industrial Strategy, 2018b). The use of renewable technology represents a pragmatic approach to the issue.

Respondent ***Charlie*** described work to introduce community driven small-scale solar PV panel installations, in London.

> *"If you're staying in Greenwich if you could probably get something like 10 to 15 people to club together to install solar panels. So it can be at a cheaper rate and more so is the Feed-in tariff as well. That's the government's going to pay you for installing it as well. So that's why we try to encourage it at the moment."* (Third sector (***Charlie***) 2018)

This is an interesting commentary on an alternative approach to domestic energy generation. The Feed-in tariff scheme was introduced by the Government in 2010, but the tariffs were reduced in 2012 to decrease the costs of the scheme (Bridgeman, Thumim and Roberts, 2018). The UK Government announced that the Feed-in Tariff scheme would close to new applicants from April 2019 (Ofgem, 2019a). However, the Smart Export Guarantee scheme, has been set up to pay those who export small-scale renewable electricity (including domestic systems) to the national grid, coming into effect from January 2020 (Energy Saving Trust, 2019).

Respondent ***Fremantle*** spoke about the importance of fuel type.

> *"Definitely fuel is quite a key one, because you know if you don't have gas for instance, as gas is the cheapest way of heating your home, but you also tend to live in older housing, flats and terrace housing, which always tend to be cheaper."* (Third sector (***Fremantle***) 2018)

This is an important observation about the impact of gas on heating. In the UK, central heating systems are predominantly powered by gas, although gas powered central heating is less common in fuel poor households (Barnes et al., 2014). The age and type of dwelling are also key factors in the experience of fuel poverty. Households living in pre-1919 dwellings, for example, are more likely to experience severe fuel poverty (Walker et al., 2014). In London, flats make up 50% of all homes and there are difficulties in applying retrofit measures (e.g. external wall insulation) to these properties (Greater London Authority, 2018a). London is where these issues combine to create a significant challenge for the authorities, as raised by ***Lima*** in section (4.2.1.6).

4.3 TRANSPORT POVERTY ANALYSIS

The Six Phase Thematic Analysis Methodology (Braun and Clarke, 2006), produced five key themes on the transport poverty topic, each of these themes contains a number of subthemes, which are listed below.

- Transport Concept
    - Accessibility
    - Affordability
    - Availability
    - Equity
    - Mobility

- Transport Impacts
    - Evidence base
    - Health
    - Household
- Transport Mode
    - Active Travel
    - Buses
    - Cars
    - Demand Responsive Services
    - Public Transport
    - Infrastructure
- Policy Approaches
    - Administrations
    - Definitions
    - Fuel Poverty
    - Funding
    - Transport Strategies.

The themes are addressed chronologically throughout this analysis. The analysis starts with the Transport Concept theme, as it sets the scene for the transport poverty topic. The number of files and references (from NVivo) have been included in brackets, to give an idea of the prevalence within the data.

4.3.1 TRANSPORT CONCEPT

There are a range of concepts within the literature on transport poverty. Lucas et al. (2016), list accessibility, affordability, availability and mobility as sub concepts of transport poverty. Equity is a concept that has been recognised by transport policymakers since the 1980s (Hay and Trinder, 1991). Perceptions of transport poverty were a natural fit for the theme, as it drew on the respondent's views.

Respondent ***Delta*** spoke about the impact of transport poverty on their life.

> *“Transport poverty is an issue that I've thought about both at work and in terms of its impact on people.”* (Academic (***Delta***) 2018)

This is an interesting comment, as it alludes to the complexity and scale of transport poverty.

4.3.1.1 ACCESSIBILITY

The accessibility sub theme (5 files and 20 references), explores comments that were made around access to transport. Velaga et al. (2012), highlight access to healthcare, education, employment and services, as a key issue for rural residents worldwide.

Respondent ***Delta*** spoke about their experience of accessibility issues in rural South Wales.

> *“I had quite a profound experience one year when my daughter wanted to live in Swansea to do a course and I had to pay her rent and the only way I could afford to pay her rent was by selling my car. So, I had to live for a year in a very rural area with only one car in the household and I found it quite an interesting experience and so I've sort of been reflecting on the fact that, I'm not poor by any means, but having to live without my own car I found myself starting to not go to things, because I didn’t want to ask people for a lift and I found that I was becoming a lot more insular, when I like got home that was it and I wouldn’t go anywhere all weekend because it was too complicated. I started buying stuff on Amazon rather than going to the shops, but that meant that I wasn’t meeting people or anything and I was quite taken by the impact it had on me. I was really pleased when at the end of the year my daughter got a scholarship to do her drama course and had enough money and didn’t need any money from Mum and I was able to go and buy a car. I'm still processing what happened in that year, because I hadn't realised it was so much more. I just thought it would be all about practical issues, but it actually affected me and how I felt about myself what I did and what my world was like. I*

> *had been fortunate that after ten months I could buy myself out of the situation."* (Academic (***Delta***) 2018)

This is an interesting case study, as it demonstrates the impact of being without a car for a long period in a rural area. In England, low population density in rural areas means that the provision of practical and affordable public transport is difficult, which means that these rural areas are heavily car dependent (Campaign for Better Transport, 2018). Therefore, not having access to a car presents a real challenge for rural residents in terms of accessing goods and services (Kenyon, Lyons and Rafferty, 2002).

Respondent ***Echo*** spoke about work to improve access, on a housing estate in East London.

> *"I think it should be about being able to choose an alternative and having access to that. So, fundamentally making a safer, healthier infrastructure and because transport poverty is linked to health and wellbeing, so insuring that people can access roads and streets that benefit their health and wellbeing."* (Third sector (***Echo***) 2018)

This highlights the link between safe access to roads and health and wellbeing. This is a key aspect, particularly in urban areas. Participation in activities is known to positively contribute to wellbeing, especially amongst the elderly (Green, Jones and Roberts, 2014).

Respondent ***Golf*** explained how the term accessibility has multiple meanings, in terms of Government policy.

> *"I mean even terms like accessibility have multiple meanings. So, when I talk about accessibility I tend to talk about it in terms of, does the person have access to all the services that they need. The job market, the labour market. Because if you talk to a policy person. There's an accessibility policy team and they only think about accessibility from the point of view of disability."* (Central Government (***Golf***) 2018)

This is an interesting point. as it demonstrates the breadth of meaning for accessibility. The Transport Investment Strategy, for example, explores accessibility in terms of access to employment centres by car and public transport (Department for Transport, 2017b). Whereas the Inclusive Transport Strategy, for example, seeks to achieve accessible transport to deliver inclusive travel (Department for Transport, 2018a). This is an important distinction in policy terms. The Making the Connections report linked accessibility with physical access for people with disabilities (Social Exclusion Unit, 2003). These examples show the range of policy development around accessibility that has taken place since the millennium.

Respondent ***Golf*** spoke about how policy was addressed within their department.

> *"I've said there's no policy team that would have the remit to deal with transport poverty. There is a team that are called the Strategy Team who would deal with this type of thing. So, if for example Cabinet Office or Number 10 say we are now suddenly interested in people who are just about managing or ordinary working families then that would go through the central team who would coordinate the department's response to that."* (Central Government (***Golf***) 2018)

This is an interesting point, as it demonstrates how Government policy is led from the centre. Lucas et al. (2019), have recommended that new Government policy interventions are needed that ensure that current levels of inequality around accessibility are not deepened, or widened.

Respondent ***Golf*** spoke about an accessibility project that was in development.

> *"A project I'm defining at the moment is – I think I'm calling it something like 'Accessibility and Life Opportunities'. We will be looking at this type of – in fact everything you've listed here we're going to be looking at. Apart from cost, we're not looking at the cost of transport. We're looking at from an accessibility – connectivity point of view. We'll say someone has access to a rail station and a bus station or a Car what impact does that have on these outcomes?"* (Central Government (***Golf***) 2018)

This is an interesting project proposal, and it was promising to see that it was realised. The Department for Transport, published the report "Access to Transport and Life

Opportunities” in October 2019 (Department for Transport, 2019a). The report by Chatterjee et al. (2019), addressed a research question that examined the relationship between transport and life opportunities across all age groups, and backgrounds in England. The report represents an important step towards understanding the impact of transport accessibility on the population in England.

Respondent ***Hotel*** spoke about access to cars and cycling infrastructure.

> *“I guess access to car ownership. I think there's the cycle infrastructure one is important. So, at the moment what's out there is levels of cycling in the census which is essentially based on people's commuting behaviour, but I don’t think that captures the spatial element or. I think there's an urban planning element that affects people's travel choices that isn't necessarily captured in some of these proxy measures.”* (Third Sector (***Hotel***) 2018)

These are important issues around access to transport opportunities. The link between cycling infrastructure and urban planning is an interesting point. Lucas et al. (2018), noted that local planners tended not to look at the micro-spatial and social distributional effects of their policy decisions, despite evidence of the impacts on accessibility and wellbeing.

Respondent ***India*** spoke about transport as a barrier.

> *“We want to work out we feel most have transport as a barrier and once we know those groups, we're probably going to pilot maybe a new scheme, a new service for that group. Whatever it might be, because we don’t know yet. We'll review the data and find out whether, maybe we've got it right and we're doing everything right as we are, but I suspect we probably don’t.”* (Regional Government (***India***) 2018)

It is important for transport authorities to understand which groups are experiencing barriers accessing transport. Crisp, Gore and McCarthy (2017), found that low-income households faced transport barriers though limited service provision, constraints on financial resources and travel times that did not align with their caring responsibilities.

4.3.1.2 AFFORDABILITY

The affordability sub theme (5 files and 15 references) is a reference to the cost of transport. Affordability refers to a lack of financial resources at an individual or household level, impacting on their ability to pay for transport options (Lucas, Mattioli, et al., 2016).

Respondent ***Foxtrot*** spoke about public transport in London.

> *"The explicit stuff now is about maintaining the affordability of public transport in London. So, keeping the costs of public transport down. The flagship policy of this current Mayor is a freeze on fares, but it's not much more dynamic than that."* (Third Sector (***Foxtrot***) 2018)

This is an interesting observation about the affordability of transport in London. The Mayor of London has reduced the price of bus travel in London through a TfL fare freeze and use of the Hopper fare on buses, which was introduced in January 2018 (Greater London Authority, 2018d). The underlying assumption here is the Mayor could and should do more, to make transport affordable in London.

Respondent ***Foxtrot*** spoke about cycling and the cost of transport in London.

> *"It's about value for money in terms of getting numbers of people cycling rather than alleviating high cost transport."* (Third Sector (***Foxtrot***) 2018)

This is an interesting point about the promotion of cycling. The Mayor of London has committed to ensuring that transport fares are affordable for all Londoners (Greater London Authority, 2018c). The challenge will be ensuring that transport fares and cycling options continue to remain affordable in London.

Respondent ***Foxtrot*** spoke about the costs of commuting in London.

> *"I suppose the assumption would be that commuter trips into central London are made by full time central London employed people who are on higher than median wages and don't necessarily struggle to afford transport even. I think pressures are elsewhere, on crowding that sort of thing and for people in sort in inner to outer London the demographic's changing tends to be low-income families working in different jobs not*

> *necessarily full time. So, they have kind of different travel needs tend to be making kind of more."* (Third Sector (***Foxtrot***) 2018)

This is an interesting observation about the costs of commuting in London. Qualitative research carried out with Londoners, revealed that 36% of commuters were not using the quickest route into central London (Zone 1), due to the cost of travel (BDRC Continental, 2015). London TravelWatch (2017), have recommended that outer London boroughs and Transport for London, take steps to integrate cycling into the commutes of low paid workers. Any steps that can be taken to reduce the travel costs for low income workers in London would be extremely beneficial.

Respondent ***Golf*** spoke about some recent research, which had examined the costs of transport.

> *"I know Sheffield Hallam University have done some research on this. They published a report that actually the local transport policy team is thinking about. So actually when I say that there aren't any teams in DfT with a focus on transport poverty. For example, the local transport team they will take on board findings from this type of research."* (Central Government (***Golf***) 2018)

This is an interesting revelation about the mechanism for policy development in Whitehall. The report mentioned by ***Golf*** is "Addressing transport barriers to work in low income neighbourhoods: A review of evidence and practice," which examined transport, poverty and access to work (Crisp, Gore and McCarthy, 2017). The fact that this report had been considered by the Department for Transport is very interesting indeed.

Respondent ***Hotel*** spoke about the costs of transport choices.

> *"I suppose the thing that's not also included there is the cost of each transport choice. So, another thing in the UK I guess is privatisation of the public transport sector, which although measuring someone's income in a way is a proxy measure of whether they can afford certain transport options. I think actually you would probably want to look at that in more*

> *detail. That would be helpful. So, like the cost of a bus fare or the cost of train journey."* (Third Sector (***Hotel***) 2018)

These are interesting points about the impact of deregulation on public transport, in the UK. The experience of bus users across the country is closely linked to where they live. Urban and regional bus services in the UK, except for London and Northern Ireland, have been deregulated since 1986, which removed regulatory constraints from ticket pricing and route design (van de Velde and Wallis, 2013).

Respondent ***India*** spoke about the impact of transport costs on young people.

> *"The likelihood is that if you're a young person in our region. You know, you're more likely to have the cost of transport be a barrier to you and we're going to probably roll that out to kind of all young people. So half price travel for all young people up until the age of 18."* (Regional Government (***India***) 2018)

This is an interesting example, of an approach designed to remove transport as a barrier for young people. Musselwhite and Chatterjee (2019), offer two alternative interpretations of the travel barriers experienced by young people – one view is that their ability to undertake more activities at home reduces travel need and the alternative view is that the cost of travel has led to more activities being undertaken at home. Half price travel keeps the options open for young people, giving them more choice around transport mode.

Respondent ***India*** provided more detail about the costs of transport for young people.

> *"It's kind of given us a really good background knowledge of where there's gap, where there're barriers, how much people actually, because my manager's posed me a question. He thinks that maybe the cost of transport isn't necessarily a barrier to people. A barrier but not a major barrier and he thinks things like family commitments, child care, maybe your mental health, your motivation, your confidence. Those things he thinks could be even more of a barrier. You could have the best transport network on your doorstep, but because you feel unsafe, you're not confident. So, we want to kind of work out how much transport is a barrier*

and then work with those groups specifically on where kind of where transport really is a barrier and we're going to hopefully pilot some innovative kind of solutions, so could be travel – you know depending if it's a confidence, lack of confidence, we might want to do more travel training." (Regional Government (***India***) 2018)

The idea that transport may not be such a significant travel barrier for young people is interesting. Confidence, along with knowledge and skills are a key issue especially for young people, as they may not have developed them yet, or they may not have been granted permission to make use of them (Chatterjee, Ricci, et al., 2019). The suggestion that travel training could be the solution to the confidence barrier is key. Many local authorities like Hertfordshire, organise travel training courses for young adults, which cover the use of timetables and purchasing tickets and personal safety (Hertfordshire County Council, 2019).

Respondent ***India*** spoke about the range of the concessions provided to transport users.

"At the moment we're spending it on sort child concessions, or Ring and Ride, which is like a dial a ride scheme. We do an add on for the ENCTS the English National Transport Concessionary Scheme. We add, we pay for the rail and the metro for anyone over 66 pensionable age." (Regional Government (***India***) 2018)

The use of concessions is key to making transport more affordable. It is interesting to see the range of concessions being offered to older transport users. Statutory bus concessions have been available for older and disabled people since 2001, they were extended in 2008, through the English National Transport Concessionary Scheme, to provide free off peak bus travel anywhere in England (Avbulimen, 2019). The add on for rail and metro in this region, is key to making these modes of transport more affordable.

Respondent ***India*** spoke about the groups most impacted by the cost of travel.

"I would say with those two groups in particular – unemployed people and the care leavers – the cost of transport is an issue. It's also an issue for disabled people as well. We've done a couple of exhibitions in job fairs.

> *It is a problem, so we totally acknowledge that in certain groups."* (Regional Government (***India***) 2018)

This is an interesting commentary on the wide range of groups impacted by the cost of travel. Public transport is vital to disabled people and the unemployed, as they are less likely to have access to other forms of travel (Campaign for Better Transport, 2018). The awareness of who is impacted, is an important step in addressing the issue of affordability for those most affected.

Respondent ***Mike*** spoke about the promotion of affordable cycling.

> *"I think that's something that we could definitely do better and be much more consistent, but it's something like we're all very keenly aware that exists, which is why we kind of say well cycling is such a good idea for that reason, but you know we don't you know we don't explicitly say that anywhere in the action plan other than cycling is an affordable mode of travel."* (Regional Government (***Mike***) 2018)

This is an interesting comment about the message required to promote cycling as an affordable travel mode. Cycling has many advantages, as it is essentially a cheap, flexible mode of personal transport, allowing many people to engage a range of social and economic activities (UN Environment Assembly, 2019). The Mayor of London has promoted cycling as part of a wider message around the aspiration for 80% of trips in London to be made without using cars, by 2041 (Greater London Authority, 2018c). Clear and consistent messaging is important to encourage take of cycling at a regional level.

4.3.1.3 AVAILABILITY

The availability sub theme (2 files 3 references) refers to the availability of public transport. People who live in rural villages and hamlets, experience a much poorer availability of buses than their urban counterparts (Titheridge et al., 2014).

Respondent ***Delta*** gave an account of an informal bus service that had operated in their area.

> *"We used to have an informal thing in the village, there was a guy in the village who had a job in town for the National Trust and he had flexibility over his working day. So, he organised it that he went to work in time to get into Llandeilo for when the buses left for the colleges that were further afield and he'd stay at work until the buses arrived back and he'd pick up the people from the village, the kids and drive them home. So, there were quite a few people in the village who could choose whether they went to Sixth form in Llandeilo or Swansea or Carmarthen, because they knew that they could get a lift into Llandeilo, which is a 7-mile journey. He did it out of the goodness of his heart. If you were at his house when he was leaving, you could get a lift in the car and if you were at a certain bench in Llandeilo as he would drive past. He would stop and pick you up and there were kids like my eldest son who were able to go to places and do things that they just couldn't have without him being there. Then he got made redundant from the National Trust and that's when Sixth form options for kids in the village just fell apart. They no longer had a way to do that missing 7 miles."* (Academic (***Delta***) 2018)

This is a really interesting example of informal lift giving. Informal lift giving is a fairly common feature in rural areas of the UK, where other transport options are not available (Campaign for Better Transport, 2018). It is difficult to see any way to formalise these arrangements without significant investment from the local authorities in these areas.

Respondent ***Hotel*** spoke about the impact of availability constraints.

> *"I mean I think it's one thing to look at and understand transport poverty, but I think it would be very valuable is to take that into looking at the impact of what that might be. The benefits to society and to an individual in choosing one travel mode over another and what transport poverty. How it constrains people's choices and therefore what the impact is of that on society."* (Third Sector (***Hotel***) 2018)

This presents an interesting idea around how availability of travel mode, constrains the choices that are available. An individual's travel choices are ultimately determined by where they choose to live. Mattioli, Lucas and Marsden (2017), point out that residential location choices are driven by a range of factors including transport, housing costs, and proximity to social networks. The challenge for local and regional transport authorities is to improve transport availability, in remote and rural settings.

Respondent ***India*** spoke about the availability of transport.

> *"A lot of people actually surprised me and said it wasn't necessarily a problem. Amongst young people it wasn't. I think because we're very urban. It depends on where that person lives and I think their circumstances. The availability – people do praise our bus network as a whole. It was only in evenings maybe that they flagged it up as being a problem, but that's not for everyone as a whole I suppose if I'm looking at all of the different groups that I've worked with availability is not such an issue."* (Regional Government (***India***) 2018)

This is an interesting comment about transport availability across a large urban area. The availability of bus services in the evenings, particularly in peripheral housing estates, has been linked to service contraction (Social Exclusion Unit, 2003). It is promising to see that investment this region has resulted in improved availability of transport options.

4.3.1.4 EQUITY

The Equity sub theme (4 files 7 references) which is more of an overarching concept. Banister (2018), talks about equity in terms of outcomes and opportunity, which include elements of horizontal (equity of state funding) and vertical equity (equity of wealth distribution). However, there is a degree of consensus that equity in transport relates to levels of accessibility (Jeekel and Martens, 2017; Pereira, Schwanen and Banister, 2017).

Respondent ***Delta*** spoke about free bus passes for older people in Wales.

> *"And then we also realised that there was an equity issue around all these free bus passes that old people had that it was only of value if you actually even had a bus. So, in some ways it was favouring the poor people who lived in urban areas, because they then did have a bus. So, it's sort of*

> *like we started and then it got difficult and then we didn't."* (Academic (***Delta***) 2018)

This is an important observation about equity between older people in rural areas and their urban counterparts. Mackett (2014), points out that the benefits of concessionary travel, were being primarily accrued by users who would have otherwise travelled without the concession. Welsh Government funding cuts enacted in 2013/14, have been singled out as the main reason for the reduction in bus usage across Wales, between 2011/12 and 2016/17 (Campaign for Better Transport, 2018). The bus services in Wales appear to been adversely affected, by wider austerity measures enacted across the UK.

Respondent ***Golf*** spoke about the links between car use, accessibility and equity.

> *"I think yeah we want to access employment, hospitals, schools, jobs then in large parts of the country especially rural areas then we do need a car. London is obviously an exception and there are some other urban centres that are exceptions as well. So, I think as an issue it's becoming, it's definitely becoming more important and there is going to be more political and policy emphasis on equity as well."* (Central Government (***Golf***) 2018)

This is interesting example, as it links accessibility and equity in transportation. Equity is of course, not a new issue for UK Government politicians or policy makers. Hay and Trinder (1991), surveyed officials in Labour and Conservative local authorities across England and found an agreement around the importance of considering equity when making policy decisions, which did not necessarily translate into policy formation. The obvious aspiration here, is that equity is fully considered by policy makers in future.

Respondent ***Oscar*** spoke about the clean air zones.

> *"The argument that's used against congestion charging, clean air zones or anything that might disadvantage cars is it's not fair on poor people, because they find it hard enough to drive a car in the first place and adding extra costs onto that is inequitable and only rich people can then afford to drive around town."* (Local Government (***Oscar***) 2018)

This is an interesting comment about congestion charging and the costs of motoring. Congestion charging, where the owner of a particular vehicle is required to pay a fee to drive into a designated zone during a specified time period, has been applied across a number of urban centres around the world (Morton, Lovelace and Anable, 2017). In the UK, the Durham scheme was implemented five months before the London scheme, its success was attributed to the positive publicity, successful consultations and subsequent revisions, which satisfied everyone's needs without reducing the scheme's impact (Ieromonachou, Potter and Enoch, 2004). Where inequality is viewed in terms of fairness and equal rights to use of cars, socially orientated policies that work to protect those who are less able to afford road pricing should be considered (Banister, 2018). This is an example of the balance that policy makers need to strike between fairness and protection, so that congestion charging can be rolled out across the country.

4.3.1.5 MOBILITY

The mobility sub theme (2 files 9 references) covers a wide range of comments on the topic of mobility. Mobility is a key concept, as it covers the amount of travel taken (usually by an individual) and is measured in terms of time, cost and number of trips, which are linked to reason for travel and transport mode (Banister, 2018).

Respondent ***Golf*** spoke about the Government's Future of Mobility Strategy.

> *"We're doing a big project on the future of mobility being led by the Government Office for Science… I've said there's no policy team in DfT that would have the remit to deal with transport poverty. There is a team that are called the Strategy Team who would deal with this type of thing. So, if for example Cabinet Office or Number 10 say we are now suddenly interested in people who are just about managing or ordinary working families then that would go through the central team who would coordinate the department's response to that."* (Central Government (***Golf***) 2018)

This is an interesting insight into Government policy formulation across Whitehall. The 'Future of Mobility: Urban Strategy' was published in March 2019 and makes no mention of transport poverty (Department for Transport, 2019b). However, the report from the Government Office for Science ‘A time of unprecedented change in the transport system,’ published in January 2019 makes several references to transport poverty (Government Office For Science, 2019). This is positive, as it demonstrates that policy makers are aware of the mobility challenges posed by transport poverty.

Respondent ***Golf*** spoke about of connectivity in response to a question about mobility.

> *“It would be do people have access to the transport system, what can they access. From their home can they access the hospital? Can they access the local school? So, we don’t. I guess I think about it from a connectivity point of view. Rather than, when I say that someone transport poor I'm thinking that they lack the necessary infrastructure. I don’t necessarily think about it in terms of money.”* (Central Government (***Golf***) 2018)

This is an interesting perspective on the mobility challenges around connectivity. In this context connectivity means the physical connections that enable to access the services that they require, although sitting alongside this is the concept of digital connectivity. Digital connectivity is predicted to have a profound impact on the future of mobility, through changes such as increased home working and the internet of things (Government Office For Science, 2019). The challenge for policy makers is therefore ensuring the population has access to an appropriate physical and digital infrastructure, to support their needs.

Respondent ***India*** spoke about the Mobility for Inclusion strategy.

> *“So, I'm in the process of producing a Mobility for Inclusion strategy and I've also been looking into. I'm undertaking at the moment quite a lot of consultation with vulnerable groups as well…… Something we are looking into is possibly mobility credits, whether somebody trades in their car we could potentially look into then giving them like money for public transport, car rental, car hire. We're trying obviously to reduce the numbers of people getting into the city…. Maybe people just can't get to*

> *the network, it's too far, it's not accessible. Maybe we do some demand responsive services. You know until we've done the research, but I think sort of going back to your original question – the Mobility for Inclusion strategy. I think that the research that we're doing now will then feed into the direction for that strategy."* (Regional Government (***India***) 2018)

This is an interesting regional strategic approach to mobility. The Mobility for Inclusion Strategy was mentioned in the 'Movement for Growth 2026 Delivery Plan for Transport,' but to date it has not been published (Transport for West Midlands, 2017). It represents an innovative approach to addressing the challenges of exclusion and transport. Mobility credits were launched under the Future Mobility Programme, where individuals were paid credits to not use their cars and use alternative modes of transport instead, such as car sharing, public transport and electric vehicle hire (Transport for West Midlands, 2019). The success of mobility schemes, are reliant on the premise that the quality public transport provision will eventually rival the private car (Lyons and McTernan, 2019). Despite this obvious caveat, the mobility credits scheme holds significant potential for addressing car dependency in the region.

4.3.1.6 PERCEPTIONS

The perceptions sub theme (8 files 15 references) relates to perceptions of transport poverty. The respondents were encouraged to relate their personal perceptions of transport poverty.

Respondent ***Delta*** spoke about the rural experience of transport poverty.

> *"So, yeah, for me the big issue is. There's two aspects of transport poverty – there's being able to afford transport and the transport being able to be there if you could afford it. So, for me it's easy if I can afford a car. I have a car. I don't have a problem, but what if you can't drive and there's loads of people who can't drive for all sorts of reasons."* (Academic (***Delta***) 2018)

This is an interesting insight into rural transport poverty, from the perspective of car ownership. In written evidence submitted to the Environmental Audit Committee (2013a), the Transport Studies Unit at the University of Oxford pointed out that people with cars do experience transport poverty, but people without cars experience poor accessibility to good and services on a regular basis.

Respondent ***Echo*** spoke about the impact of transport poverty on a housing estate in London.

> *"Yeah, I mean it's hard to identify one single, or one cause for all of the social problems on that estate, but I think transport poverty is definitely a factor in this."* (Third sector (***Echo***) 2018)

This is an interesting comment about transport poverty, being just one of many social problems on this housing estate. Lucas et al. (2016), highlight the situation faced by low income households, who not only travel less than their wealthy counterparts, but disproportionately experience unhealthy and unsafe environments whilst travelling. This example demonstrates the intrinsic unfairness of the situation faced by those living on low incomes, where a lack of decent travel options are just one of the issues that they face.

Respondent ***Foxtrot*** spoke about the origins of transport poverty.

> *"I think the issue of transport poverty feels like it only really came to light about the time Sustrans published the research on it in - I can't remember the exact year 2011 or 2012"* (Third Sector (***Foxtrot***) 2018)

This is an interesting observation about the origins of transport poverty in the UK. The year 2012, appears to have marked a watershed moment in the UK, where the term transport poverty became popularised in academic and campaigning literature (Lucas, 2012; Velaga et al., 2012; Sustrans, 2012; RAC Foundation, 2012). It seems to have had an impact as the Environmental Audit Committee (2013a), took evidence on transport poverty from a wide range of stakeholders, which was published in June 2013.

Respondent ***Foxtrot*** spoke about the approach taken to transport poverty.

> *"I think there's a kind of implicit or tacit assumption in policy that transport should be there to help people to move around. I have never seen*

> *transport poverty, as kind of an explicit goal. A lot of the time it's much more simplistic than that. You know for a transport appraisal it's usually about improving journey times and the assumption is that somewhere down the line is that someone has better access to job opportunities or less time spent on transport."* (Third Sector (***Foxtrot***) 2018)

This is an important observation about the aspirations of transport policy in the UK. In 'WebTAG: TAG unit A4-1 Social Impact Appraisal,' the Government use the terms 'Accessibility' and 'Personal Affordability Impacts' (Department for Transport, 2017a). This reflects the notion of 'Transport Affordability' from the lexicon of definitions for transport poverty, which describes the situation where an individual or household lacks the financial resources to pay for travel options (Lucas, Mattioli, et al., 2016). It appears that transport poverty should be implicitly considered by transport planners, at appraisal stage. It will be interesting to see if this results in projects that are more considerate of those impacted by transport poverty.

Respondent ***Golf*** spoke about their perceptions of transport poverty.

> *"So, from the way you've defined it [transport poverty] from a monetary point of view, as I've said I don't really think about that. I think it's definitely an issue from the way I would think about it from an accessibility point of view. So, the analysis that we do shows that basically you are. I guess you could say your transport poor if you don't have access to a car, because you can access very few labour markets and services within that certain timeframe. It's definitely an issue. I think DfT is starting to think about this issue more. We've published something called the Transport Investment Strategy."* (Central Government (***Golf***) 2018)

This is an interesting comment about accessibility versus affordability in terms of defining transport poverty. The transport appraisal social impact guidance (see discussion above) includes 'Personal Affordability Impacts,' which refers to research showing that cost of transport is barrier for certain groups of the population (Department for Transport, 2017a). This is an important point and it is promising to see that the guidance includes accessibility and affordability, as these are two key concepts within transport poverty.

Respondent ***Hotel*** used inequality to describe their perceptions of transport poverty.

> *"I mean for me an issue the main word that really sums it up is inequality, because I think in inequality in lots of different parameters influences the way that someone travels and that coupled with other factors may lead them to be in this situation of transport poverty. There are lots of issues that affect someone's travel choices, whether that's their gender or on a personal level – their perception of what's safe or unsafe. Housing, where they are able to afford to live. All of these things affect how someone chooses to travel and the options available to someone given the constraints that they have to operate in their life, whether that's where they work, or whether they have children that they need to drop at school. That kind of thing. It might mean that their options are reduced, and that affects access to services. It also affects things like. I mean if someone doesn't feel or doesn't have or isn't supported to choose for example active travel. That could also have a health implication, so not only does inequality play out as a factor that influences how someone's travelling. How someone travels then affects inequality in other things."* (Third Sector (***Hotel***) 2018)

This is a really important point about transport poverty, essentially being an issue of inequality. Mattioli, Lucas and Marsden (2017), attribute transport as a factor behind many social inequalities in areas ranging from access to goods, services, education and health services. There are links between the inequality of transport poverty and the 'rights to the city,' espoused by Lefebvre, with these rights arriving as the outcome of political struggle (campaigns to raise awareness) rather than being granted by the state (Purcell, 2014). It is critically important that the struggle to raise political awareness of transport poverty continues, until full recognition is granted.

Respondent ***India*** gave their perceptions of transport poverty.

> *"I suppose that's people who simply can't afford the cost of transport and how you define that. I would say that transport poverty is quite an issue for certain groups across our region. The feedback from our work that*

> *we've been doing with this discretionary review, we're doing the travel survey and a lot of the stuff that. We've also been walking the floors of job centres – literally just going up to people that are probably on benefits, who are unemployed and we're literally doing the travel survey with them. We've done a lot of that with care leavers as well, literally going into care leaver things and just literally as they come through the door to get support, we've been surveying them. I would say with those two groups in particular – unemployed people and the care leavers – the cost of transport is an issue. It's also an issue for disabled people as well. We've done a couple of exhibitions in job fairs. It is a problem, so we totally acknowledge that in certain groups. I'd also say young people as well. We've recently done a travel survey for young people and again costs came out quite high as another barrier for why they can't access opportunity. Again cost of travel."* (Regional Government (***India***) 2018)

This is an interesting comment on the impact of transport affordability that is supported by anecdotal research evidence, in the form of a travel survey. The focus on the unemployed and young adults leaving care is poignant given the challenges facing these groups. Chatterjee et al. (2019), have recommended that educational institutions review of their travel bursary schemes, to ensure that they are providing adequate support to students with travel challenges. Thus, ensuring that there is adequate financial support for young people to travel for education purposes, is an issue of fairness in English society.

Respondent ***Oscar*** spoke about research that they had been involved in on transport poverty.

> *"We had a scrutiny session about transport poverty that was mainly in relation to the way that we support bus services run commercially. I mean, that was the focus of the scrutiny session. My colleague who isn't able to be here today looked into transport poverty and there's not really any one real transport policy because it's not really something that's needed now. There's not really one definition of transport poverty it's*

often associated with rural areas but people who obviously find it difficult to run a car, but public transport just isn't viable on a regular basis to support rural areas. So, we've also looked at the fact that in some of our more deprived areas something like 40% of households have no access to a car." (Local Government (***Oscar***) 2018)

This is an important comment, as it is a good example of a local authority taking the issue of transport poverty into consideration. It is interesting to see this articulation of the definitional challenges around rural transport poverty. The availability of public transport in rural areas has also been raised by ***Delta*** and is discussed in section (4.3.1.3). Lucas et al. (2016), used National Travel Survey data (2002-2010) to demonstrate that levels of car ownership are approximately 50% in the groups on the lowest income bands, such as single parents, unemployed/economically inactive and the elderly. This closely matches the findings reported by ***Oscar*** on car ownership and highlight that it is an important issue for policy makers.

Respondent ***Oscar*** spoke about the impact of perceptions around stigma and status.

"So there's something about the stigma or status. The stigma of not having, or the status of having a car you know and a lot of status is invested in that. So I suppose if you're going back to the concept of relative poverty there's a sort of double whammy isn't there, it's that cars are expensive to run and maintain and put fuel in. So you've got the sort of double whammy of people who are forced to use buses and not very good means of transport and you kind of you've got the physical thing and then there's the mental status thing. You've got the high status of owning a car and then the low status of using a bus or a bike." (Local Government (***Oscar***) 2018)

This raises an interesting point about the relationship between social status and stigma and transport mode. Banister (2018), highlights a need to move transport policy away from the mobility choices of the rich, to a perspective that gives greater mobility to everyone. This aspiration would revolutionise transport for all users. These ideas resonate with Lefebvre's vision of urban reform, whereby the reform itself becomes a revolutionary act against the current order (Lefebvre, 1996).

4.3.2 TRANSPORT IMPACTS

This theme includes three sub themes: evidence base, health and household, which emerged as a way of discussing the impacts of transport poverty. The Social Exclusion Unit (2003), point out that the impact of poor transport, combined with poor access to services and activities is borne by individuals, communities, businesses and the state.

4.3.2.1 EVIDENCE BASE

The evidence base sub theme (8 files and 29 references), refers to a wide range of comments that explore evidence around the issue of transport poverty.

Respondent ***Delta*** spoke about transport poverty in relation to their former role.

> *"When I was actually in Welsh Government, it would have been quite interesting to explore transport poverty more, but we really didn't know where the evidence was or how we would get there, so fuel poverty is a lot more well thought through and we didn't know why transport poverty wasn't, but part of it was because it's harder. So, like how do you differentiate between people who are in. So say for instance right the village I live in its a rural area. You could just look at the lack of access to bus services and think it's transport poverty's there, but only some people have got it. So, I wouldn't say that I suffered from transport poverty, okay we had a bad year, but normally we earn enough, we can buy ourselves out of the problem, but then we'll have neighbours who can't, but then there's also the children. So like as I was saying earlier like my kids decision about where they could go to school and the subjects they could study was all affected by the school bus. So, even within the same house you've got different people affected by transport issues in a different way."*
> (Academic (***Delta***) 2018)

This is an interesting comment, as it reflects the complexities faced by administrations attempting to tackle transport poverty. The point that transport poverty is harder to measure than fuel poverty, was reflected in the evidence submitted to the Environmental Audit Committee (2013). Challenges to the idea of a single transport poverty measurement included the failure of previous attempts to measure complex concepts in this way and the lack of a clear definition of transport poverty (Environmental Audit Committee, 2013b). The personal experience of transport poverty related by ***Delta*** is key, as it demonstrates the impact of household finances. The final point about different people being affected in different ways in the same house, is an additional layer of complexity that is reflected in the literature. Variation within households is an important feature of transport poverty (Mattioli, Lucas and Marsden, 2017).

Respondent ***Echo*** spoke about their work on behaviour change in London.

> *"So, we have an evidence base for behaviour change and the work that we do and we have to report into TfL about those engaged and children that are involved and we're in the middle of three multi-modal projects which and their aim is move people away from car use to cycling walking and public transport, so they're not just cycling focused."* (Third sector (***Echo***) 2018)

This is an important issue, as behaviour change is a key factor in the take up of active travel. The Mayor of London's Transport Strategy, contains a number of references to changing behaviours towards more active travel in the Capital (Greater London Authority, 2018c). The comment about widening the focus from cycling in London is also interesting. Cycling represents a small part of active travel journeys (6% of overall active travel) in London (Fairnie, Wilby and Saunders, 2016). Chatterjee et al. (2019), recommend that greater levels of equity in the transport system that reflect the full range of negative outcomes of private car use, would mean that young people could be rewarded for using sustainable means of transport. Any measures that can be introduced to support the move to active travel, would be beneficial for young people.

Respondent ***Foxtrot*** spoke about the type of journeys typically made in London.

> *"It's kind of very simply about the short journeys being made in London and where they are and what type of journeys they are for, so I suppose a sort of proxy for that at the moment is sort of focusing on the shorter journeys being made in and around town centres in outer London and inner London rather than central London."* (Third Sector (***Foxtrot***) 2018)

This is an interesting comment about the types of journeys taken being taken by Londoners. The Mayor of London's Transport Strategy contains an acknowledgment that parts of outer London are impacted by poor transport links, which are economically unfair as they limit access to jobs, education and training for outer London residents (Greater London Authority, 2018c). It will be important to monitor these short commutes in London, to find out if measures to improve active travel are taking effective.

Respondent ***Golf*** spoke about the use of journey time statistics.

> *"It would mostly be journey time statistics. How long it takes to get from A to B and that allows you to think whether people have access to the amenities that they need. But the way I think about it is, I mean statisticians would tend to just present a decontextualized thing which says that it takes X amount of time to get from origin to destination. Whereas my team would try to look at – think about that from a person's point of view. If, for example, the A303 is going to be affecting a number of different villages. What impact will putting the A303 in – what will it have on those particular villages. So, will they experience enhanced access because of that particular road scheme. Things like that. We're also planning using longitudinal evidence from the understanding to look at people's access to life opportunities. Quite a broad term there. When I say that I mean social networks, relationships, communities, job centres."* (Central Government (***Golf***) 2018)

This is an interesting approach to improving access to transport for rural residents in England. The point about time is particularly interesting, as it links into the issue of time poverty. Time poverty, is key to understanding the impact of accessibility issues, as women from low-income households are disproportionately affected, due to a need to make lots of trips for domestic responsibilities and work using circuitous routes (e.g. by bus) to reduce costs (Turner and Grieco, 2000). The time spent travelling to work is a factor behind the decision by low-income households to maintain a car under circumstances where is it financially challenging, which is exacerbated by the uncertainty created by zero hours contracts (Mullen and Marsden, 2018). Chatterjee et al. (2019), reported that around a third of adults did not have access to car and relied on public transport, or other transport modes to fulfil their transport needs. This represents the scale of the challenge that the Government will need to address, to improve access to life opportunities.

Respondent ***Hotel*** spoke about some recent transport poverty reports.

> *"Sustrans have done two studies on transport poverty. So, the first was called Locked Out, so that was on 2012 and that was Sustran's response to realising it was an issue and there was not much out there, neither in the way of evidence nor an established framework for defining transport poverty. That piece of work was produced, which was England focused and it essentially took three factors, so that was car availability, income and access to services by public transport, so how far they would have to travel to access the nearest GP, or shops that kind of thing. The second was a follow up on that, which was looking at Scotland. This was last year."* (Third Sector (***Hotel***) 2018)

These are important observations about transport poverty across the country, where Sustrans played a pivotal role in bringing the issue to the attention of the public and transport policy makers. Sustrans publicised the affordability issues around English car ownership in the 'Locked Out' report (Sustrans, 2012). The follow up report, looking at Scotland, found that the risk of transport poverty was increased in areas with relatively low income, high car availability and a lack of public transport (Sustrans, 2016). These reports are a key part of the evidence base for transport poverty in the UK. They sit alongside reports produced by the Campaign for Better Transport, which carried out a literature review of transport and poverty (Bourn, 2012b), and recommendations for further work to tackle transport related poverty (Bourn, 2012a).

Respondent ***India*** spoke about their evidence base around transport poverty.

> *"I've got to say that we haven't really got much of an evidence base. We haven't really done that much research on transport poverty. The work that I'm doing at the moment, this discretionary review. I think that's probably the closest we've actually got. We did do some surveying about three or four years ago. We used a consultancy called aimed at disability and the barriers faced by disabled groups, but we haven't done very much. I've had a few meetings with Dr Karen Lucas. I know she's kind of done a little bit of work in that area."* (Regional Government (***India***) 2018)

This is a candid admission about transport poverty research, but it was interesting to hear about the collection of survey data on barriers to transport. Prof. Karen Lucas was the lead author on a contribution to the 'Future of Mobility: Evidence Review' for the Government Office for Science, which examined the evidence for transport poverty across the UK (Lucas et al., 2019). These examples represent important elements in the construction of a wider evidence base, for transport poverty in the UK.

Respondent ***Mike*** spoke about perceptions around cycling.

> *"There's Movement for Growth tracking study that's done annually. So these are looking at perceptions. People's perceptions of transport, so they look at walking, cycling and driving and public transport. To get their perception, levels of satisfaction and those kind of things. As you say we could do better, a lot of our data's limited and we could definitely do a lot better on this."* (Regional Government (***Mike***) 2018)

It is interesting to hear about the collection of data on perception of cycling and the limitations around this at a regional level. In England, cycling is not part of the national identity like it is in the Netherlands, instead cycling has a strong local identity in places like Bristol and Hackney (London) (Aldred and Jungnickel, 2014). The average number of cycling of trips per person in England have remained between 14 and 18 between 2002 and 2017 (Department for Transport, 2018b). These comments demonstrate that more work needs to done to improve the perceptions of cycling in England.

Respondent ***Oscar*** spoke about their work around different transport modes.

> *"We don't tend to think much about transport poverty we tend to think about people who are deprived and may or may not have a car and how they might get about, but that's in marked contrast to what we do most of the time, which is just thinking about different modes and not necessarily the socio-economic status of the people using those modes. I find one of the most ironic things is that it tends to be the middle classes more who are using bicycles, which is obviously one of the cheapest and more accessible forms of transport and our research shows that it's a bit like Mrs Thatcher in the 80s that we did some targeted research in Selwood which is near Bristol – one of the more deprived wards and that showed that basically if you're riding a bicycle you're seen as a bit of a loser."* (Local Government (***Oscar***) 2018)

It is interesting to hear about this approach to transport. The focus on transport mode rather than transport poverty, is perhaps a reflection of the wider Government priorities at the time. ***Oscar's*** comments about cycling align with the literature. Cambridge, Bristol and Hackney were places, where cycling was viewed as a middle class activity (Aldred and Jungnickel, 2014). These comments also highlight the need to promote cycling as an accessible activity that everyone can participate in.

4.3.2.2 HEALTH

The health sub theme (6 files and 6 references) reflect comments on the health impacts of transport poverty. The impact of poor transport accessibility, for example, has been linked to missed healthcare appointments in England (Social Exclusion Unit, 2003). Obesogenic environments are also more prevalent in deprived areas (Law et al., 2007). Whereas, wellbeing is positively associated with good levels of transport connectivity (Chng et al., 2016).

Respondent (***Echo***) spoke about the health inequalities faced by people living in poverty.

> *"A feeling where nothing would ever change and so I suppose and that preventing kind of jobs coming to them, but also yeah maybe feeling*

disempowered by being sort of stuck there as well and obviously health inequality is much greater in places like that." (Third sector (***Echo***) 2018)

This is an important comment about the health inequality associated with living in poverty. Health impacts arising from transport decisions, range from the obesity resulting from a lack of activity, to improved fitness and wellbeing through walking and cycling (Jones and Lucas, 2012). The Mayor of London's Transport Strategy aims to address health problems caused by inactivity and pollution, by shifting car use to active travel and public transport (Greater London Authority, 2018c). It will be interesting to see if this strategy in London will help to reduce the health inequalities faced by residents.

Respondent ***Foxtrot*** spoke about health and transport in London.

> *"Some of the things that are interesting health, a big shift in focus for this current administration. Having a health target as part of transport, so an active travel target. Getting everyone to achieve 20 minutes of active travel every day. Two 10 minute spells of active travel every day and I think if you were to draw a map of London and where you would put the cycle routes if it was premised on taking people from nothing to 20 minutes a day it would look quite different to the one that we have now, which is about keeping London moving and tackling congestion and crowding on public transport. Finding space to put things in where it's all very contested and a political hot potato."* (Third Sector (***Foxtrot***) 2018)

This is an interesting commentary on the strategy to promote active travel in London. The Mayor of London's Transport Strategy contains an aim for all Londoners to do 20 minutes of active travel per day by 2041 (Greater London Authority, 2018c). The idea of building cycling and walking infrastructure, to encourage 20 minutes of active travel each day, represents an interesting approach to the Mayor's target. The challenge in London, is that rates of active travel are lower in Outer than Inner London, where walking and cycling are more prevalent (Aldred, Croft and Goodman, 2019). The 'mini-Holland' programme in the Outer London boroughs of Waltham Forest, Enfield and Kingston, which is not yet complete has led to some increases in active travel (Aldred, Croft and Goodman, 2019).

It will be interesting to see the full impact of this scheme on active travel when it has been completed.

Respondent ***Hotel*** spoke the implications of travel choices.

> *"Starting to think more about really what are the health implications of certain communities being able to choose to travel by bike rather than by car."* (Third Sector (***Hotel***) 2018)

This is an interesting comment, which links into the debate around health benefits associated with active travel. In terms of cycling, class and location (emerging culture vs established culture) are factors that play a key role in transport choice (Aldred and Jungnickel, 2014). There are some negative aspects associated with active travel. Jones and Lucas (2012), point out that walking and cycling in proximity to a busy road can expose communities to a range of negative health impacts (e.g. pollution, noise and high risk of accidents). It is important for transport planners to work towards eliminating these negative health impacts, if active travel participation is to be improved in marginalised communities.

Respondent ***Oscar*** spoke about the links between inequality and public health.

> *"I mean certainly our I think it's our public health that that leads us very strongly to tackle inequality and inequity because that's obviously a key. One of the key fundamental tenants of public health is that inequality is fundamentally unhealthy not only for the poor but also for the rich."* (Local Government (***Oscar***) 2018)

This is an important point about the link between in inequality and public health. Preston and Rajé (2007), highlighted that unlimited private mobility (e.g. private car) is a contributing factor in adverse public health impacts, such as high rates of road traffic accidents and declining use of public transport. In some locations dangerous, polluted or noisy streets discourage residents from walking or cycling and poor public transport access drives increased car usage – leading to environmental and public health issues (e.g. pollution and obesity) (Government Office For Science, 2019). This demonstrates the importance of factoring in public health, when addressing transport inequalities.

4.3.2.3 HOUSEHOLDS

The households sub theme (5 files and 12 references) examines comments made about the relationship between households and transport poverty. Traditionally, research on transport affordability options, has tended to focus on households that have been required to spend more than they can reasonably afford on maintaining a car, for access to work and essential services (Mattioli, Lucas and Marsden, 2017).

Respondent ***Delta*** spoke about variation within households.

> *"So, even within the same house you've got different people affected by transport issues in a different way."* (Academic (***Delta***) 2018)

This is an extremely important point about transport poverty. Fuel poverty clearly affects the whole household, whereas transport and accessibility issues impact at an individual level, which means that one person may experience transport poverty and others may not (Mattioli, Lucas and Marsden, 2017). The fact that different households members can be affected in different ways, makes transport poverty a much more complex issue for policy makers to address than fuel poverty.

Respondent ***Delta*** gave an example of variation in transport needs at household level.

> *"And also parents don't always find the money to sort out their kids problems, and maybe they haven't got the money. Maybe they don't understand what a big issue it is. My current crisis is that my 16-year-old wants insurance when he's 17 and it's going to cost us about £3000 and if I found the money, would that be good way of spending it. So, who makes that decision? We're going to have to have some interesting discussions at home… Another real problem is actually the cost of passing your driving test. I think that if 17-year-old kid live in rural areas, they should be given free driving lessons, because like he doesn't have an option. He can't make use of subsidised bus services, because there aren't any. He has to pass his driving test and I'm thinking it's not just the cost of insurance. Those driving lessons are expensive and it's getting harder and harder to pass the test. It's going to get more and more*

expensive, so this barrier. Now I think in rural areas kids should be given free driving lessons." (Academic (***Delta***) 2018)

This is an interesting example, as it clearly demonstrates the decision making processes that take place in rural households across the country. It highlights the high costs of motoring for young people in rural areas, for whom in many cases having access to a car is a necessity. Chatterjee et al. (2019), reported that less young people (aged 17-20) hold driving licences, or identify as a driver of the main household car, than the peak era in the early 1990s. The 'On the Move' report looked at why driving amongst young men had declined, it found that the costs of learning to drive and expensive insurance were significant factors (Social Research Associates, 2015). This example shows that there are some tough challenges for policy makers, which are presented by the costs of motoring for young people.

Respondent ***Echo*** spoke about the transport challenges for elderly residents living in Outer London.

> *"It's kind of right at the north of the borough and its severed from the rest of Barking and Dagenham by the A12, which is a really big smelly A road and the only way for people to get out of the estate is to either drive or go on foot or by bike. They can use those kind of busier roads to get out, but the main connector is a set of underpasses that are not attractive to use, because they smell they are often dark, lights are broken. People, particularly vulnerable older women find them intimidating."* (Third sector (***Echo***) 2018)

This example demonstrates the transport accessibility challenges faced by elderly residents on this peripheral estate in Outer London. The Mayor of London's Transport Strategy, acknowledges that areas of Outer London are blighted by poor public transport links, which isolates people and communities (Greater London Authority, 2018c). The challenge for transport planners in London will be mitigating these issues for all members of the community.

Respondent ***Hotel*** spoke about the links between housing and transport choices.

> *"I think predominantly also through housing. I think it's playing itself out in housing policy and planning and the effect that that has on rent prices, or homeownership or where people choose to live. That very much is driven by income, I think, but I think it's also about infrastructure in a very real way. Not necessarily income, but what are the options available to someone, are they connected to public transport options that are affordable. I guess it's a very multi-dimensional issue when you start to look at one factor that's influenced by other things as well. I think infrastructure in a big way – transport and for cycling that feels safe and makes it a realistic viable option for people."* (Third Sector (***Hotel***) 2018)

This is an interesting commentary on housing, income and transport choices, with infrastructure as a key factor behind these choices. Lucas et al. (2018), carried out a study of two deprived urban areas in Merseyside (England), using geographically weighted regression models, finding that the physical location was a greater determinant of trip making behaviour than social factors like household income and employment status. Looking at cycling specifically, in England by mode share 2% of all journeys were made by bicycle in 2017 (Department for Transport, 2018b). It has been predicted that if recent funding increases in cycling infrastructure are maintained, then the use of bicycles will grow in England (Government Office For Science, 2019). The challenge for policy makers will be two-fold, in terms of building the infrastructure for cycling and incentivising residents to use it.

Respondent ***Mike*** spoke about promoting cycling schemes, as an affordable mode of transport.

> *"One of the things that we talk about is cycling sort of as an affordable mode of transport for people and things like different schemes that would be appropriate like the bike share scheme. We're going to be working with Next Bike and they're going to have options you know for people who are lower income or no income so that they can access the bike share and get to work."* (Regional Government (***Mike***) 2018)

This is an interesting approach for expanding the use of bicycles to individuals living on low incomes. A Mobility-as-a-Service (MaaS) trial project called Whim, in the West Midlands, includes a bike share component (Chatterjee, Ricci, et al., 2019). MaaS could assist with steps to improve the take up of bike share schemes. However, MaaS trials internationally have not always been a success and most small scale MaaS pilots have been unable to scale up (Government Office For Science, 2019).

4.3.3 TRANSPORT MODE

This theme covers the comments on the various modes of transport that arose from the interviews with respondents. In Great Britain, 808 billion passenger kilometres were recorded (the highest ever) in 2017, with 83% of these passenger kilometres taking place in a car, van or taxi (Department for Transport, 2018b). This demonstrates the dominance of the car, as a mode of transport.

4.3.3.1 ACTIVE TRAVEL

The active travel sub theme (5 files and 30 references) refers to walking or cycling (Chatterjee, Ricci, et al., 2019). In London, for example, 42% of the time spent on active travel is part of a journey, where public transport is the main mode of travel (Fairnie, Wilby and Saunders, 2016).

Respondent ***Echo*** spoke about the promotion of active travel across London.

> *"In London obviously congestion, air quality, road safety are big concerns. So, the majority of the team go to schools as Bike-It officers, so they engage kids across 12 different schools we're intensively engaged and we're expected to use awareness and empowerment activities to get them to change their behaviour and encourage their parents to do so as well and they also try to take some of the barriers away from riding bikes. Looking at the design around the school. Yep, things like that. So, in terms of how it ties into policy. I suppose it's kind of most obviously funding is key to us being able to carry out our work."*
> (Third sector (***Echo***) 2018)

This is an interesting example relating to behaviour change and cycling. Cavill et al. (2019), found strong evidence that the promotion of active travel in schools (e.g. walking and to a lesser extent cycling), helped to developed life long active travel habits. This shows the benefits that active travel can have on young people and their families. However, Chatterjee et al. (2019), reported that a lack of safe cycling infrastructure is viewed as a barrier to cycling amongst younger children (9-11 years). This highlights the importance of creating cycling infrastructure, alongside measures to promote active travel.

Respondent ***Foxtrot*** spoke about the benefits of cycling for individuals on low incomes.

> *"I think it's taken as a tactic implication that cycling is an incredibly low-cost form of transport and it should be a democratic one and helps people on low incomes to achieve their mobility needs."* (Third Sector (***Foxtrot***) 2018)

This is an interesting point about the costs of cycling. Cycling is one of the cheaper ways to travel, and in theory permits access to any part of London, at any time of day (Greater London Authority, 2018c). However, there are some underlying cultural aspects around cycling that will need to be addressed. In Hackney, and other London boroughs men are over represented in the cycling population (Aldred and Jungnickel, 2014). Policy makers will need to take steps to encourage female cyclists in London, in order for it to become truly democratic.

Respondent (***Foxtrot***) spoke about promoting cycling in London.

> *"I should say, and we're starting from a very low base for cycling even though there's 730,000 journeys a day. It's still a tiny proportion of all journeys in London. So, the work at the moment is just really on the basic – what do we need to get people cycling and where can we do it. It's changing but it's less about where should we do it I suppose. Yeah, it almost feels like a sort of pilot phase where we're seeing if these things work. There is no intention to sort of spatially to provide cycling structure where there's kind of greatest potential and again that's really about*

> *numbers. It's about value for money in terms of getting numbers of people cycling rather than alleviating high cost transport."* (Third Sector (***Foxtrot***) 2018)

This is an important point about the lack of provision of cycling infrastructure in London. There will need to be significant increases in infrastructure provision if cycling numbers are to be increased, particularly in Outer London. The 'mini-Holland' scheme in the Outer London boroughs of Enfield, Waltham Forest and Kingston was instigated by the former Mayor of London (Boris Johnson 2008-16), and despite some protests in Waltham Forest, has led to increases in walking and cycling in areas with the new infrastructure (Aldred, Croft and Goodman, 2019). The current Mayor of London (Sadiq Khan 2016-present), has proposed the delivery of a London wide cycle network, with high quality routes that are safe, along with an improved infrastructure to address barriers to cycling (Greater London Authority, 2018c). It is vitally important that this improved cycling infrastructure is rolled out across Outer London, if active travel levels are to increase.

Respondent ***Hotel*** spoke about their role in collecting evidence of active travel.

> *"My team normally has a role in collecting evidence from that especially around impacts on walking and cycling, but also other outcomes… So, a lot of the time its questionnaire based, or sometimes objective data. So, count recordings of the number of users on a route, or more quantitative perception based surveying. So, we might do that on site or a focus group – that kind of thing. So, ultimately, our objective with all of that evidence is to encourage transport policy in the UK to be more supportive of walking / cycling. To demonstrate the positive impacts that active travel can have on society and essentially to encourage more investment in active travel."* (Third Sector (***Hotel***) 2018)

This is an interesting commentary on the work that takes place, to support and encourage the take up of active travel across the UK. A recent review of active travel across the UK found that there was strong evidence supporting the effectiveness of active travel interventions, particularly where they were implemented at a city or town-wide scale (Cavill et al., 2019). There appears to be a clear intent to move policy towards active travel, especially in urban areas across Britain, where there is Government support for improved mobility (Department for Transport, 2019b). It is essential that research and investment in active travel continue, if the policy goals around mobility are to be realised.

Respondent ***Mike*** spoke about the impact of the Cycling Charter.

> *"The Cycling Charter has four themes: raising the profile of leadership; the cycling network promotion – promoting cycling; and then funding and under these for the action plan we have a number of actions under each one of those themes. The aim of the cycling charter is to raise cycling levels to 5% of mode share for travel to work. The average right now from the last census in 2011 is 1.8%. Yeah, so there's pockets across the region. There's pockets of higher, that go you know sort of 5-6% and there's some much, much, much lower, but on average it's still probably around that 2%. Ok, so we're working to get through to 5%."* (Regional Government (***Mike***) 2018)

This raises an interesting point about the challenges facing policy makers, around increasing commuter cycling. The viewpoint that cycling is associated with individuals on a higher income may well be true for recreational cycling, but this is not necessarily the case for utility cycling which varies according to the conditions in locality across the Great Britain (Goodman and Aldred, 2018). It is clearly important that conditions to increase cycling are implemented in this region.

Respondent ***Oscar*** spoke about their role in promoting public transport and active travel.

> *"My job is to increasingly promote public transport, walking and cycling, public and active travel to get to work and to get around town. I also get involved in things like road safety, people doing things like 20 mph speed limits."* (Local Government (***Oscar***) 2018)

This comment highlights the importance of active travel and safer travel, to the transport agenda for local authorities. Cavill et al. (2019), recommend the promotion of active travel by local agencies, as part of efforts to increase physical activity levels. Road safety is also an important factor in active travel. According to Bourn (2012b), research shows that road injuries can be reduced in deprived neighbourhoods, by implementing measures that prioritise pedestrians. Safer streets are regarded as a social benefit of the 'Future of Mobility: Urban Strategy,' and have been linked to the implementation of the self-driving technologies (Department for Transport, 2019b). Active travel clearly accrues many benefits, but it is vital that the infrastructure to enable walking and cycling is constructed to facilitate it.

4.3.3.2 BUSES

The buses sub theme (3 files and 23 references) refers comments on this transport mode. Buses formed 59% of passenger journeys by share of public transport mode (2016/17), across Great Britain (Department for Transport, 2018b). Chatterjee et al. (2019), found that buses were predominantly used by those with lower incomes, in more urbanised areas.

The experience of using the local bus service, gave respondent ***Delta*** an insight into a fellow passenger's experience.

> *"I was having to get a bus from the train station in Swansea to where I was going. The bus was about 6pm and in London you get the bus at 6 it's fine, but she was like relieved she got the bus because it was the last one of the evening or whatever and she was talking about how she'd been on, how she had real problems getting to work, because she could only really do shop work, but she had to do shop work at shops where she could work hours when the bus service was running. She'd had this other job that had paid better, but it required working late some evenings and because there wasn't a bus she'd had to pay for a taxi home and that was costing her more than the extra money that she was getting. So at the time she was doing a trial with I think it was Mark's and Spencer's and she was just so desperate to keep the job, because it was within the hours that the buses ran, but it was a decent hourly rate and I think it was that she couldn't drive for some reason, but couldn't get mobility allowance. You know, there was some. Maybe it was financial a car just wasn't going to be an option, and I just realised how much her whole*

choices and there were times when she was just on benefits because she couldn't get a job that would fit in with the bus timetable and that really made me realise how much the bus timetable. If you're reliant on the buses then that actually affects your whole life. It's like she could only get to jobs or places that were on bus routes, so her whole world was defined by the bus system." (Academic (***Delta***) 2018)

This is a fascinating insight into the impact of the bus timetable, on the life of this individual. Hamilton and Jenkins (2000), point out that public transport is an essential part of the lives of many women, as it links them to employment, childcare, education and health services. The Campaign for Better Transport (2018), reported that bus services in Wales have been reduced, and bus fares have increased in recent years. It is important that policy makers make every effort, to keep bus services running to rural communities.

Respondent ***India*** spoke about transport barriers associated with bus interchanges.

"So, what people have said is they don't like interchange, because if they live near the key corridor on our key route networks, buses are very frequent. So, it's not necessarily been a problem for all groups. It's where - I found from talking to these vulnerable groups – it tends to be where they have to interchange and maybe use two or three or four different. You know change buses, but that becomes almost a barrier, so, and that's a problem." (Regional Government (***India***) 2018)

This is an interesting point about bus usage and the challenges around interchanges. Interchanges are a crucial element of public transport, but they require extra effort and create additional uncertainty for the user (Bryniarska and Zakowska, 2017). The 'Future of Mobility: Urban Strategy' contains a commitment to making transport hubs easier to access (Department for Transport, 2019b). It will be interesting to see how plans evolve to improve bus interchanges.

Respondent ***Oscar*** spoke about increases in the use of bus services.

"We've been cutting our support to the long commercial bus services, quite a lot of them have been ended up running commercially anyway by

the bus companies because we've been, well for a number of factors that we're one of the few local authorities in Britain on in England anyway that has got a rising bus market and that's probably a combination of having residents parking in a ring around the city centre which has forced commuters out of their cars and also that we've been putting a lot of priority measures so bus lanes and advantage to buses and improving all of the bus shelters and the environment and that's made the buses more reliable and more quick so the companies have been able, not only to run more buses including routes that previously were not commercial, but they've also lowered their fares so that's obviously good for everyone, but it I would imagine proportionately benefits deprived areas and deprived people more because you've got bus priority and the lower fares." (Local Government (***Oscar***) 2018)

This is a good example of successful local planning, leading to increased bus usage in a regional urban area. The actions of local authorities in the UK, are critical in terms of transport planning for roads and buses (Government Office For Science, 2019). The fact that the company were able to reduce fares is good for the service users. Making bus services more affordable, is essential for encouraging greater usage outside London.

4.3.3.3 CARS

The cars sub theme (5 files and 26 references) refers to a variety of comments around use of cars. Car usage by transport mode share in England represented 62% of trips, which represented 78% of the total distance travelled in 2017 (Department for Transport, 2018b).

Respondent ***Delta*** spoke about mapping, car ownership and income levels in Wales.

"So, we were mapping areas with a poor bus service. We were using, wasn't accession software. It's a new one that's come out Trac I think it's called. So, we mapped areas where it would take you – you leave say on a Monday morning at 9am where could you actually get a bus to a school or to a hospital in an hour and there were big areas of Wales where you couldn't and then we cross mapped these areas with car ownership

levels. So, we were trying to pick out where there are areas in Wales with low car ownership, but poor bus service and then we realised that wasn't quite full the story, because there were areas with high car ownership levels, but actually income levels were low. So, that was suggesting to us that there were people who must have been spending a high proportion of their income on having a car, because there wasn't a bus and we felt that that was getting us a bit towards transport poverty, but we didn't take the exercise any further because it was like how do we then drill down and it's almost like you'd want to do more." (Academic (***Delta***) 2018)

This is an interesting example of transport poverty research, which appears to have identified areas experiencing transport poverty. Increases in the costs of public transport (since the 1980s) relative to costs of buying and running a car, have made the car a more affordable and attractive option for households living on low incomes (Curl, Clark and Kearns, 2018). The concept of forced car ownership was identified in rural areas of Great Britain, in low-income households that maintained cars as a necessity (Banister, 1994). Mattioli, Lucas and Marsden (2017), have suggested that improvements to active travel and public transport in peri-urban and rural areas, are likely to relieve the financial pressures on households impacted by forced car ownership. It is important for policy makers to find ways to assist low-income households, forced into car ownership by a lack of alternative mobility options.

Respondent ***Echo*** spoke about car ownership in a peri-urban housing estate in London.

"So, whilst having a car and owning a car is really aspirational for a lot of people in that community, a lot of people can't afford a car. The way that roads have been built and car use prioritised, it can create terrible isolation. To be able to get to their closest station is a 25 minute." (Third sector (***Echo***) 2018)

This is a good example of the challenges created by not having a car in a location where transport links are poor. The exclusion from facilities, such as out of centre supermarkets, created by not having a car, mean that poorer residents often lack access to affordable and healthy food (Church, Frost and Sullivan, 2000). The Mayor's Transport Strategy for

London aims to reduce social isolation through the promotion active travel using the Healthy Streets Approach (Greater London Authority, 2018c). The challenge for policy makers will be ensuring that the infrastructure to enable safe walking and cycling, is in place across Outer London.

Respondent ***Foxtrot*** spoke about the levels of car ownership in Outer London.

> *"Across the board typically there are more cars per household in Outer London, but still a surprisingly high proportion of households don't have access to a car. I'm not sure how that breaks down in terms of what proportion of their income they're spending."* (Third Sector (***Foxtrot***) 2018)

This is an interesting comment about the distribution of car ownership across London. Census data from 2011, indicated that 73.2% of Outer London households live in a household with a car (Aldred, Croft and Goodman, 2019). London households without cars reported greater levels of active travel (70%), compared to households with one car (55%) and two or more cars (44%) (Fairnie, Wilby and Saunders, 2016). Understanding the link between car ownership and active travel in London, is crucial if the future aspirations for increased active travel are to be met.

Respondent ***Golf*** spoke about research on car dependency.

> *"So, research we recently commissioned suggested that 93% of people feel they need to own a car to get on with their daily lives."* (Central Government (***Golf***) 2018)

This is an interesting revelation about car dependency. The extent of this dependency is evidenced by the proportion of journeys made by car in Great Britain, which was 83% in 2017 (Department for Transport, 2018b). This presents a range of challenges to policy makers in urban and rural settings. The Future of Mobility: Urban Strategy aspires to harness future changes, in a way that improves affordability and widens access to mobility across society (Department for Transport, 2019b).

Respondent ***Golf*** spoke about equity and the future of transport.

> *"That's one area of my work and another area of my work is looking at the future of transport, so how are people going to behave and respond to autonomous vehicles, other technologies, but I haven't taken an equity point of view on that particular work yet."* (Central Government (***Golf***) 2018)

The role of automation in the future of transport raises some interesting challenges, from an equity perspective. It has been recommended that policy makers consider how best to take advantage of the benefits of automation, which include safer more efficient and cost effective transport and balance these against public concerns (Government Office For Science, 2019). The equity implications of automation for taxi drivers (for example) could be serious, as low-income households and disabled people, tend to be more reliant on these services (Lucas et al., 2019). It is clear that policy makers will have much to consider in terms of equity, with the pending arrival of autonomous vehicles.

Respondent ***India*** spoke about alternatives to the car.

> *"We're trying to push people onto alternatives to the car, anyway. The cost of transport obviously has to pay a major role in that we have to make it appealing. We have to give people the right information, so people want to make that journey in the first place."* (Regional Government (***India***) 2018)

This is an interesting proposal that has the potential to reduce car dependency. It aligns with the other emerging trends, like the shift away from owning to using transport services, which is likely to bring about transformational change in society (Government Office For Science, 2019). For example, Uber (ride sharing app), has made it easier for commuters in the United States to travel to places that are under-served by public transport (Hall, Palsson and Price, 2018). It will be interesting to see how these changes play out, in terms of future mobility policy.

Respondent ***Oscar*** spoke about the impact of fuel prices on car usage.

> *"Yeah, the thing that affects that most of all, which may be relevant to your studies is when the price of oil and fuel comes down the bus*

company then have a problem because then it becomes more, you know cars can compete again more readily than buses and so we did see our growth falter a year or two ago I can't remember exactly when but when oil prices came right down and that was reflected in the pump price then our growth stalled for a while, but it's back on track again now." (Local Government (***Oscar***) 2018)

This is an interesting point about the impact of fuel prices on the costs of transport. Rising oil prices, have generally translated into higher prices for motor fuel in developed countries (Dodson and Sipe, 2008). Mattioli et al. (2018), found that low-income households in the UK have a degree of latitude around reducing fuel demand for their cars, in response to price rises. In the UK, the greatest volatility around household spending on transport has taken place since 2012, with increased spending on transport resulting from fare rises for public transport (Banister, 2018). It would be interesting to investigate the relationship between bus fares and fuel prices in future work, to determine what factors influence the decision making by transport users.

4.3.3.4 DEMAND RESPONSIVE SERVICES

The Demand Responsive Services sub theme (1 files and 2 references) examines comments around the use of Demand Responsive Transport. Davison et al. (2014), classifies Demand Responsive Transport, as transport services that respond to public passenger demand, and charge a fee on the basis on a per passenger basis.

Respondent ***India*** spoke about the potential for demand responsive services, to support existing public transport services.

"Maybe people just can't get to the network, it's too far, it's not accessible. Maybe we do some demand responsive services. You know until we've done the research, but I think sort of going back to your original question – the mobility for inclusion strategy. I think that the research that we're doing now will then feed into the direction for that strategy." (Regional Government (***India***) 2018)

This is an interesting comment accessibility of the transport network. Wang et al. (2014), looked at Demand Responsive Transport in Greater Manchester, and found that a large amount of trips, originated in areas with a low population density. It is feasible that demand responsive services could improve the overall reach of the transport network. It will be interesting to see where respondent ***India's*** research leads.

4.3.3.5 PUBLIC TRANSPORT

The public transport sub theme (2 files and 8 references) refers to general comments about public transport. Public transport, along with walking and cycling are the most cost and energy efficient transport modes (Mattioli, Lucas and Marsden, 2017). If people walked, cycled and used public transport more, there would be lower levels on congestion and pollution, and the population would be fitter and healthier (Shaw and Docherty, 2019).

Respondent ***Mike*** spoke about the use of bicycles on the metro system.

> *"My personal opinion is that it would be better if people could take their bikes on the metro and travel, because for some people who go on rail right. They want their bike at the other end. That's why they bring their bikes on the rail. So, in a more ideal situation you would be able to do the same with metro, so you'd bring it and you'd have your bike at the other end."* (Regional Government (***Mike***) 2018)

This raises an interesting point about the carriage of bicycles on the metro system. In London, the only types of bicycle allowed on trains and trams are folding bikes, these are allowed on at any time, but non-folded bikes are only allowed during off-peak hours, bank holidays and weekends (Jordan, 2018). If non-folding bicycles were allowed onto metro system then it may in turn lead to the desired increases in commuter cycling (discussed by ***Mike*** in section (4.3.3.1)).

Respondent ***Oscar*** referred to a well-known quote by Enrique Peñalosa, on public transport use.

> *“I think my favourite quote is from one of those Latin American mayors, which goes a smart city is not one where the poor drive cars, it's where even the rich use public transport.”* (Local Government (***Oscar***) 2018)

The following quote from the former Mayor of Bogota (Colombia), Enrique Peñalosa is well known in transport circles, and it comes from a Ted Talk that he gave in New York City (Peñalosa, 2013).

> "An advanced city is not one where even the poor use cars, but rather one where even the rich use public transport." (Peñalosa, 2013)

This is an important aspiration for all cities, and it is one that London is well placed to meet, in the future. A key element of the Mayor of London’s Transport Strategy is to encourage fewer trips by car, which is a greater issue in Outer London (Greater London Authority, 2018c).

Respondent ***Oscar*** spoke about the challenges of commuting using public transport.

> *“People are still commuting the same amount of time, so what effectively that means is just people commuting greater distances, which is fundamentally unsustainable, but at the same time it's quicker for people to travel a couple of dozen miles to work from outside the city as it is for someone to take the bus from 3 or 4 miles – 4 or 5 miles from the city centre to get to the city centre because of the circuitous routes and the frequent stops.”* (Local Government (***Oscar***) 2018)

This is an interesting commentary, as it highlights an important time issue around commuting by public transport. There is potential for Mobility-as-a-Service to assist by providing travel times that are based on real time travel conditions, which could assist transport users and reduce congestion in the city (Government Office For Science, 2019). Ultimately, the local authority who would need to review the bus routes, because changes could speed up commuting times.

4.3.3.6 INFRASTRUCTURE

The Infrastructure sub theme (3 files and 5 references) arose from comments about transport infrastructure. Effective policy making is key to realising growth from investment in transport infrastructure, as the political context in which economic conditions are embedded is crucial to success (Banister and Berechman, 2001). However, the Labour administration, which governed from 1997 to 2010, failed to deliver many of the infrastructure and congestion charging schemes that they had proposed (Docherty et al., 2018).

Respondent ***Golf*** spoke about national and local transport infrastructure in the UK.

> *"Very rarely that you find something coming from the centre, but the big schemes like HS2 are obviously an example of that. So local authorities have a big – a very big say in what transport is provided. If they can make a strategic and economic case for that."* (Central Government (***Golf***) 2018)

This comment sets out an interesting example, of the difference in scale between national and local transport funding. Mullen and Marsden (2015), have pointed out that the expectations from national governments on transport funding, have influenced the formation of regional transport partnerships to compete for government funding on the basis of economic potential. The Movement for Growth strategic transport plan in the West Midlands region, is an example of a national scale investment delivered alongside a local transport investment, which aims to significantly reduce car usage in the region by 2026 (Transport for West Midlands, 2017). The challenge for local authorities is building the right case for funding, and aligning this with national and regional priorities.

Respondent ***Hotel*** spoke about the impact of infrastructure on public transport.

> *"That very much is driven by income, I think, but I think it's also about infrastructure in a very real way. Not necessarily income, but what are the options available to someone, are they connected to public transport options that are affordable. I guess it's a very multi-dimensional issue*

> *when you start to look at one factor that's influenced by other things as well. I think infrastructure in a big way – transport and for cycling that feels safe and makes it a realistic viable option for people.”* (Third Sector (***Hotel***) 2018)

This highlights the importance of infrastructure to the transport options that are available to individuals. The £100 million ‘mini-Holland’ programme in Outer London (Enfield, Waltham Forest and Kingston) is a good example of investment in active travel, which includes 97 infrastructure measures and is due for completion by 2020-21 (Aldred, Croft and Goodman, 2019). Cavill et al. (2019), found that seven whole city/town initiatives across England, which modified infrastructure and included marketing and behaviour change initiatives, all increased cycling levels with two increasing walking levels. It is apparent that investment in infrastructure, is a key element for increasing active travel, and decreasing car use in urban areas.

Respondent ***Oscar*** spoke about an importance of local transport investment.

> *“I mean it’s all very well to define things but then what’s the point of that you’d have to think about how you’re going to target your investment in order to alleviate fuel or transport poverty, which I guess is not putting money into things like HS2 but putting money into local transport and intra rather than inter urban transport and I think, but again you might find someone in the county council who says the exact opposite of that.”* (Local Government (***Oscar***) 2018)

This statement raises an important point about national, versus local investment in transport infrastructure. Banister (2018), points out that large-scale investments in transport infrastructure for rail and air travel are typically favoured over transport investment that improve the local situation. The Mayor of London’s Transport Strategy highlights the importance of national transport investment in London to the national economy (through the rail network), combined with investments at a local level to improve the road network and implement the Healthy Streets approach (Greater London Authority, 2018c). The balance of local and national investment, is key to achieving infrastructure solutions that work for communities impacted by transport poverty.

4.3.4 POLICY APPROACHES

This theme draws together the approaches currently in place to address transport poverty. It covers administrations, definitions, links to fuel poverty, funding and transport strategies. The links between social exclusion and transport barriers in England, were identified in the seminal 'Making the Connections: Final report on transport and social exclusion,' which focused on accessibility to local services and activities (Social Exclusion Unit, 2003). Lucas et al. (2019), found that inequalities linked to mobility and accessibility, remain closely linked to social disadvantage in England.

4.3.4.1 ADMINISTRATIONS

The administrations sub theme (4 files and 27 references), is wide ranging and covers administrative levels of Government. Across England there has been a change to the way that transport funding is delivered, with the formation of Local Enterprise Partnerships, along with devolved deals to regions with elected mayors (Department for Transport, 2017b).

Respondent ***Delta*** spoke about the Welsh Government's approach to transport management.

> *"In Welsh Government it's not divided modally, so operations look after operations for highways, bus and the rail and the building staff people will build things on highways, bus and rail. So, the whole government has a very cross modal approach, but it meant like the lady who was responsible for operations wouldn't just deal with highway maintenance. She was also having to look at how do I keep the bus service going and so it was quite interesting discussions going on about how we allocate the budget between building things and maintaining things, and then also how we would feed those discussions into our appraisals system. The big job that I was doing in Welsh Government was re-writing WelTAG, so the new WelTAG 2017 got published in December of last year."* (Academic (***Delta***) 2018)

This is an interesting summary of the approach to transport management in Wales. WelTAG 2017 is the Welsh Transport Appraisal Guidance that contains best practice for developing, appraising and evaluating transport interventions in Wales (Welsh Government, 2017). Hickman (2019), acknowledges that the Transport Appraisal Guidance approach is well developed, but highlights the lack of balance in the delivery of transport infrastructure projects, as demonstrated by a lack of investment in public transport, walking and cycling networks. The challenge for the Transport Appraisal Guidance, will be its ability to facilitate meaningful investment in local transport infrastructure.

Respondent ***Golf*** spoke about the role of Central Government in transport policy.

> *"So, because DfT doesn't actually do the policy or the delivery. The local authorities will be doing that for HS2 for example we've got HS2 Ltd who's delivering it, so we set the guidance and we tell them what to do. They go out and commission it. Local authority will go out and commission some research and then we will check that that research matches our standards and if it doesn't match our standards, we will request they redo it."* (Central Government (***Golf***) 2018)

This is an interesting statement about the role of the Department for Transport in policy and the delivery of policy. The implication is that local authorities are in control of transport policy and delivery, so long as they follow the guidance from the Department for Transport. Hickman (2019), describes Transport Appraisal Guidance as a 'traditional' approach, in which the process leading up to Ministerial approval is heavily guided by an analyst (often a specialist consultant), meaning that there is little wider discussion or debate around the policy objectives involved. This highlights the need for a more collaborative approach, to transport policy delivery.

Respondent ***Hotel*** spoke about the development of transport strategies across England.

> *"I suppose Manchester has been able to be very successful and direct about what their transport strategy is trying to achieve. Whether that's the political leadership or devolution itself. It's probably a combination of*

> *things. Yeah, and I guess London has to certain extent as well if you think about having very clear transport strategies for the city and being able to implement those. I think the West of England is still one to watch on that front. I haven't seen anything clear yet, but then it's still new to have an elected Mayor there."* (Third Sector (***Hotel***) 2018)

This is an interesting summary of transport strategy development, in English regions with elected Mayors. The Greater Manchester Transport Strategy 2040, puts sustainability at the heart of its urban mobility plan, by seeking to establish walking and cycling in the region (Transport for Greater Manchester, 2017). The Mayor of London's Transport Strategy makes active travel and public transport a central aim by 2041 (Greater London Authority, 2018c). These are good examples of administrations, with clear transport strategies aimed at increasing active travel.

Respondent ***India*** spoke about the development of a clean air zone.

> *"In terms of the world of air quality, we are looking at doing a clean air zone in Birmingham. What we are looking at is, with us going through the process of a clean air zone we know that we probably need stronger policies on our parking, working with all the local authorities in the region. Also, we give free – there's no cost to park and ride at the moment if you want to use it. Potentially we might have to start bringing in new policies to increase the parking charges in the region. When we have a clean air zone."* (Regional Government (***India***) 2018)

This is an interesting proposal, as it demonstrates that the city is working on reducing levels of transport emissions. The Birmingham Clean Air Zone will be introduced in 2020, with daily charges for non-compliant vehicles entering the Clean Air Zone (Birmingham City Council, 2019). An Ultra-Low Emissions Zone has been in place across central London since 2019, with a daily charge of £12.50 for non-compliant vehicles, it will extend to cover all of inner London by 2021 (Greater London Authority, 2018c). The 'Future of Mobility: Urban Strategy' has set a target for 50%-70% of new vehicle sales to be ultra-low emission by 2030 (Department for Transport, 2019b). It is clear that urban regions are seeking to drive the sale and use of ultra-low emission vehicles over the next decade, which will be beneficial for residents.

4.3.4.2 DEFINITIONS

The definitions sub theme (7 files and 21 references) covers the ways that transport poverty has been defined by the respondents. Unlike fuel poverty, an agreed definition of transport poverty has not been formulated in the literature or policy (Lucas, Mattioli, et al., 2016).

Respondent ***Delta*** spoke about the challenges around defining transport poverty.

> *"Yeah, so again we struggled to define it. We just didn't know how to define it, so we did do a bit of exercise in Welsh Government of trying to do some mapping work."* (Academic (***Delta***) 2018)

This comment is important, as it demonstrates the challenges faced by officials in formulating a working definition of transport poverty. The Welsh Assembly Government's Transport Strategy acknowledged the role that transport policy has in tackling poverty, without using the term transport poverty (Welsh Assembly Government, 2008). Lucas et al. (2019) point out that the absolute poverty is projected to rise in Wales, as low income families in the region have a greater reliance on benefits than earnings. This is likely to keep transport poverty on the agenda of the Welsh Government.

Respondent ***Echo*** spoke about transport poverty, in terms of access to employment and education.

> *"It's not a term that I use a lot, but I suppose it's about access isn't it. So, we can potentially move around a lot more. We're expected to be able to travel further for work and school and yet there are really basic obstacles and barriers in the way of people moving, particularly young people and that's high car usage. It's kind of like walking out onto your local neighbourhood and a road is a barrier to a young person being able to get to school safely."* (Third sector (***Echo***) 2018)

This is an interesting point, as links the definition of accessibility to transport barriers for young people. Accessibility was a key concept in the ‘Making the Connections’ report, where it was used to discuss access to goods and services (Social Exclusion Unit, 2003). Lucas et al. (2016), include accessibility poverty within their lexicon of definitions for transport poverty, as it impacts on an individual’s ability to meet their daily transport needs. Chatterjee et al. (2019), point out that a third of young people under the age of 17, complete journeys on foot. The importance of safe roads is vital for young people accessing school and other services.

Respondent ***Foxtrot*** spoke about how transport poverty was defined in their work.

> *“Yeah, I suppose there are varying definitions. I think our definition was a spatial one originally, and it was identifying areas of the United Kingdom where people were at risk of transport poverty for a range of factors from the availability of public transport and I think kind of household incomes in those areas and therefore what if they were a low income area spending a large proportion of their money on maintaining a car they were defined as at high risk of transport poverty. I can't remember what that. I think it was maybe 10% of household income.”* (Third Sector (***Foxtrot***) 2018)

This is an important point about defining transport poverty in spatial terms, and linking this with the availability and accessibility of transport options. The 10% household income threshold was used in research by the RAC Foundation (2012), which compared transport poverty to the fuel poverty definition in place at that time. More recently, Mattioli, Wadud and Lucas (2018), calculated that 9.4% of UK households fell into the ‘low income, high costs’ (current) definition of fuel poverty, with this group of households spending 24% of their household income on running a car. The challenges around how best to define and measure households living in transport remain largely unresolved.

Respondent ***Golf*** questioned the definition of transport poverty used on the participant information sheet.

> *"Can we start by saying that I did read through this and I do wonder how helpful I'm going to be and the reason for that is that transport poverty. The way you've defined it – it takes it out of transport policy. I'd say that it puts it into kind of more of a welfare. And for note there's no specific policy team in the DfT that would deal with the definition of transport poverty as you've outlined."* (Central Government (***Golf***) 2018)

This is an interesting observation, about the definition of transport poverty used in the participant information sheet. The participant information sheet (see Appendices), described transport poverty in terms of difficulties in paying for essential journeys at individual and household level (Titheridge et al., 2014). This was chosen as a straightforward way of describing the issue of transport poverty. Personal Affordability, features in the Transport Appraisal Guidance (TAG Unit A4.1), as an acknowledgement that the cost of transportation is a major barrier to some people (Department for Transport, 2017a). It is difficult to define transport poverty, without including an element of affordability, as it is key to understanding the issue.

Respondent ***Hotel*** spoke about the challenges in defining transport poverty.

> *"Like I said before I think it is quite a challenging thing to define, because transport itself is such a cross cutting issue, affecting people's health the environment and also related to urban planning things. So I suppose that the way that we've worked out how to define it, which I think tries to cover most things is income, some dimension of income. So, it is a component that should be included as someone's economic security or livelihood. I think the second thing that is important to include is travel choices or travel options. So, that's car ownership, but I think also access to public transport is a really key one and from a Sustrans perspective as well levels of cycling or availability of cycling infrastructure. Something to capture the dimension of travel choice and what options people might have available."* (Third Sector (***Hotel***) 2018)

This is an interesting commentary about the challenges involved in defining transport poverty. Sustrans had used income (affordability) as one three factors (the other two were accessibility related) to map transport poverty in England, in their written evidence to the Environmental Audit Committee (2013b). Lucas et al. (2016), incorporate affordability within their wider lexicon of individual definitions for transport poverty. Transport poverty is more complex than income alone. Arguably it is a more straightforward way to explain the phenomena to the public and policy makers, which Sustrans (2012) did to great effect in the ‘Locked Out’ report.

Respondent ***India*** spoke about defining transport poverty.

> *“I know I've not quite answered the question that you've asked. What transport poverty is. I suppose it's difficult I don’t know. I would just say in terms of your specific question - I would say that transport poverty is where a person can't access an opportunity because of the cost of travel. That's how I define it and it stops them, really.”* (Regional Government (***India***) 2018)

This raises an interesting point about the difficulties in defining transport poverty. The cost of travel (affordability), is an unambiguous way to define transport poverty. If public transport is not affordable then it can be barrier to accessing essential services, for individuals and households living on low incomes (Social Exclusion Unit, 2003). Banister (1980), highlights how this situation arose from the impact of spatial changes, such as the centralisation of activities (education, shopping and employment) into urban centres, without fully considering the impact of transport costs. This makes the affordability of transport options a fundamental consideration for people living on low incomes, and thus an important issue for transport authorities.

Respondent ***Oscar*** spoke about local authority investment in public transport and active travel, in the absence of a clear definition.

> *“I think it’s a leap of faith rather a clear kind of academic causal relationship. We are doing that by investing in buses, cycling, walking, more information. More help for people to get going and so on. More of a leap of faith than a clear academic causal relationship and I think that’s probably a theme that’s emerging for you here sorry – I’m telling you how*

to interpret your results – from what I'm listening to myself saying is that we don't really have a good definition of either transport or fuel poverty." (Local Government (***Oscar***) 2018)

This is an interesting comment, as it highlights the impact that the lack of clear definition of transport poverty, has on how local authorities make transport investment decisions. Transport poverty represents a governance challenge that is dependent on the policy choices being made (Government Office For Science, 2019). This makes it clear that guidance on how to investment in appropriate measures to tackle transport poverty, is urgently needed by local authorities.

4.3.4.3 FUEL POVERTY

The fuel poverty sub theme (8 files and 12 references) explores comments from transport poverty respondents about fuel poverty. Mattioli, Lucas and Marden (2017), have pointed out that fuel poverty is more established than transport poverty, which has suffered from a relative lack of interest from policy makers and academics. Whilst none of these respondents had formally explored fuel poverty, their comments on the subject are of interest.

Respondent ***Delta*** gave the following response, when asked if they had explored the links between fuel poverty and transport poverty.

"No, not really. I've now got a different job and you sort of think there ought to be, but I think it's more than just income, because it's like. If you've got money everyone you can get fuel, but with transport it's not quite so simple, because you may not have bus services available. So, within your budget the amount of fuel that one person could buy could be different to another person, because it depends on where they live. Whereas with fuel if your income is X. I know there's somethings about your building stock or something, but roughly it's probably easier to solve. If your disposable income is X then if you have this amount of money you can buy enough heat, but that's not the same for transport. So, it could be if you live in an urban area you'd only need a small amount of money

> *to have transport options, like mainly bus and the occasional taxi. If you live in a rural area that money's just not going to get you anything at all. So, I think that's one of the reasons and I think we started thinking about it spatially and just felt that this spatial aspect made it a lot more complicated."* (Academic (***Delta***) 2018)

This is an interesting commentary on the differences between fuel and transport poverty. Respondent ***Delta*** compares the differences in the way that income impacts on households in fuel poverty and transport poverty, from an urban and rural perspective. The example used by ***Delta*** about the impact of income on the ability to buy heat and/or transport, demonstrates the complexities involved. Mattioli, Lucas and Marden (2017), describe the complex relationship between efforts by households to earn income and transport expenditure as recursive due to commuting costs, which is not the case for fuel poverty. The complexity of transport poverty in comparison to fuel poverty, presents a significant challenges to policy makers.

Respondent ***Echo*** gave the following response, when asked if they had explored the links between fuel poverty and transport poverty.

> *"Not really. I suppose our focus isn't really [fuel poverty]. We want to talk about cars, if people can't afford petrol or fuel then we want to get them onto bikes and get them walking."* (Third Sector (***Echo***) 2018)

This quote should be viewed in light of the fact that ***Echo*** works for an organisation, focused on the promotion of active travel. It is understandable that fuel poverty would not be a priority for them. The comment about the impact of cycling is interesting. Aldred (2014), advised that investment in cycling, would increase mobility amongst families living in poverty by 25% nationwide. This presents cycling is a viable option, for families impacted by transport poverty in England.

Respondent ***Foxtrot*** gave the following response, when asked if they had explored the links between fuel poverty and transport poverty.

> *"Personally no. Not really, but you can see. I think it's a means to understand sort of inequality in our transport provision, and therefore*

policy might be designed to even out the costs of transport across the population." (Third Sector (***Foxtrot***) 2018)

The comments about using transport policy to bring about fairness in transport pricing, is an interesting point in relation to tackling inequality. Banister (2018), points out that most of the UK state investment in transport favours modes of transport used by the rich, with households in the top 10% spending more on transport than the total household expenditure of households in the bottom 10%. This highlights the scale of the challenge facing policy makers, in relation to the cost of transport.

Respondent ***Golf*** gave the following response, when asked if they had explored the links between fuel poverty and transport poverty.

> *"I've got no idea if there are plans to do that. Fuel poverty won't be dealt with by DfT that'll be BEIS. I can imagine that there's probably not been much done on that at all. It might be worth trying to find a contact at BEIS to talk to about fuel poverty."* (Central Government (***Golf***) 2018)

This is an interesting response, as it shows that the Government had no plans to explore the links between fuel and transport poverty. It also reflects the comments by ***Alpha*** about transport poverty in section (4.2.1.7). Mattioli, Lucas and Marden (2017), have recommended that the Government avoid siloed decision making in fuel poverty policy making, and consider looking at the impact of policy measures on household energy and transport costs. The challenge for policy makers will be to avoid making siloed decisions when looking at fuel poverty, or transportation policy.

Respondent ***Hotel*** gave the following response, when asked if they had explored the links between fuel poverty and transport poverty.

> *"No, so it's been more focused on the transport sector. It's not something that Sustrans has looked at. I don't think we have plans to look at it."* (Third Sector (***Hotel***) 2018)

This comment is interesting, as it demonstrates how organisations that campaign on a transport platform, are focused on their own sector. This is understandable and government departments, also tend to take similar approach, as evidenced by the comments from ***Golf*** and ***Alpha****,* in this section. Mattioli, Lucas and Marden (2017), stress that there is a need for a more joined up approach to energy affordability during the radical energy transition, to a lower carbon future. It is vitally important that policy stakeholders in the UK, are reminded of the importance, of a joined up approach to fuel and transport poverty.

Respondent ***India*** gave the following response, when asked if they had explored the links between fuel poverty and transport poverty.

> *"We haven't really, but that is an area that we want to look into."* (Regional Government (***India***) 2018)

This is an exciting response, as it holds the promise of a joined up approach to fuel and transport poverty in this region. Mattioli, Lucas and Marden (2017), highlight the links between transport affordability and urban socio-spatial configurations. This is relevant to the West Midlands, which is a highly urbanised region of England. Robinson, Bouzarovski and Lindley (2018), point out that there are often considerable socio-spatial variations in fuel poverty prevalence at neighbourhood level. It is therefore important that regional authorities fully consider the socio-spatial impact of their policies, in order minimise any detrimental impacts to those affected by fuel and/or transport poverty.

Respondent ***Mike*** gave the following response, when asked if they had explored the links between fuel poverty and transport poverty.

> *"No that's not something that we do. That's not in our remit."* (Regional Government (***Mike***) 2018)

This is an understandable response, as this respondent specialises in cycling policy across the West Midlands region. It is extremely promising to see that the West Midlands region is thinking more widely about fuel and transport poverty, as evidenced by the comments from respondent ***India*** in this section.

Respondent ***Oscar*** gave the following response, when asked if they had explored the links between fuel poverty and transport poverty.

> *"I think we would probably say that it's hard enough to own a car at the best of times and we're trying to do much more to encourage people not*

to have cars from a planning point of view and so on. If you do have a car its often quite difficult to put fuel in it and I think there's evidence for people you know that are sort of skipping on meals so that they can keep putting fuel in their car and get to their jobs. I guess from a policy point of view you probably want to take the most rounded perspective is not necessarily just looking at transport or fuel poverty, but looking much more holistically at the kind of lives people live and making sure that they have access to the sorts of lives they want to live. I mean I think the problem with transport is the derived demand and so you're always second guessing what the transports for, if sort of trying to look at transport or fuel poverty." (Local Government (***Oscar***) 2018)

This is an interesting commentary on the relationship between fuel and transport poverty. The key point made by ***Oscar*** is the need for a holistic approach, which considers the sort of lives that people aspire to live. This reflects comments made by respondents ***Bravo*** and ***Lima***, about a holistic approach to tackling fuel poverty. Transportation only exists to fulfil the demand for mobility (e.g. commuting for work), this is why it is the outcome of a derived demand (Rodrigue, Comtois and Slack, 2016). The challenge for policy makers is to accurately predict the demand for transport. This is reflected in the comment by ***Oscar*** about 'second guessing' the nature of this demand.

4.3.4.4 FUNDING

The Funding sub theme (3 files and 9 references) looks at the ways that transport is funded. In England, there has been a move for transport funding to be delivered through devolved administrations, such as Transport for West Midlands and Transport for North (Shaw and Docherty, 2019). The Mayor of London's Transport Strategy, is being used to support public transport through a fare freeze, along with investment in active and sustainable transport (Greater London Authority, 2018c).

Respondent ***Echo*** spoke about the impact of funding cuts.

"Recently through TfL - they've had a funding cut from central government so that's affected our ability to be able to continue with our work. So, if behaviour change or active travel aren't priorities for

government or for TfL then we can't do what we do. So obviously the Mayor's transport strategy is ambitious and sets out great targets for the coming years up until 2041 and wants 80% of journeys to be made actively, but unless there's funding, so revenue from public transport or a serious investment, because of the economic and health benefits of cycling walking then actually it's kind of going to stagnate." (Third sector (***Echo***) 2018)

This comment raises an interesting point about the impact of funding cuts on the ability of non-governmental organisations to function. ***Echo*** points out that this has an impact on the delivery of key transport objectives in London. The Mayor of London's Transport Strategy aims for 80% of all trips to be made by walking, cycling and public transport by 2041 (Greater London Authority, 2018c). It is therefore important that policy makers in London fully consider the impact of funding cuts on the transport sector, when setting targets.

Respondent ***Golf*** spoke about the application process for transport funding in England.

"It would probably be labelled as accessibility and connectivity type thing, or it might be they've got a challenge where there are lots of low-income people living in an area where they don't have access to the job market. That type of challenge, so they'd create a strategic case based on that and they have to demonstrate the strategic value and they have to demonstrate the economic value and the social impacts. Send their business case to DfT for a particular pot of money – local growth funds for example, which will have their own strategy which they'll need to match somehow and the senior decision makers, officials and ministers will take a look at the business case. Take a look at our assessment of the evidence behind it and make a decision about whether to do it or not." (Central Government (***Golf***) 2018)

This is an interesting insight into the process that local authorities follow, in order to obtain transport funding to tackle local challenges. The Transport Investment Strategy promotes local level decision making, to give local communities control, backed by a Government commitment to funding growth outside London (Department for Transport, 2017b). Hickman (2019), points out that the nature of the transport appraisal system means that funding for public transport and active travel schemes are more difficult to justify, than highway projects for cars. This is something that will need to change, in order for the government to advance the future of mobility agenda.

Respondent ***India*** spoke about the impact of funding cuts, on the provision of local transport services.

> *"We used to do free travel for interviews, but with funding cuts and we used to get a lot of EU European money for that bit's gone. I think the local sustainable transport fund might have done some funding. We might have used some of that in the past – that's gone now and we get the operators themselves are funding that. That whole offer now of 50% is funded through our public transport operators, bus operators. Mainly National Express fund that. It's not a popular as it was, as people still have to find 50%, but it's better than nothing."* (Regional Government (***India***) 2018)

This is an important commentary on the impact of funding cuts to transport services, for low-income and unemployed transport users. Respondent ***India*** points out that the responsibility for subsidising services, has moved from the transport authority to the transport operators. The cuts introduced by austerity have seen a greater reduction in local authority spending across the more deprived areas of England, in percentage and per capita terms (Hastings et al., 2015). With the era of austerity drawing to a close, it is important that funding for transport services returns to former levels, so that transportation can be affordable to all users.

4.3.4.5 TRANSPORT STRATEGIES

This transport strategies sub theme (4 files and 16 references), covers a number of strategies that were raised by the respondents. Docherty et al. (2018), argue that the transport system in Great Britain is less developed than other major European economies, because of repeated Ministerial failures to deliver on transport policy commitments. The ‘Future of Mobility: Urban Strategy’ makes ambitious commitments that are underpinned by a principles based approach, these include the promotion of active travel, mass transit and a transition to zero-emissions (Department for Transport, 2019b). Transport poverty has been described, as one of the ‘governance challenges’ for the transport sector (Government Office For Science, 2019).

Respondent ***Delta*** spoke about the potential of the Welsh Transport Appraisal guidance WelTAG 2017 (Welsh Government, 2017), to tackle transport poverty.

> *“Yeah and we're hoping that with the new WelTAG, which I recommend you read, because it is less than 40 pages long, we might get more projects which aren't just about building something, but it could be about subsidising a bus service. It's online, just Google new WelTAG 2017 and don’t be put off because the website will come up that it's beta, but it's not the document that is beta, it's the website that is beta and it has a forward by Ken Skates and the Future Generations person and we're hoping that WelTAG might be used to look at things like. You might tackle a problem – like the problem is transport poverty – what might you do like subsidising a bus service, or subsidising taxis and somebody might use WelTAG as a framework to look at what's going to be the impact on people, to help us think through these problems more.”* (Academic (***Delta***) 2018)

This is an interesting idea, which has the potential to address some of the underlying concerns around transport poverty. Karen Lucas (2019), addressed the potential of WelTAG via personal correspondence (email), by pointing out that the WelTAG guidance was not well developed, which meant that it tended to be superseded by older guidelines and assessment practices. Hickman (2019), questioned whether the transport appraisal process still has value and recommends a move away from the narrow economic criteria currently in place. The inclusion of accessibility and personal affordability criteria in the TAG Unit A4.1 – social impact appraisal (Department for Transport, 2017a), is essential for addressing transport poverty. However, the comments from Lucas raise the question, of whether policy makers are actually using the social impact element, when appraising new transport developments.

Respondent ***Golf*** spoke about how a local authority, might approach a problem like transport poverty.

> *"If for example a local authority has a challenge or a problem, they will create a business case. There are 5 aspects to the business case. There's the strategic case, which is probably the place where you would see something about transport poverty if you were going to see it anywhere."* (Central Government (***Golf***) 2018)

This is an interesting insight into the transport planning process from the perspective of a local authority. Hickman (2019), explains that the project options that have been proposed to fix a certain problem are assessed against a five cases: Strategic, Economic, Commercial, Financial and Management. However, equity as an indirect factor, is difficult to evaluate using the conventional cost benefit analysis approach, applied to transport appraisals (Thomopoulos, Grant-Muller and Tight, 2009). Hickman (2019), points out that the current cost benefits analysis approach means that there is not enough progress against the social and sustainability goals, in local and national policy. It seems that a pivot to a more socially and sustainability focused policy approach, is needed to address complex issues like transport poverty.

Respondent ***Hotel*** spoke about a project on active travel in Scotland.

> *"I mean it's interesting you say that, because I'm working on a project at the moment which is auditing the state of active travel in the South East of Scotland and as part of that process we've found that a lot of the population does live quite far out from urban centres and is essentially commuting by train and then changing to a different mode. In that project – we feel that we have to look at transport poverty in this case. I guess that's an example of forced – or the situations that would precipitate that."* (Third Sector (***Hotel***) 2018)

This is an interesting example, which demonstrates that many commuters are essentially forced into using expensive train services to get to the office. The Scottish National Transport Strategy, aims to improve the connectivity between transport modes and improve the passenger experience (including the offer of a single ticket for the transport system) (Transport Scotland, 2016). Perhaps a more flexible approach to working from home by employers and policy makers, would help commuters with their transport costs.

Respondent ***India*** spoke about the impact of the workwise scheme.

> *"Workwise is kind of an offer we've got within the region where we fund people – anybody that's unemployed or is looking for work. When they find a job – they've secured employment – we do give them a 50% discount on all their travel on their monthly pass for three months. Workwise started in the West Midlands and we've been doing it 16 years, maybe a bit more. It's been 18 years that Workwise has been going. There's loads of information on our website about Workwise."* (Regional Government (***India***) 2018)

This is an interesting example of a scheme that supports job seekers with their transport needs. Lucas, Tyler and Christodoulou (2009), assessed the impact of the Workwise scheme, which they found had been able to support a considerable number of clients[6]. This shows the importance of quantifying the benefits of schemes, impacting on individuals experiencing transport as a barrier to employment. Workwise is an example of an approach that has been successful in supporting people into work, with the wider societal benefits that this brings.

[6] 53% of clients surveyed from 732 referrals, had found employment through Workwise, with a per client subsidy of £123 (Lucas, Tyler and Christodoulou, 2009).

5. DISCUSSION

5.1 INTRODUCTION

This chapter will distil the analysis from the qualitative analysis strands of fuel poverty and transport poverty and address the synergies between them. The empirical findings of the fuel and transport poverty research along with the three research outcomes (1.3.2), will be reviewed in this chapter.

5.2 EMPIRICAL FINDINGS

This section explores the empirical findings that arose from the fuel and transport poverty research. The section has been divided into the categories that emerged from the thematic analysis, so that the origin of each finding is clear.

5.2.1 FUEL POVERTY EMPIRICAL FINDINGS

5.2.1.1 CURRENT SITUATION FINDINGS

The negative impacts of living cold homes emerged as the key empirical finding, under the current situation theme.

There is strong evidence that cold homes are a health hazard to the households forced to live in them. The Marmot Review Team (2011), pointed out that living in cold temperatures and fuel poverty, have a strong relationship to cardio-vascular and respiratory diseases. Excess cold is a hazard under the Housing health and safety rating system (HHSRS), it refers to situation that arises when indoor temperatures fall below the minimum satisfactory levels for a relatively long period of time (Department for Communities and Local Government, 2006). The responsibility for the enforcement of these regulations falls on local authorities. Respondent ***Bravo*** highlighted this around the role of the Environmental Health teams, that look into hazards under the HHSRS.

Within this finding about the negative impacts of living in cold homes, is the link between cold homes and health that was identified by respondent ***Bravo***. The finding that emerged is the fact that cold homes discriminate against people who are ill. This point about discrimination links into questions about the rights of these individuals. Lefebvre (1996), advocates a transformation of socio-spatial relations away from the status-quo. The rights of these individuals are not being adequately upheld and this is where a broad urban social movement (Harvey, 2008), could support them.

The 'No Cold Homes' initiative in Bristol, launched in November 2017, has been set up in a way that deliberately distances itself from the terminology of fuel poverty, which can be stigmatising for those affected. This is an important point and came across in the interviews with respondent ***Kilo*** who has involvement in the initiative. Purcell (2002), argues that the ideas espoused by Lefebvre in 'Right to the City,' have the potential for the development of a renewed urban democracy. Arguably the 'No Cold Homes' initiative in Bristol is enfranchising the inhabitants of the city, to come together with officials, policy makers and the local energy company, to find new ways of tackling the issue. The involvement of the inhabitants is what gives this approach the potential to have greater impact than just involving the usual cast of experts. It represents a bottom-up approach to the issue, rather than top-down.

The link between cold homes and the private rented sector is important, as this sector has been acknowledged as the new priority by the Government. Cold homes are a particular issue in the private rented sector, with residents reporting heating costs as one of their largest outgoings (Ambrose, McCarthy and Goodwin, 2016). Respondent ***Alpha*** explained that residents living inefficient privately rented homes, were four times more likely to be fuel poor. The regulation changes in the private rented sector, which came into effect on the 1st April 2018 to prevent landlords from letting F and G rated properties were discussed by respondent ***Alpha***, who pointed out that discussions were ongoing about the landlord cost cap. Since the interview with ***Alpha***, the cost cap for landlords was set at £3,500 (Committee on Fuel Poverty, 2019). The responsibility for monitoring compliance with domestic minimum levels of energy efficiency, sits with local authorities (Department for Business, Energy & Industrial Strategy, 2019b).

The issue with cold homes also needs to be viewed in the context of the wider crisis around the availability of affordable housing in the UK, which was highlighted by respondent ***Fremantle***. The prevalence of fuel poverty in the private rented sector is perhaps symptomatic of this wider crisis, where low-income households are willing to accept sub-standard housing due to the lack of affordable alternatives. In a pressurised housing market for tenants, finding a landlord that will rent to them, is ultimately the most compelling factor (Kemp, 2011). This makes it all the more important for the Government to empower local authorities with the financial resources, to enable them to properly enforce the legislation around F and G rated properties.

Another finding under the current situation theme, was that none of the fuel poverty respondents had explored the links with transport poverty. This may not reflect the wider fuel poverty community, due to the small sample of respondents surveyed in this project. However, in many ways it is representative of the siloed nature of poverty in the UK, where people work in isolation on their particularly type of poverty and do not consider it in a wider context. This links with the call from Mattioli, Lucas and Marsden (2017), to avoid siloed policy making on energy affordability issues. It is important for policy makers to look more widely on the impact of their decision making, particularly on poverty issues, which are likely to be interconnected.

5.2.1.2 CURRENT SOLUTIONS FINDINGS

The importance of holistic energy advice provision to households living in fuel poverty, emerged as the key finding under the current solutions theme. Alongside challenges around the identification of fuel poor households.

The energy advice referral work of the SHINE service in Islington was highlighted by respondent ***Alpha***. The Seasonal Health Intervention Network (SHINE), was launched by Islington council in 2010 and now offers energy advice and fuel poverty interventions across London, impacting over 20,000 homes (Greater London Authority, 2018a). This is a good example of the wide ranging impact that can be achieved by a single service, with adequate funding. There are a number of similar services that being run across London and more widely across England. WHAM in Bristol, is another example of a service, which provides advice on energy, finances and home repairs (Centre for Sustainable Energy, 2017). Respondent ***Bravo*** described them as holistic services, due to the fact that they provide a single point of contact for households referred to them. The referrals from health professionals tended to have the greatest benefit, according to ***Bravo***, which is important given the negative health impacts that can arise from living in fuel poverty. Energy advice and referral services, clearly have a key role to play in assisting households that find themselves in fuel poverty.

The challenges in identifying those households living in fuel poverty were discussed by respondent ***Alpha***, who spoke about using machine learning on the EPC data held in the National Energy Efficiency Database (NEED) to identify fuel poor households. However, to date there have been no breakthroughs with the use of information technology with regards to the effective targeting of fuel poor households. Bridgeman, Thumim and Roberts (2018), have pointed out that simply using EPC data to identify fuel poor dwellings should be treated with caution, as any low-income households identified, are still be likely to require engagement, or referral. Respondent ***Lima*** spoke about the challenges in using EPC data to identify fuel poor households in London, where there is lots of socio-economic variation at household level within buildings and streets. These examples supports the importance of the role that referral plays in tackling fuel poverty, and why it is an important part of the current solution.

5.2.1.3 POLICY APPROACHES FINDINGS

A number of policy approaches to tackling fuel poverty were identified through the interview process. The key finding that emerged was the importance of an approach that fits with the local circumstances of the area.

The prime example of this is the ‘No Cold Homes’ initiative in Bristol, which in the words of respondent ***Kilo*** is *“very much a city thing,”* rather than being a top-down approach. This is clearly an approach that works well for Bristol in terms of the city ethos. The Fuel Poverty Partnership in London is, where the Mayor of London has assembled a wide-ranging group of stakeholders to “*tackle fuel poverty holistically,”* in the words of respondent ***Lima***. The membership of the London Fuel Poverty Partnership includes the following sectors: local government, social housing, landlords, tenants, health, social care, academia, charities, energy suppliers and the energy efficiency industry (Greater

London Authority, 2018b). This is an approach that appears to fit well with the scope and scale of the fuel poverty challenge in London. It is therefore, important that local officials support and encourage approaches to fuel poverty that fit with their local areas.

The challenges with the current definition of fuel poverty also emerged as an important finding, as there was criticism of the LIHC indicator from all respondents. This is perhaps summed up best by respondent ***Fremantle**,* who pointed out that "*he [Hills] did come up with a definition which was very unhelpful"* in reference to the LIHC indicator. The difficulties in using the LIHC definition were also raised by respondent ***Juliet***, who made the point that it was *"very difficult for practitioners to use."* Boardman (2012), in discussing the disadvantages of the LIHC, pointed out that perfect definition of fuel poverty was proving to be elusive. Perhaps unsurprisingly, given the challenges around LIHC, the Government have chosen to consult on a new definition of fuel poverty called Low Income Low Energy Efficiency (LILEE), which moves from a relative to an absolute cost threshold (Department for Business, Energy & Industrial Strategy, 2019a). This step addresses a key criticism of the relative measure used for LIHC, which in the words to Fremantle meant that it was "*virtually impossible to abolish it [fuel poverty] because they set the threshold at median."* It remains to be seen if LILEE will become the chosen indicator, as the Government have not yet published the outcome of their consultation.

A further finding under policy approaches, were the limitations around the use of means tested benefits, as a proxy for fuel poverty. In the words of respondent ***Alpha*** *"we have the proxy that we – if it's from the means-tested benefits route we know of the maximum income, because they're means tested on their benefit."* The Committee on Fuel Poverty (2018), have recommended that the Government develop proxies that do not depend on means tested benefits, so that fuel poor households not in receipt of these benefits can be located. The Government have introduced Local Authority Flexible Eligibility (under ECO3) to encourage local authorities to use their local knowledge and expertise to identify fuel poor households in their area, including those not in receipt of benefits (Department for Business, Energy & Industrial Strategy, 2018d).

Some local authorities have been taking a holistic approach to fuel poverty, in the words of respondent ***Bravo*** *"we link fuel poverty with other forms of poverty. So, for example, I* *work quite closely with our welfare reforms team."* This demonstrates the application of local knowledge and expertise in a holistic way that links fuel poverty into wider poverty, as it is likely that fuel poor households are suffering from other forms of poverty. Middlemiss (2016), points out that the problematisation of fuel poverty as distinct from other forms of poverty, encourages policy makers to leap towards energy efficiency as the only possible solution, rather than examining the complexity and interrelations between the different types of poverty. It is apparent that local practitioners like ***Bravo*** are not simply taking energy efficiency as the only solution, as they are taking a holistic approach that encompasses other forms of poverty when dealing with households impact by fuel poverty. The link to welfare reform teams is also important, as it is often the case that low-income households are not claiming all the benefits, to which they are entitled.

5.2.1.4 PUBLIC SECTOR FINDINGS

There were a number of findings around public sector involvement with fuel poverty policy. The key finding was that England is the only nation within the UK that does not have publicly funded energy efficiency programmes.

The provision of funded grant programmes across the UK was raised by respondent ***Fremantle***, who pointed out that *"in England all we have now is the Energy Company Obligation [ECO], whereas in Scotland and Wales they have that and publicly funded grants."* The Committee of Fuel Poverty (2018), have noted that England is the only country in the UK without publicly funded household energy efficiency schemes, within their recommendation for a new 'Clean Growth Challenge Fund.' The funding request for the £1.08 billion 'Fuel Poverty Challenge Funding from BEIS/Treasury' was published in January 2019, with the aim of meeting the short term funding gap for the 2020 milestone (Committee on Fuel Poverty, 2019). To date the response to this request has not been published, and England remains without a publicly funded, fuel poverty energy efficiency programme.

The ability of local authorities to deliver on the fuel poverty agenda, is a finding that is key to the Government's ability to meet the milestones for the 2030 target. In the words of the third sector respondent ***Juliet*** *"they [local authorities] just simply don't have the resources* *to be able to do it and so whilst it looks really great on paper in practice, the housing health and safety rating scheme is a great example of that."* The Committee on Fuel Poverty (2018), have recommended that the enforcement of health, wellbeing and safety regulations (HHSRS) in the private rented sector should be enhanced. This follows their disappointment at the inability of the Government to review the HHSRS in 2017 (Committee on Fuel Poverty, 2018). Concerns about the delivery of HHSRS are not new. They were also highlighted by the Fuel Poverty Advisory Group (2015), who were concerned by a lack of enforcement of the HHSRS scheme, which they attributed in part to a lack of local authority resources. There is a clear issue around the ability of local authorities to support the delivery of reductions in fuel poverty, typified by the fact that concerns about the HHSRS have yet to be addressed the Government.

The complex relationship between local authorities and ECO installers also emerged as an important finding, as it highlighted the challenges faced by local authorities involved in the delivery of the ECO scheme. This was pointed out by respondent ***Bravo**,* who said that "*I see the local authorities that are having a lot of success they've kind of got an installer on board…., but we're quite careful because these people are in effect cold calling and how do you go through without actually securing them go through, and check that what they are carrying out is good."* The quality of the work delivered by ECO installers is a key challenge. There are policy options open to the Government around the provision of training to address quality issues, along with increasing the number of installers, with the ability to deliver difficult-to-install measures (Emden, Murphy and Lloyd, 2018). If ECO3 is to be successful in reducing fuel poverty then is it really important that the Government address these core concerns, from local authorities and policy experts, by reforming the way that ECO measures are delivered.

The finding that the landlord registration scheme for the private rented sector would only attract good landlords, is connected to the role of the local authorities in tackling fuel poverty. The situation as described by third sector respondent ***Juliet*** *"some local authorities… They'll have a registration scheme and that sort of thing, but what you find is it's the good landlords who join and the poorer landlords who don't."* This is an important point, as the Government (respondent ***Alpha***), have acknowledged the scale of the fuel poverty issue in the private rented sector. The fact that the private rented sector is populated by non-professional landlords, is thought to be related to a reluctance from landlords to invest in energy performance (Ambrose, McCarthy and Goodwin, 2016). The Committee on Fuel Poverty (2019), reported that the ‘cost cap’ for private landlords to improve the energy performance of their properties, had been set at £3,500 by the Government. The 2020 milestone in the Fuel Poverty Strategy for England was to bring as many band F and G homes up to band E, as reasonably practicable (Department for Energy and Climate Change, 2015c). However, the Committee on Fuel Poverty (2019), have reported that the 2020 milestone will be missed without additional tax-payer funding. The challenge for the Government and local authorities, will be ensuring that private landlords are supported and encouraged to upgrade their properties, or the 2030 fuel poverty target could be at risk.

5.2.1.5 ENERGY SECTOR FINDINGS

Switching suppliers was the main topic that was raised under this theme. The key finding was that current messaging on engaging people with the markets through switch and save, should be complemented with messaging around energy efficiency and energy saving.

The messaging on switching and save is clear and straightforward. In the words of respondent ***Fremantle***, “*the message is very much about engaging people with markets and [is] seen as a quick win, you know you switch supplier, you know you save.”* This is an important point about the nature of the energy market. However, as ***Fremantle*** points out *“there is supposed to be education available, about getting people to recognise that this is something that they need to do every year.”* Thomas (2008a), explained that the energy market holds the promise that consumers will be able to reduce their energy bills, by shopping around and switching frequently between suppliers, so that they will always be with the cheapest supplier. The key point made by ***Fremantle***, was a preference “*to see more emphasis around energy efficiency and energy saving and also about just the importance of why, because you want to stop people from rationing you know if that’s going to damage to their health.”* This last point on reasons why energy efficiency and energy saving are important is a powerful one. The rationing of heating is a strategy for coping with cold homes (Ambrose, McCarthy and Goodwin, 2016). Anderson, White and Finney (2012), found that odds of rationing fuel were higher (2.6 times) in households that used prepayment meters to pay for electricity. Educational messaging is an important tool for promoting energy efficiency and energy saving, whilst discouraging rationing. This links in with the current solutions on energy advice, which have been discussed in section (5.2.1.2).

The finding that households in debt to their energy supplier cannot switch suppliers is also important, as the market does not work in the same way for them. The main point is whether fuel poor households know they can switch suppliers or not. In the words of respondent ***Juliet***, "*particularly around if they've got a debt they can't switch supplier and so on, so it's making sure they understand whether they can, or whether they can't switch supplier."* Middlemiss (2016), points out that a household unable to pay of a debt with an energy supplier, are not only prevented from switching, but are likely to be on an uncompetitive tariff. This is a double whammy for fuel poor households. However, as respondent ***Juliet*** explained, there is a degree of "*inertia as well in that there are people who think they've got bigger fish to fry and in actual fact budget planning would make a big difference for them."* Barnes et al. (2014), describe inertia, as too much hassle to switch suppliers. This is again where energy advice provided by the third sector, or local authorities can assist fuel poor households.

The point on budget planning made by respondent ***Juliet*** is important, as some customers have expressed a preference around using PPMs to help them with budgeting. This point was also made by respondent ***Kilo*** (Current Situation theme), *"we find that a lot of customers on pre-payment meters actually like it, because it means that they can budget."* Ambrose, McCarthy and Goodwin (2016), found that many low-income households in their study liked using PPMs as it gave them control over their budgets. Ofgem (2018b), reported that the number of households in debt without a repayment plan had increased in 2017.

These findings highlight the link between debt, budget planning and fuel poverty. It is important that the energy sector and policy makers consider the impact of debt and the importance of budget planning, when developing solutions that impact on the fuel poor.

5.2.2 TRANSPORT POVERTY EMPIRICAL FINDINGS

5.2.2.1 TRANSPORT CONCEPT FINDINGS

There were a range of findings associated with the concept of transport poverty, which can be categorised under the sub concepts of accessibility, affordability and availability. The key finding was that transport poverty did not fall under the remit of any policy teams in the Department for Transport (UK).

The concept of transport poverty, in the words of respondent ***Golf***, *"there's no policy team that would have the remit to deal with transport poverty."* However, ***Golf*** explained that, *"there is a team that are called the Strategy Team who would deal with this type of thing."* This demonstrates the importance of central policy leadership within Government. Things have moved on since the interview with ***Golf*** in 2018. The Department for Transport have published an evidence review into transport and inequality by NatCen, which finds that different groups are at risk of transport poverty (Gates et al., 2019). Whilst this is an extremely promising step. The evidence review comes with a caveat that any views expressed, are not necessarily those of the Department for Transport (Gates et al., 2019).

The 'Future of Mobility' report also included transport poverty among its key findings, as a transport challenge faced by the UK in the 20th Century (Government Office For Science, 2019). Arguably, transport poverty is a live issue in the 21st Century, as the terminology was not popularised in the UK until 2012 (Sustrans, 2012; Lucas, 2012). There is also a caveat within the 'Future of Mobility' report, which is that 'it is not a statement of government policy' (Government Office For Science, 2019). This would possibly explain why transport poverty does not appear as a named concept, like fuel poverty, within current government policy documents.

Interestingly, transport poverty does not feature in the 'Future of Mobility: Urban Strategy,' which is a statement of Government policy (Department for Transport, 2019b). Transport poverty does appear as an evidence gap in the 'Summary of Responses to Call for Evidence: Future of Mobility,' where stakeholders have highlighted a need for more understanding of the impact that new mobility might have on transport poverty, and the accessibility of key services (Department for Transport, 2019c). The concern is that transport poverty does not appear to be a current policy priority for the Government, despite the fact that there is a clear interest in it. It is possible that momentum is gathering for full recognition, like fuel poverty.

The accessibility challenges associated with being without a private car in a rural community, were an important finding. Respondent ***Delta*** shared a personal experience, which they described as "*having to live without my own car I found myself starting to not go to things, because I didn't want to ask people for a lift and I found that I was becoming a lot more insular."* This is potentially indicative of the impact of living without a car on mental health. Ahern and Hine (2012), examined the challenges facing older rural residents in Ireland, finding that social isolation and mental health issues were connected with a lack of transport provision. The older populations of rural areas, mean it is unlikely that are enough people, to support a move away from car dependence to more collaborative modes of transport (Campaign for Better Transport, 2018). Mattioli et al. (2020), point out that the growth in car ownership is linked to the decline in other modes of transport.

Respondent ***Delta*** explained, that they "*had been fortunate that after ten months I could buy myself out of the situation."* This meant that they were able to buy another car. The experiences of ***Delta*** represent an interesting case study, as they highlight the issues faced by households without a car in rural areas. The challenges faced by policy makers in tackling rural transport poverty are significant, but they are not insurmountable. The Campaign for Better Transport (2018), have recommended that local and national Government recognise the importance of rural public transport and take action to ensure future provision. The Government are due to publish the 'Future of Rural Mobility' strategy in due course, which is expected to reveal how the benefits of transport innovation can be enjoyed by rural residents (Department for Transport, 2019b). The Government will need address the causes of rural car dependency in the Future of Rural Mobility' strategy, and set out how investment in transport innovation can address them.

The affordability of public transport in London, from the perspective of low-income residents in London came across as an important finding. Respondent ***Foxtrot*** explained that the *“pressures are elsewhere, on crowding that sort of thing and for people in sort in inner to outer London the demographic's changing tends to be low-income families working in different jobs not necessarily full time.”* This is an important observation about transport in London. Research looking at the impact of travel costs on low income workers in London found that a large proportion of people (one in five), commuting from Outer London to Inner London, reduce other household spending in order to pay for travel to their place of employment (BDRC Continental, 2015). The Mayor’s Transport Strategy, promotes active travel, particularly walking as an activity unconnected to income, along with cycling as one of the least expensive ways of getting around the city (Greater London Authority, 2018c). The incorporation of active travel into commuting has the potential to lower transport costs and improve health, which is why it has been actively promoted in London. However, especially in Outer London the benefits of cycling infrastructure (mini-Hollands), have been found to be strongest in areas where people live near the new infrastructure (Aldred, Croft and Goodman, 2019). Encouraging wider take up of cycling as a way of addressing transport affordability, will therefore require significant investment in cycling infrastructure by local authorities and Transport for London.

It was particularly interesting to find that transport availability, was not as an issue for young people in the West Midlands region. In the words of respondent ***India***, *“amongst young people it [availability of transport] wasn’t. I think because we're very urban.”* The West Midlands region, has developed a delivery plan that aims to shift the emphasis on travel, away from high levels of car use (Transport for West Midlands, 2017). Chatterjee et al. (2019), reported, that people with limited access to cars, such as young people, had experienced declining availability of public transport in recent years. Set against this background, the finding from respondent ***India*** is extremely promising for young people in the West Midlands.

5.2.2.2 TRANSPORT IMPACTS FINDINGS

This theme explored the impact of transport poverty. The key finding, was that fuel poverty was better thought through than transport poverty.

The finding about fuel and transport poverty comes from the evidence base sub theme. In the words of respondent ***Delta***, *"it would have been quite interesting to explore transport poverty more, but we really didn't know where the evidence was or how we would get there, so fuel poverty is a lot more well thought through and we didn't know why transport poverty wasn't, but part of it was because it's harder."* Encapsulated in this comment by ***Delta***, is the reflection that transport poverty is harder that fuel poverty. Mattioli, Lucas and Marsden (2017), described how the notion of 'transport poverty' was built on an implicit analogy between fuel poverty and transport affordability. The key word linking to the two concepts being 'poverty.' However, research has revealed that affordability is just one strand of transport poverty (Lucas, Mattioli, et al., 2016).

The Environmental Audit Committee (2013a), explored the idea of developing a measure for transport poverty that was analogous to that used for fuel poverty at the time (10% measure), but the expert witnesses – The Campaign for Better Transport and Karen Lucas – pointed out that this would not work for a variety of reasons. Essentially, the complexity of transport poverty has prevented a simple measure being developed, as the proportion of household expenditure on transport is much greater in high-income households than low-income households (The Campaign for Better Transport) and accessibility often lies at an individual rather than a household level (Dr Karen Lucas) (Environmental Audit Committee, 2013b). Interestingly, Mattioli, Lucas and Marsden (2017), reported that the LIHC measure was preferable to the 10% measure in terms of measuring transport affordability. Mattioli, Wadud and Lucas (2018), found that the LIHC metric could be used to indicate households in 'car-related economic stress,' as car ownership amongst low-income households was found to be a driver of economic stress. These points go some way to explain why transport poverty is harder than fuel poverty. The fact that fuel poverty policy has been developed by successive UK Governments since 1997, would also explain why it has been better thought through.

The use of journey time statistics to measure access to life opportunities, emerged as an interesting finding under the evidence base theme. Respondent ***Golf*** explained the importance of, "*how long it takes to get from A to B and that allows you to think whether people have access to the amenities that they need."* Time is the key element. Lucas et al. (2016), describe it in terms of an individual being required to travel for an excessive amount of time, linking it to time poverty and isolation. Turner and Grieco (2000), point out that single parent households led by women, are particularly susceptible to time poverty, as they are often unable to buy their way out of the situation. It's promising to see that the issue of excessive journey times, are being addressed by the Government.

The way that transport is addressed by local authorities, in terms of mode rather than socio-economic status, represents another interesting finding. In the words of respondent ***Oscar***, *"we don't tend to think much about transport poverty, we tend to think about people who are deprived and may or may not have a car and how they might get about, but that's in marked contrast to what we do most of the time, which is just thinking about different modes and not necessarily the socio-economic status of the people using those modes."* This demonstrates that the concept of 'transport poverty' is not necessarily a priority for local authorities. However, the fact that they are considering the relationship between deprivation and transport is important. Transport poverty research is relatively underdeveloped, as it sits between the transport and social science domains and doesn't fit into the research agenda for material deprivation (Lucas, Mattioli, et al., 2016). Interestingly, ***Oscar's*** colleague had carried out some desk based research into transport poverty, which had uncovered multiple definitions, this was analysed in section (4.3.1.6). Until the Government make transport poverty a priority, it is difficult to see how local authorities can justify the allocation of resources, to examine the full extent of the issue.

5.2.2.3 TRANSPORT MODE FINDINGS

This theme examined the different transport modes that were discussed through the interview process. The key finding that emerged were the positive impacts of promoting active travel both in schools, and by local authorities.

Promoting behaviour change around cycling at schools, through Bike-It officers emerged as an important element of this finding. Respondent ***Echo***, described their role in schools across London, "*so they engage kids across 12 different schools we're intensively engaged and we're expected to use awareness and empowerment activities to get them to change their behaviour and encourage their parents to do so as well and they also try* *to take some of the barriers away from riding bikes."* This is really important work, as it plays a part in developing active travel habits in children that may well be continued into adult life (Cavill et al., 2019). Research with older children (11 to 14 years), found that cycle training increased their likelihood of cycling to school and cycling for at least half an hour in the previous week (Chatterjee et al., 2019). However, ***Echo***, pointed out "*it's kind of most obviously funding is key to us being able to carry out our work."* This is a concern, as active travel is a core policy aim in the Mayor's Transport Strategy – all Londoners to do 20 minutes of active travel each day by 2041 (Greater London Authority, 2018c). It is vitally important these schemes are prioritised, so that they can continue this work with schools in London, if the active travel policy aims are to be achieved.

The role of local authorities in promoting public transport and active travel emerged, as the other important element of this finding. Respondent ***Oscar***, spoke about their role, *"my job is to increasingly promote public transport, walking and cycling, public and active travel to get to work and to get around town."* This demonstrates the important role, local authorities have in promoting active travel, with respect to wider efforts to increase physical activity (Cavill et al., 2019). However, active travel tends to decrease as people get older, which is presents a challenge in relation to keeping older people living independently for longer (Government Office For Science, 2019). Fairnie, Wilby and Saunders (2016), reported on active travel data from the London Travel Demand Survey, which showed that from the ages of 16 to the late 30s active travel is undertaken by 65% of the population, from around 40 to late 70s there is a linear decline, which accelerates in the 80s-90s. This makes the promotion of active travel to younger and middle aged people, all the more important, in terms of its impact long term on health and travel inequalities.

The importance of infrastructure to support active travel, is a closely related finding. Respondent ***Hotel***, spoke about this,*"I think infrastructure in a big way – transport and for cycling that feels safe and makes it a realistic viable option for people."* The implementation of the 'mini-Hollands' programme in Waltham Forest, Enfield and Kingston (Outer London), are good examples of interventions that are leading to an increase in active travel (Aldred, Croft and Goodman, 2019). However, current levels of active travel are low when compared to the past, but significant latent demand for active travel means that there is potential to increase take up, with the right incentives and infrastructure (Government Office For Science, 2019). Cycle Infrastructure Design (Local Transport Note 1/20) follows the launch of the Government's plan for cycling in July 2020, and stipulates that the quality of new cycling infrastructure must improve through the provision of protected bicycle lanes, cycle-safe streets and low traffic neighbourhoods (Department for Transport, 2020b). This recent policy development is extremely promising for the promotion of active travel across the country, as it shows that the Government are willing to fund the necessary infrastructure measures.

5.2.2.4 POLICY APPROACHES FINDINGS

This theme explored the policy approaches revealed through the research. A number of interesting findings emerged, such as the fact that none of the transport poverty respondents had considered fuel poverty in their work. The key finding was that a holistic view of people's lives was needed, from a policy perspective, which would make sure that people could live in a way that they preferred.

The need for a holistic view of the way that all types of poverty affects people's lives emerged as the key finding from respondent ***Oscar***. It echoes a similar point made by respondents ***Bravo*** and ***Lima***, in the fuel poverty project. In the words of ***Oscar***, *"I guess from a policy point of view you probably want to take the most rounded perspective is not necessarily just looking at transport or fuel poverty, but looking much more holistically at the kind of lives people live and making sure that they have access to the sorts of lives they want to live."* This holistic approach, particularly with respect to fuel poverty is not unprecedented.

Baker et al. (2019), advocate a holistic, or 'folk first' approach to tackling fuel poverty, which will require higher levels of public investment. The social relations capabilities approach, puts the individual front and centre, by taking a wide ranging view of their circumstances and whether they have the ability to access adequate energy services (Middlemiss et al., 2019). These person centred 'holistic' approaches are at the forefront of fuel poverty research, and they could also be applied to transport poverty research.

Either in a way that incorporates fuel and transport poverty together, or a way that treats them separately but more holistically.

It was interesting to find that none of the transport poverty respondents, had explored the links with fuel poverty. It is important to point out that this may not be reflective of the wider transport poverty community, due to the small sample of respondents surveyed in this project. It was interesting to see a desire to explore these links from some of the respondents, as they may break the current policy siloes. Mattioli, Lucas and Marsden (2017), point out that energy and transport belong to distinct academic and policy silos, but stress the need for convergence. The CREDS ‘Vulnerability to fuel and transport poverty’ project attempts to bring about this convergence by looking jointly at the people vulnerable to both types of poverty (Simcock et al., 2020). Hopefully this research will feed through to policy makers, and bring about the desired convergence in policy and academia.

The need to adequately fund the ongoing work to change behaviours around active travel from the Government and TfL, also emerged as important finding. In the words of respondent ***Echo***, *“recently through TfL - they've had a funding cut from central government so that's affected our ability to be able to continue with our work. So, if behaviour change or active travel aren't priorities for government or for TfL then we can't do what we do.”* The question of how the funding of transport schemes in the UK are prioritised, raises interesting points about the beneficiaries. Docherty, Shaw and Waite (2019), make the point that it is important to question why, in relative terms, more money is spent on larger schemes that enable wealthier residents to travel long distances, in comparison to local schemes to improve bus services, cycle routes and pavements that would benefit poorer residents.

Cycling in particular, has risen up the political agenda in 2020. The Government announced a £2 billion package to promote active travel across the country (Department for Transport, 2020a). This was part of a much larger £5 billion package to improve bus and cycle links across England, outside London, announced earlier in the year (Department for Transport, 2020c). This new funding holds significant potential for the continuation of work to promote active travel amongst children and their families.

However, there is a risk that these new cycle lanes will be under-utilised, if the promotion of active travel is not adequately funded.

The potential for transport appraisal guidance to be used to tackle problems like transport poverty, was another interesting finding. Respondent ***Delta*** proposed that, *“You might tackle a problem – like the problem is transport poverty – what might you do like subsidising a bus service, or subsidising taxis and somebody might use WelTAG as a framework to look at what's going to be the impact on people, to help us think through these problems more.”* WelTAG is the Welsh Transport Appraisal Guidance (Welsh Government, 2017). In principle, the use of WelTAG to guide policy decision making is interesting, as it could encourage greater consideration of social impacts by transport planners. Karen Lucas (2019), agreed that WelTAG was a good approach, but reported that it was not very well developed, which meant that it was superseded by older guidance and assessment practices.

It is promising to see that the potential is there, even if the guidance does need more work and promotion, to encourage its use. Gates et al. (2019), point out that cost-benefit analysis is a powerful approach to appraise transport proposals, that can produce adverse findings for people on the lowest incomes (e.g. interventions that support the lowest paid into work, are less valuable to the economy, due to the low wages of this group). It is therefore, important that the benefits of social factors are properly weighted when using guidance (like WelTAG), to appraise the benefits of transport schemes.

5.3 UNDERSTANDING FUEL AND TRANSPORT POVERTY

The first research outcome leads to an improved understanding of fuel poverty and transport poverty as complex, interconnected phenomena by conducting of their consolidated study on empirical and policy levels. This has been achieved through the detailed analysis of fuel and transport poverty. The analysis has revealed a number of themes, which were explored in analysis sections in Chapter 4 sections (4.2 and 4.3). The key empirical findings that emerged from the fuel and transport poverty analysis were explored in section (5.2).

The impact of multilevel/multivariate poverty cannot be understated, with respect to fuel and transport poverty. It is a key determinant in whether an individual or a household experiences them. However, it is important to stress that fuel poverty is a distinct and separate problem to the general impact of living on a low income (Hills, 2011). Transport poverty in turn is a distinct problem from fuel poverty. Unlike fuel poverty, transport poverty is not very well articulated (Lucas, Mattioli, et al., 2016). These results build on work by Mattioli, Lucas and Marsden (2017), by *critically comparing and contrasting* fuel and transport poverty from a UK centric policy perspective.

The following sub sections examine the empirical findings, which enhance the overall understanding of fuel and transport poverty.

5.3.1 POLICY APPROACHES

The research has revealed that the policy approach to fuel poverty in the UK, is more developed than transport poverty, mainly due to a greater level of recognition by the Government. The key finding linking fuel and transport poverty, is need for a holistic approach to the individuals and households impacted by both forms of poverty.

The holistic approach was independently advocated by respondents ***Bravo*** and ***Lima*** (fuel poverty) and by respondent ***Oscar*** (transport poverty). The advantages would be a prioritisation of the circumstances faced by the individuals or households most affected. This could take the form of a holistic ‘folk first’ approach to fuel poverty, rather than a conventional techno-economic ‘fabric first’ approach (Baker et al., 2019). It would require a re-framing of fuel poverty policy, which currently aligns with the latter. Middlemiss (2016), pointed out that the LIHC definition reinforced the differences between poverty and fuel poverty, leading to a greater focus on energy efficiency as the only fuel poverty solution. The challenge would be around adapting this approach for transport poverty, which does not have an equivalent measure. Arguably, the LIHC measure could be used to measure the transport affordability component of transport poverty (Mattioli, Lucas and

Marsden, 2017). However, that leaves the other components of transport poverty without agreed measures.

Baker et al. (2019), argue that policymakers should reasonably consider the evidence, for the benefits of providing face to face support to vulnerable householders. This could equally apply to households in fuel or transport poverty, where the household is given a wide ranging support package. Arguably the advice and support elements of this package are being provided by schemes like SHINE across London (Islington Council, 2017) and LEAP across South-West England (AgilityEco, 2019), but there is no systematic approach across the country. There is an awareness in Government of the important role that these schemes play, as respondent ***Alpha*** who guided the fuel poverty research towards the SHINE scheme in section (4.2.2.1).

There appears to be some movement in policy terms, towards a more individual centred approach to fuel poverty. The consultation proposal for the new fuel poverty strategy for England, has proposed a vulnerability principle, which means that the needs of vulnerable households living in energy efficient housing (Bands A-C), would also be considered (Department for Business, Energy & Industrial Strategy, 2019a). This appears to be the start of moves to consider the circumstances of the people affected by fuel poverty, rather than just systematically applying a one-sized fits all approach to the issue. It is important that the rights of these people are respected throughout this process, which links into the sense of renewal advocated by Lefebvre (1996), in *'Right to the City.'*

Transport policy would also benefit from a holistic approach, to addressing the causes of transport poverty. Curl, Clark and Kearns (2018), reported that policy rhetoric around holistic regeneration in northern England, had not resulted in any evidence of change. Gates et al. (2019), found that interventions to address transport and inequality in the UK could have been more successful if they considered macro-economics and larger initiatives that go beyond transport (e.g. housing policy). However, the fact that Gates et al. (2019), have systematically reviewed research on transport and inequality for the Department for Transport, demonstrates an interest in these issues from Central Government.

Lucas et al. (2019), reported that the social inclusivity of the transport system could be enhanced by integration across land-use and planning of services, supported by policy to constraint demand (e.g. parking controls and travel plans). This all points to the need to consider transport and social issues from a wider perspective through appropriate policy interventions. Until the Government and local authorities adapt a holistic approach, it is unlikely that these issues created by transport poverty will be resolved effectively.

5.3.2 ENERGY EFFICIENCY

This research has also revealed that energy efficiency is an important aspect of fuel poverty policy. The implications of England not having a publicly funded energy efficiency programme, along with the need for messaging on energy efficiency to accompany switch and save, were key findings.

In England, the Government have been reliant on the Energy Companies Obligation (ECO) schemes to fund energy efficiency improvements, since it was set up in 2013 (Hough, 2017). The Warm Front Energy Efficiency Scheme ran from 2000 until 2013, and it is credited with removing 2.36 million households from fuel poverty in England (Sovacool, 2015). The closure of Warm Front, left England without a publicly funded scheme to deliver energy efficiency improvements (Committee on Fuel Poverty, 2018). The ECO scheme is funded through a levy on energy bills, which creates a pressure to keep ECO contributions low, to avoid adverse impacts on bill payers (Middlemiss, 2016). The absence of a taxpayer funded energy efficiency scheme has created a funding gap in England.

The Committee on Fuel Poverty (2019), submitted a request for fuel poverty challenge funding (£1.08 billion) from the Treasury, in order help the Government to meet its fuel poverty target 2020/2025 milestones. The absence of state funding, has created a situation where the Government, is at risk of not meeting its own fuel poverty targets in England. The justification used to end the Warm Front scheme, was that the it would not get close to eliminating fuel poverty (Hough, 2017). Middlemiss (2016), points out that the way that fuel poverty has problematised by the Government through the Band C target by 2030 and the LIHC indicator, makes it ineradicable. The risk is that without adequate funding, the inability to eradicate fuel poverty might become a self-fulfilling prophecy.

The Government funded messaging on switch and save in England, has been delivered through the Big Energy Saving Network (BESN) since September 2013 (Department for Business, Energy and Industrial Strategy, 2017b). The BESN provided individuals with advice on energy markets, tariffs and the benefits of switching suppliers, reaching an estimated 78,000 individuals (2013-14) through frontline workers (Ambrose, Eadson and Pinder, 2015). In addition, the BESN workshops attracted 16,000 participants (2013-14), encouraging them to seek a better energy deal that included messaging on energy efficiency measures in the home (e.g. 32% undertook small scale changes like energy efficient light bulbs) (Ambrose, Eadson and Pinder, 2015).

The funding of the BESN shows that the Government had recognised gaps in its ability to reach those living in fuel poverty, making use of the voluntary and community sector to deliver its messaging to the communities most impacted. The delivery of BESN has since moved to Citizens Advice, along with the Government funding, where proactive advice on energy issues is delivered through an 'assisted action'[7] approach by Energy Champions (Curtis, 2019). It is promising to see how the scheme has evolved to put advice on energy efficiency measures, at the forefront of it's delivery package to the fuel poor.

The Scottish Government have taken an alternative approach to the way that they tackle fuel poverty. The Draft Fuel Poverty Strategy for Scotland, sets out an ambition to reduce fuel poverty levels to 5% of all households by 2040, and includes public investment in energy efficiency through Energy Efficient Scotland (Scottish Government, 2018a). The Energy Efficient Scotland scheme, has committed to support the entire housing sector with the changes needed to improve their energy efficiency ratings, by providing additional support for the fuel poor (Scottish Government, 2020). The scope of the Energy Efficient Scotland scheme is reminiscent of the Warm Front scheme in England, which is

[7] The process of 'assisted action' under the BSEN, refers to the support given to consumers to take action to reduce their energy bills, which would otherwise would not have happened (Curtis, 2019).

presumably why, it is a key part of the Scottish Government's strategy to drastically reduce fuel poverty by 2040.

Baker et al. (2019), called on the Scottish Government, to move towards greater recognition of vulnerable householder's needs, in their fuel poverty policy. The 'lived experience' of fuel poverty was the focus of a Scottish Government evidence review, conducted in 2019 (The Scottish Government, 2020). This shows that the Scottish Government is prepared to go beyond energy efficiency measures and look at how fuel poverty impacts on the lives of those affected. The Scottish Government evidence review found that fuel poor households, are often struggling to understand the energy related information that they are presented with, for example around switching suppliers (The Scottish Government, 2020). This is a situation that BESN (through Citizens Advice Scotland) has the potential to help resolve over time, as 42% of consumers surveyed, have reported making energy efficiency changes following support from an Energy Champion (Curtis, 2019).

The consultation on the new fuel poverty strategy for England, makes the case that energy efficiency is the best long-term solution for tackling fuel poverty (Department for Business, Energy & Industrial Strategy, 2019a). This would indicate the Government have no intention of moving away from the energy efficiency approach over the next five years. The focus on energy efficiency as the primary approach to tackling fuel poverty, makes it all the more important that public funds are made available in England. The Government has more recently taken steps towards implementing public funding for energy efficiency measures in England. The Green Homes Grant for homeowners and residential landlords, provides a £5,000 Government funded grant (two-thirds contribution) towards eligible improvements (Department for Business, Energy and Industrial Strategy, 2020). This is a welcome step in the right direction from the Government, as it will also provide an important economic boost.

5.4 POLICY RECOMMENDATIONS

The second research outcome was fuel and transport poverty – policy recommendations for decision makers in Local and National Government. This research outcome was achieved through a critical appraisal of the empirical findings. The most viable solutions have been identified, so that they can be put forward as potential policy recommendations.

5.4.1 ENERGY ADVICE

The empirical findings from Current Solutions theme, revealed the importance of holistic energy advice for households living in fuel poverty.

The following policy recommendation emerged from this finding. There is a need to increase the amount of energy advice available to individuals and households, at risk of, or living in fuel poverty. This recommendation is grounded in the comments of respondent ***Bravo*** (Advice 4.2.2.1), who spoke about the importance of a single point of contact for referrals, which represented a more holistic service provision.

The increased use of a single point of contact for referrals into health and housing services, is in-line with NICE recommendations, with local areas being advised to estimate their levels need (Public Health England, 2019). The Committee on Fuel Poverty (2018), have made the point that access to 'good quality energy advice' will be needed as society makes the transition to a decarbonised energy system, especially as the fuel poor lack the financial resources to invest in lower carbon energy solutions.

In London, for example the SHINE hub located in the borough of Islington offers a pan London referral service for low-income and vulnerable households (Islington Council, 2017). The Mayor of London has also made available £500,000 to provide a Fuel Poverty Support Fund (2017-2021), to support the launch of local advice and referral networks across London (Greater London Authority, 2018a). The Bristol JSNA Chapter 2018 Fuel Poverty lists a range of services that accept referrals and provide advice and support to residents across the city, including WHAM – Warm Homes Advice and Money, which has been specifically set up to support people living in fuel poverty (Bristol City Council, 2018). The Bristol Fuel Poverty Action Plan has recently been commissioned from the Centre for Sustainable Energy (Centre for Sustainable Energy, 2019).

The provision of straightforward advice around energy consumption is an extremely important factor in tackling fuel poverty. The continued funding of energy advice services, is essential as the Government works towards its preferred long term solution, of improved domestic energy efficiency.

5.4.2 FUEL POVERTY RECOMMENDATIONS

The empirical findings on fuel poverty revealed a number of areas, where recommendations could be made, to policy and decision makers at a local and national level.

The Current Situation theme highlighted the negative impacts of living in cold homes, which negatively impacts on health, with greater prevalence in the private rented sector. The Current Solutions theme (includes energy advice see section 5.4.1), highlighted the challenges around identifying households that are living in fuel poverty. The Policy Approaches theme (5.2.1.3) highlighted the importance of adapting an approach that fits with the local circumstances of the area, issues with the LIHC definition of fuel poverty, use of means tested benefits, along with a holistic approach to fuel poverty and other forms of poverty.

The Public Sector theme highlighted lack of a publicly funded energy efficiency programme in England, resourcing challenges with local authorities, relationships with ECO installers and the challenges around implementing landlord registration. The Energy Sector theme highlighted the importance of messaging around energy efficiency to accompany switch and save, households in debt cannot switch suppliers and the benefits of household budgeting.

The key fuel poverty policy recommendations that emerged from the empirical findings, will be discussed in the following sub sections.

5.4.2.1 ADDRESSING HEALTH IMPACTS

The negative health impacts of living in cold homes emerged as a key finding, with a number of key recommendations for policy makers. These included considering new ways to fundamentally reduce the number of cold homes, with a focus at local and national level.

There are a number of mechanisms to address cold homes that are currently available to local government and health authorities, which include the housing health and safety rating system (HHSRS) (Department for Communities and Local Government, 2006), and the NICE guideline on excess winter deaths and illness associated with cold homes (NICE, 2015). This in turn highlight the issue of resources available to local authorities, as there is considerable variation across the country (Emden, Murphy and Lloyd, 2018). Clearly, increased investment from Central Government would be needed to improve these mechanisms and reduce the national variation.

It is also important to consider the reflection of respondent ***Bravo***, that cold homes discriminate against people who are ill. This brings the question of their rights into play. The writings of Henri Lefebvre (1996) in the ‘Right to the City’, provide a philosophical framework to address the rights of residents forced to live in cold homes. Purcell (2002), suggests that the right to the city offers distinct potential for those resisting threats within an urban environment. Arguably the important campaigning around fuel poverty since 1975 (Boardman, 2010), has done much to raise the profile of the issue. Present day campaigning organisations like Fuel Poverty Action (2014), with the ‘Energy Bill of Rights,’ are taking steps to address the issues of cold homes in radical ways that challenge the status quo.

An interesting example of an inclusive urban approach that emerged from the research was the ‘No Cold Homes’ initiative, in Bristol. This initiative was launched in 2017, with

Bristol City Council, the Centre for Sustainable Energy, Bristol Energy and Western Power Distribution taking the lead (Pipe, 2017). The initiative came to light through the comments of respondent ***Kilo***, who pointed out that the No Cold Homes Strategy Group, were looking for an alternative terminology for fuel poverty.

The collaborative approach adapted by the 'No Cold Homes,' appears to have been a catalyst for change in Bristol. In November 2019, Bristol City Council held an event called 'End Cold Homes' to develop their Fuel Poverty Action Plan, inviting individuals, organisations and health sector partners (Lizarbe Marco, 2019). There are lessons from this type of collaborative bottom-up approach that could be adapted by communities across the country, who are affected by fuel poverty. Policy makers are recommended to explore the 'No Cold Homes' blueprint in their areas.

5.4.2.2 DEFINING FUEL POVERTY

The challenges with the LIHC definition of fuel poverty, emerged as an important finding. However, the desk-based research revealed that the Government had consulted on a new LILEE definition of fuel poverty (Department for Business, Energy & Industrial Strategy, 2019a), but this has yet to be formalised in policy. This section will explore how the lessons from LIHC can be formulated into recommendations for LILEE.

The intention of the LIHC definition was explained by respondent ***Alpha***, who pointed out that LIHC was not intended to reduce the number of fuel poor households. It was designed to remain static until the 2030 (Band C) target was reached, whereas the fuel poverty gap should decrease over time. However, a number of respondents were critical of various aspects of the LIHC definition.

Respondent ***Fremantle*** felt that the LIHC definition was very unhelpful and in fact contributed to a de-prioritisation of fuel poverty, precisely because the definition did not change over time. ***Fremantle*** explained that LIHC made it virtually impossible to eradicate fuel poverty, because a median (50%) threshold was used to distinguish between those in fuel poverty and not in fuel poverty. Respondent ***Lima***, was also concerned about the use of median energy bills, which tended to be lower in London, as properties were smaller than other parts of the country. Boardman (2012), pointed out that the use of median fuel costs, results in too few households being classed as fuel poor.

Respondent ***Bravo***, explained that the LIHC definition was less easy to understand and communicate, but added that the 10% definition was useful in this regard. Respondent ***Kilo*** pointed out that the LIHC definition excluded households living in smaller homes, with lower fuel costs than average, along with those groups that have different heating needs. Respondent ***Juliet***, felt that the LIHC definition was very difficult for practitioners to use for the identification of people living in fuel poverty, which meant that they did not use it to determine recipients of support. Boardman (2012), explained that monitoring proposals like LIHC, do not tend to translate into criteria that can be used to identify fuel poor households.

Therefore, based on these comments it is extremely important that LILEE does not remain unchanging over time, or use median energy costs which may result in too few households being included within the fuel poverty criteria. However, it also needs to be clearer to understand and use than LIHC.

Early signs are promising, with LILEE (under the current proposals) incorporating 3.66 million households into the definition of fuel poverty compared to 2.55 million households under LIHC (Department for Business, Energy & Industrial Strategy, 2019a). An examination of the new the LILEE indicator will form the basis of future work.

5.4.3 TRANSPORT POVERTY RECOMMENDATIONS

The empirical findings on transport poverty revealed some key aspects, where recommendations could be made to policy and decision makers, at local and national levels.

The Transport Concepts theme revealed findings about transport accessibility, affordability and availability. However, the key finding was that transport poverty did not fall under the remit of any policy teams at the Department for Transport. The Transport

Impacts theme revealed that fuel poverty was better thought through than transport poverty, it also revealed that the concept of transport poverty is not necessarily a priority for local authorities. The Transport Mode theme revealed that the promotion of active travel by schools and local authorities had a range of positive impacts, which needed to be supported by adequate infrastructure. The Policy Approaches theme revealed that a holistic view of people's lives was needed, to ensure that people could live in a way in their preferred way.

The key transport poverty policy recommendations that emerged from the empirical findings, will be discussed in the following sub sections.

5.4.3.1 TRANSPORT POVERTY RECOGNITION

The lack of recognition of transport poverty, as a policy remit within the Department for Transport emerged as a key finding. The recommendation for policy makers, is to consider formally recognising the wider definition of transport poverty, at a local and national level.

The aspiration of British academics and transport campaign groups in putting forward the notion of 'transport poverty,' adapted from 'fuel poverty' (Mattioli, Lucas and Marsden, 2017), is starting the yield results. The choice of language in transport poverty, was clearly influenced by the successful recognition of fuel poverty, by the Labour Government that came to power in 1997 (Department of Trade and Industry, 2001). However, it should be noted that twelve years earlier, the Conservative Secretary of State for Energy– Peter Walker MP – was interviewed about fuel poverty and gave the following response.

> *"I'm afraid that I must take issue with the term 'fuel poverty'. People do not talk of 'clothes poverty' or 'food poverty', and I do not think it is useful to talk of 'fuel poverty' either. Of course there is far too much poverty around, and the Government is spending huge sums to alleviate it through the social security system."* (Neighbourhood Energy Action, 1985, p. 13)

Interestingly, we now talk about fuel poverty, clothes/shoe poverty and food poverty on a regular basis, but only fuel poverty is officially recognised. Alston (2018), reported that the UK Government does not measure food poverty, and noted that the Minister was dismissive of the significance of foodbank use across the country. Essentially, official recognition of a new types of poverty is an uphill battle, as shown by the case of fuel poverty which took over 20 years to be recognised as a distinct issue. There was a body of evidence published by the Government in 2019 that refers to transport poverty, which shows that progress towards formal recognition is taking place, albeit quite slowly (Gates et al., 2019; Government Office For Science, 2019; Lucas et al., 2019). It is the intention that this research contributes to the debate around the recognition of transport poverty, by supporting the case that it is analogous with fuel poverty and deserves equivalent status.

5.4.3.2 TRANSPORT POVERTY STRUCTURE

The fact that fuel poverty seemed better thought through than transport poverty, emerged as a key finding. This presents a challenge in terms of recommendations to policy makers, as transport poverty is not an officially recognised or defined. Therefore, the recommendation has instead been made to the wider transport community – academics, researchers and third sector organisations – to agree a structured definition of transport poverty that can be adapted by policy makers, in lieu of an official definition.

The Gates et al. (2019) report for the Department for Transport, drew on affordability, accessibility and availability definitions of transport poverty that were sourced from (Sustrans, 2012; Titheridge et al., 2014; Lucas, 2012). Arguably, they missed the most developed academic discussion around the definition of transport poverty, which was set out in (Lucas et al., 2016). Lucas et al. (2016), set out five conditions for transport poverty, which can be summarised as follows:

- Availability – no suitable transport options for the individual (factors in disabilities and capabilities).
- Accessibility – transport options do not go to where the individual wants to go.

- Affordability – proportion of household spending on transport, puts them into the official measure of poverty.
- Time – transport options take excessive amounts of time to get to where the individual wants to go (leads to time poverty or isolation).
- Externalities – travel leads to excessive exposure to negative transport externalities (such as air and noise pollution and dangerous traffic conditions).

It would be ideal if the British academic and research community could arrive at an agreement around these five conditions, so that policy makers and transport planners can be clear about what they should address at a local level.

5.5 METHODOLOGICAL CONTRIBUTIONS

This research has identified the need to develop a more holistic approach to tackling fuel and transport poverty in the UK. The current approach to each of these phenomena is narrow and siloed, with policy measures being developed to tackle specific issues rather than the wider problem of poverty.

Urban poor have the ‘right to the city’ (Lefebvre, 1996), with respect to their place in the whole urban process (Harvey, 2008). Their rights to enjoy the city, are being eroded through their lack of access to opportunities created by locations in which they find themselves, often at the edge of cities where they are drawn by low-cost housing with limited transport options, which impinges on their ability to access goods, services, health and social networks (Lucas, Mattioli, et al., 2016). This results an increased vulnerability to fuel and transport poverty, which if left unchecked will lead to their social exclusion.

5.5.1 FUEL POVERTY METHODOLOGY

The Policy Approaches empirical findings for fuel poverty have highlighted the need to look at fuel poverty in a way, that fits with the local circumstances of the area. This is a methodological approach to fuel poverty, which has the potential to create a meaningful impact.

Two interesting examples of a holistic approach to fuel poverty emerged from the research process. The first was ‘No Cold Homes’ initiative in Bristol and the second was the ‘London Fuel Poverty Partnership’ organised by the Greater London Authority. They offer a blueprint for local and regional authorities looking to develop a more inclusive approach towards fuel poverty. The advantages they offer are the inclusion of a wider range of stakeholders than would normally be associated with fuel poverty working groups.

The Fuel Poverty Action Plan for London, sets out role of the London Fuel Poverty Partnership, in delivering fuel poverty support, and collaborating to find ways of helping Londoners struggling with their energy bills (Greater London Authority, 2018a). The No Cold Homes steering group, contributed to the Bristol City Council JSNA chapter on fuel poverty and the proposed fuel poverty strategy (Bristol City Council, 2018). It will be interesting to see how the Bristol Fuel Poverty Strategy compares to the Fuel Poverty Action Plan for London, in terms of its aspirations.

5.5.2 TRANSPORT POVERTY METHODOLOGY

The Policy Approaches empirical findings for transport poverty, has highlighted that a holistic view of the way that people chose to live their lives was needed. In a methodological sense this finding brings fuel and transport poverty together, along with other forms of poverty.

A holistic view, calls for a people centred approach to poverty that encompasses energy use and transport demand. Baker et al. (2019), advocate for the use of ‘trusted intermediaries’ in order to develop a more ‘holistic conceptualisation’ of the individuals and households in need of support. It is important that siloed policy making is avoided when looking at policy measures to address household energy costs, as transport costs can create trade-offs for household budgets (Mattioli, Lucas and Marsden, 2017). Thinking about overall policy impact on the lives of those individuals holistically, should enable policy makers and transport planners to make decisions that positively impact on people’s lives.

This would of course be easier to facilitate with the official recognition of transport poverty. Local and regional transport authorities, would be able to justify allocating their scare resources to developing a holistic approach towards fuel and transport poverty.

6. CONCLUSION

6.1 INTRODUCTION

This project has involved an in-depth examination of fuel and transport poverty in the UK. This section seeks to present the conclusions of the research in a clear and straightforward way. It includes a synopsis of the contribution to knowledge, followed by a series of recommendations and ideas for future work. Lastly, it will draw a concise overall conclusion to the thesis.

6.2 CONTRIBUTION TO KNOWLEDGE

This study contributes to knowledge by advancing the current understanding of the synergies between fuel poverty and transport poverty in the UK. This thesis has examined both issues in detail with reference to academic literature and policy documentation and used this to analyse the responses from expert interviews in the fuel poverty and transport sectors. The thesis enhances the overall understanding of fuel and transport poverty. This is explored in the Discussion within the Understanding Fuel and Transport Poverty section (5.3).

This study contributes to knowledge by making a series of policy recommendations (5.4). These recommendations cover the following topics:

- Energy advice (5.4.1)
- Fuel poverty recommendations (5.4.2)
    - Addressing Health Impacts (5.4.2.1)
    - Defining Fuel Poverty (5.4.2.2)

- Transport poverty recommendations (5.4.3)
    - Transport poverty recognition (5.4.3.1)
    - Transport poverty structure (5.4.3.2)

The first recommendation on energy advice, was a key empirical finding under the Current Solutions findings. It highlighted the importance of increasing the amount of energy advice available to individuals and households who are either at risk of, or living in fuel poverty.

The first of the fuel poverty recommendations – addressing health impacts – emerged from the Current Situation findings. The negative health impacts of living in a cold home was a key finding, which led to the recommendation for policy makers to fundamentally reduce the number of cold homes.

The second of the fuel poverty recommendations – defining fuel poverty – emerged from the Policy Approaches findings. The challenges with the LIHC definition of fuel poverty, were an important finding. The recommendations were based on a formulation of the lessons from LIHC and how these could be presented as recommendations, for the newly proposed LILEE indicator.

The first of the transport poverty recommendations – transport poverty recognition – emerged from the Transport Concepts findings. The recommendation for policy makers, is to consider formally recognising the wider definition of transport poverty, at a local and national level.

The second of the transport poverty recommendations – transport poverty structure – emerged from the Transport Impact findings. The fact that fuel poverty seemed better thought through than transport poverty was a key finding. The recommendation has been made to the wider transport community – academics, researchers and third sector organisations – to agree a structured definition of transport poverty that can be adapted by policy makers, in lieu of an official definition.

This study contributes to knowledge by making methodological contributions (5.5). These contributions include:

- Fuel poverty methodology (5.5.1)
- Transport poverty methodology (5.5.2)

The fuel poverty methodological contribution emerged from the Policy Approaches empirical findings (5.2.1.3). The key finding was the importance of an approach that fits with the local circumstances of the area. Adapting this methodological approach has the potential to create a meaningful impact, in the communities most affected by fuel poverty.

The transport poverty methodological contribution emerged from Policy Approaches empirical findings (5.2.2.4). The key finding was the importance of taking a holistic view of the way that people chose to live their lives. In a methodological sense this finding brings fuel and transport poverty together, along with other forms of poverty.

6.3 FUTURE WORK

There are a number of potential areas of future work that will follow on from this thesis:

- A review of the new fuel poverty strategy, to include the new health and wellbeing and LILEE indicators (Department for Business, Energy & Industrial Strategy, 2019a).
- A review of the impact of the 'No Cold Homes' initiative and the Bristol Fuel Poverty Action Plan.
- A review of the impact of the 'London Fuel Poverty Partnership' and the Fuel Poverty Action Plan for London.
- Formally include the devolved nations of the UK in future work to examine the impact of fuel and transport poverty.
- Informing the progress of large projects, such as 'Fuel and transport poverty in the UK's energy transition (FAIR)' (Centre for Research into Energy Demand Solutions, 2019)

6.4 CONCLUSIONS

At the heart of this thesis lies a fundamental question. Can fuel and transport poverty can be addressed within the same policy framework in the UK? The research has revealed that the answer to this question is not straightforward, due to the complexities of these phenomena.

This study has attempted to answer this question and builds on the important theoretical work, into fuel poverty and transport poverty in the UK undertaken by Mattioli, Lucas and Marsden (2017). It takes a more practical approach through the use in-depth semi-structured expert interviews, supported by detailed research and policy review at local, regional and national scale in the UK.

The study finds that fuel and transport poverty are complex and interconnected phenomena, as demonstrated by the synergies between them. There is a need to develop a more holistic approach to them, that puts the rights of all individuals and households affected first.

In theory, the answer to the question is yes, but the way that the complexities manifest themselves, combined with the lack of recognition of transport poverty at a national level in the UK, prevent the formulation of such a policy framework at the current time. The study has revealed local and regional work on these phenomena, which has the potential to lead to a policy framework built around local priorities.

It is highly likely that the need for the UK to hit demanding carbon reduction targets, will indirectly contribute to addressing many of the contributing factors of fuel and transport poverty, as the housing and transport sectors become de-carbonised by 2050. It is vitally important that the rights of the fuel and transport poor, are not forgotten in this process.

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APPENDICES

Alistair Boggars
University of Greenwich
Faculty of Business
International Business & Economics
Greenwich Campus

Direct Line 020 8331 8842
Direct Fax 020 8331 8824
Email researchethics@gre.ac.uk
Our Ref UREC/17.2.5.3
Date: 30th January 2018

Dear Alistair,

University Research Ethics Committee – Minute 17.2.5.3

TITLE OF RESEARCH: Fuel poverty and transport poverty in the UK: a critical examination of their future in relation to government policy.

I am writing to confirm that the above application has been **approved** by Chair's Action on behalf of the Committee and that you have permission to proceed.

I am advised by the Committee to remind you of the following points:

- You must notify the Committee immediately of any information received by you, or of which you become aware, which would cast doubt upon, or alter, any information contained in the original application, or a later amendment, submitted to the Committee and/or which would raise questions about the safety and/or continued conduct of the research;
- You must comply with the Data Protection Act 1998;
- You must refer proposed amendments to the protocol to the Committee for further review and obtain the Committee's approval thereto prior to implementation (except only in cases of emergency when the welfare of the subject is paramount).
- You are authorised to present this University of Greenwich Research Ethics Committee letter of approval to outside bodies in support of any application for further research clearance.

On behalf of the Committee may I wish you success in your project.

Yours sincerely

John Wallace
Secretary, University Research Ethics Committee

cc. Professor David Gray, FBU
Dr Petros Ieromonachou, FBU
Dr Yuliya Yurchenko, FBU

University of Greenwich
Greenwich Campus
Old Royal Naval College
Park Row
London SE10 9LS
Telephone: +44 (0)20 8331 8000

PARTICIPANT INFORMATION SHEET

Research Project Title

An examination of fuel poverty and transport poverty policy in the UK.

Invitation

You are being invited to take part in my research project. I am a PhD research student with the University of Greenwich. Before you decide to do so, it is important you understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask me if there is anything that is not clear or if you would like more information.

Please take time to decide whether or not you wish to take part.

What is the purpose of the project?

This research project aims to look at policy on fuel poverty and transport poverty, which are part of wider socioeconomic issues affecting British society and identify recommendations for future policy measures that would help to alleviate those forms of poverty. Fuel poverty is an inability to afford adequate energy services and transport poverty occurs where there is difficulty in paying for essential journeys, both issues impact on individuals and households. The project forms part of my PhD research with the University of Greenwich.

Why have I been invited to participate?

You have been chosen as you have expertise on fuel poverty/transport poverty policy through your work in central government/local government/academia.

Do I have to take part?

It is up to you to decide whether or not you would like to participate. I will describe the project and go through the information sheet, which I will give to you. I will then ask you to sign a consent form to show you agreed to take part. You are free to withdraw at any time. You do not have to give a reason.

What will happen to me if I take part?

You will be asked to participate in a semi-structured interview lasting up to one hour. In this interview you will asked a series of questions that aim to build a picture of current thinking on fuel poverty and transport poverty in the UK. The questions will be provided ahead of the interview.

What will happen if I don’t carry on with the study?

If you withdraw from the project all the information and data collected from you, to date, will be destroyed and you name will be removed from all the project files.

Please note that you will be unable to withdraw after 30th November 2018.

What will I have to do?

You are required to answer to the questions in the interview.

What are the possible disadvantages and risks of taking part?

Participating in the research is not anticipated to cause you any disadvantages. There are no expected risks associated with participating in this research.

What are the possible benefits of taking part?

The information that I get from the study will help to increase the understanding of fuel poverty and transport poverty in the UK. It is hoped that the project will inform policy recommendations and contribute to improvements in how those affected by fuel poverty and transport poverty are identified and classified.

What if there is a problem?

If you have a concern about any aspect of this project, you should contact me or a member of my supervisory team (see section contacts for further information).

Will my taking part in the project be kept confidential?

All information which is collected about you during the course of the research will be kept strictly confidential, and any information about you which leaves the University of Greenwich will have your name and any other identifying details removed so that you cannot be recognised, unless you consent to your name being disclosed.

The interview will be recorded and stored securely in a University of Greenwich One Drive Folder and destroyed at the end of the project in 2019. The researchers and supervisors are the only people who will have access to the data. Your responses will be anonymised as appropriate to protect research integrity and ethics.

What will happen to the results of the research study?

The results will form part of my PhD thesis, conference presentations and academic publications based on it. You will not be identified in my thesis or any subsequent publications unless you have given your specific consent.

Who is organising the research?

The research student is the organiser of the project, which is approved by the University of Greenwich.

Who has ethically reviewed the project?

The University of Greenwich Research Ethics Committee.

Further information and contact details:

Research Student - Alistair Bogaars A.D.Bogaars@greenwich.ac.uk

Faculty of Business / Department of International Business & Economics

Queen Mary Building

University of Greenwich

Park Row

London

SE10 9LS.

First Supervisor - Dr Yuliya Yurchenko Y.Yurchenko@greenwich.ac.uk (Tel: 0208 331 8641)

Second Supervisor - Dr Petros Ieromonachou P.Ieromonachou@greenwich.ac.uk (Tel: 0208 331 8131)

Third Supervisor - Professor David Wray d.wray@greenwich.ac.uk (Tel: 0208 331 9833)

Thank you for taking part in this research project.

Sample Interview Script Fuel Poverty

Welcome

My name is Alistair Bogaars and I'm a PhD student in the Business School at the University of Greenwich. I'm looking at fuel poverty and transport poverty in the UK and carrying out a critical evaluation of their future evolution in relation to government policy.

I would like to refer you to the participant information sheet which I sent you before the interview today.

Consent

Could you please confirm your name and give your consent for this interview to be recorded.

What is the purpose of the project?

This research project aims to look at policy on fuel poverty and transport poverty, which are part of wider socioeconomic issues affecting British society and identify recommendations for future policy measures that would help to alleviate those forms of poverty. The project forms part of my PhD research with the University of Greenwich.

Why have I been invited to participate?

You have been chosen as you have expertise on fuel poverty policy through your work in central government.

General questions

Could you please talk about a little bit about your role in relation to fuel poverty policy.

I would be really grateful if you could talk about your perceptions of fuel poverty as an issue and whether these perceptions have changed over time.

Could you please talk about the evidence base that is used to examine fuel poverty.

Could you please talk about the definitions for fuel poverty, which have changed a few years ago.

Have you explored the links between fuel poverty and transport affordability from a policy perspective? Are there any plans to do so (if not)?

Sample Interview Script Transport Poverty Interview Script

Welcome

My name is Alistair Bogaars and I'm a PhD student in the Business School at the University of Greenwich. I'm looking at fuel poverty and transport poverty in the UK and carrying out a critical evaluation of their future evolution in relation to government policy.

I would like to refer you to the participant information sheet which I sent you before the interview today.

Consent

Could you please confirm your name and give your consent for this interview to be recorded.

What is the purpose of the project?

This research project aims to look at policy on fuel poverty and transport poverty, which are part of wider socioeconomic issues affecting British society and identify recommendations for future policy measures that would help to alleviate those forms of poverty. The project forms part of my PhD research with the University of Greenwich.

Why have I been invited to participate?

You have been chosen as you have expertise on transport poverty policy through your work at Bristol City Council.

General questions

1. Could you please talk about a little bit about your role in relation to transport policy.

2. I would be really grateful if you could talk about your perceptions of transport poverty as an issue and whether these perceptions have changed over time.

3. Could you please talk about the evidence base that is used to examine transport poverty.

4. Could you please talk about how transport poverty is defined.

5. Have you explored the links between transport poverty and fuel poverty from a policy perspective? Are there any plans to do so (if not)?