Energy supplier involvement in English fuel poverty alleviation: a critical analysis of emergent approaches and implications for policy success

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Energy supplier involvement in English fuel poverty alleviation: a critical analysis of emergent approaches and implications for policy success

Lauren Joyce Probert

A Doctoral Thesis submitted in partial fulfillment of the requirements for the award of Doctor of Philosophy of Loughborough University

September 2014

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Abstract

Over the last twenty-five years, fuel poverty in England has successfully transitioned from niche academic interest to mandated concern of the state. More recently still, government have opted to charge energy suppliers with primary delivery responsibility for fuel poverty programmes. The original contribution to knowledge made by this thesis is in offering a novel comparative analysis of the potential for the state and energy suppliers to effectively support fuel poor households. This research offers one of the first academic assessments of the new suite of policies championed by the coalition government formed in 2010. It is also amongst the first pieces of work to apply and critically assess the new official metric for fuel poverty, the ‘Low Income, High Costs’ definition. By assessing delivery choices against the tenets of neoliberalism identified as guiding recent UK governments, the work further takes into account the motivations of policymakers. A diverse methodological approach is applied, incorporating policy evaluation, quantitative analysis, synthesis of existing literature, and professional engagement.

This research establishes that in passing the Warm Homes and Energy Conservation Act 2000, politicians did not appreciate the demands of the commitment to eradicate fuel poverty by 2016. Subsequently, supplier obligations – initially intended as a means of mitigating climate change – have become the primary policy tool for tackling fuel poverty. The evidence presented here suggests, however, that suppliers are inherently poorly suited to this task for a variety of reasons: their access to the data required to successfully identify fuel poor households is limited; they fund activity in a manner that is unavoidably regressive; and the extent to which they are able to deliver programmes more efficiently than the state is, particularly for economic interventions, subject to question. It is consequently argued that, whilst supplier obligations are likely to appeal to an austerity-driven, neoliberal government as an expedient means of keeping expenditure away from the public purse and of limiting the role of the state, this work demonstrates that increased government involvement and greater political ambition will be required if fuel poverty policies are to be successful.

Keywords: fuel poverty; energy efficiency; energy supplier obligations; energy policy; policy analysis; neoliberalism.
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Too many people to name in this space have indulged my agitations and ruminations over the last four years. Gill Main went above and beyond the call of duty in reading every last word of this thesis at least twice, with an assiduousness rivalled only by that which she affords the pursuit
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Finally, thanks to my family; aunts and uncles, grandparents and cousins. To Hannah, the little sister I always look up to. Most of all, to my parents, whose boundless support makes everything possible.
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<td>AHC</td>
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<td>BEA</td>
<td>Benefits Entitlement Advice</td>
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<td>BERR</td>
<td>Department for Business, Enterprise and Regulatory Reform</td>
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<td>BHC</td>
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<td>Building Research Establishment Domestic Energy Model</td>
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<td>CCC</td>
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<td>CEO</td>
<td>Chief Executive Officer</td>
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<td>CERO</td>
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<td>Commission for Rural Communities</td>
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<td>EPSRC</td>
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<td>Energy Retail Association</td>
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<td>Description</td>
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<td>EST</td>
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<td>European Union Emission Trading Scheme</td>
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<td>EWM</td>
<td>Excess Winter Mortality</td>
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<td>Feed-in-Tariffs</td>
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<td>FoE</td>
<td>Friends of the Earth</td>
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<td>FPAG</td>
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<td>FPDO</td>
<td>Fuel Poverty Data Observatory</td>
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<td>GB</td>
<td>Great Britain</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>Gas and Electricity Markets Authority</td>
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<td>GIS</td>
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<td>HBAI</td>
<td>Households Below Average Income</td>
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<td>HC</td>
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<td>HHCRO</td>
<td>Home Heating Cost Reduction Obligation</td>
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<tr>
<td>HL</td>
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<td>Her Majesty’s Treasury</td>
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<td>HMRC</td>
<td>Her Majesty’s Revenue and Customs</td>
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<td>IMD</td>
<td>Indices of Multiple Deprivation</td>
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<td>Joseph Rowntree Foundation</td>
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<td>Jobseeker’s Allowance</td>
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<td>kWh</td>
<td>Kilowatt-hour</td>
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<td>LA</td>
<td>Local Authority</td>
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<td>LAA</td>
<td>Local Area Agreements</td>
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<td>LCF</td>
<td>Levy Control Framework</td>
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<td>LIHC</td>
<td>Low Income, High Costs</td>
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<td>LILEA</td>
<td>‘Low-Income, Low-Efficiency Area’</td>
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<tr>
<td>LSOA</td>
<td>Lower Super Output Area</td>
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<tr>
<td>MBI</td>
<td>Market-Based Instrument</td>
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<td>MP</td>
<td>Member of Parliament</td>
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<td>National Audit Office</td>
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<td>National Energy Efficiency Data Framework</td>
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<td>National Indicator</td>
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<td>National Right to Fuel Campaign</td>
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<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<td>Ofgem</td>
<td>Office for Gas and Electricity Markets</td>
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<td>OFT</td>
<td>Office of Fair Trading</td>
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<td>ONS</td>
<td>Office of National Statistics</td>
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<td>OPEC</td>
<td>Organisation of the Petroleum Exporting Countries</td>
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<td>Policy Analysis Matrix</td>
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<td>PAYS</td>
<td>Pay As You Save</td>
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<td>PbR</td>
<td>Payment-by-Results</td>
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<td>PDF</td>
<td>Portable Document Format</td>
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<td>PG</td>
<td>Priority Group</td>
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<td>Acronym</td>
<td>Description</td>
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<td>PIP</td>
<td>Personal Independence Payments</td>
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<td>RBT</td>
<td>Rising Block Tariff</td>
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<td>rdSAP</td>
<td>Reduced Data Standard Assessment Procedure</td>
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<td>RO</td>
<td>Renewables Obligation</td>
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<td>SAP</td>
<td>Standard Assessment Procedure</td>
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<td>Solar Photovoltaics</td>
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<td>SPG</td>
<td>Super Priority Group</td>
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<td>SPSS</td>
<td>Statistical Package for the Social Sciences</td>
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<td>UK</td>
<td>United Kingdom</td>
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<td>UKFPS</td>
<td>United Kingdom Fuel Poverty Strategy</td>
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<td>World Energy Council</td>
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<td>WFP</td>
<td>Winter Fuel Payment</td>
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<td>WHDS</td>
<td>Warm Home Discount Scheme</td>
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<td>WHECA</td>
<td>Warm Homes and Energy Conservation Act</td>
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<td>WHECB</td>
<td>Warm Homes and Energy Conservation Bill</td>
</tr>
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<td>WHO</td>
<td>World Health Organisation</td>
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<td>WTC</td>
<td>Working Tax Credit</td>
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Fuel poverty – broadly defined as “the inability to afford adequate heat because of energy efficiency in the home” (Boardman 1991: 221) – exists as the product of three aggravating factors; low incomes, high energy prices, and energy inefficient housing stock. It is the last of these components that is critical in differentiating fuel poverty from income poverty, and in establishing efficiency interventions as the appropriate policy response. As Brenda Boardman characterised the issue in her pivotal 1991 book *Fuel Poverty*:

*General poverty can be reduced through additional income support, but the most effective way to lessen fuel poverty is through capital investment. It is the crucial role of the capital stocks – the house, heating system, and other energy using equipment – in causing fuel poverty that determines the need for policies that are specific to the problem.*

(Boardman, 1991: 221)

Fuel poverty exists where low income households pay inflated energy costs because they live in inefficient dwellings. This is a very real concern for many households in England due to the comparatively low quality of the national housing stock (see Guertler, Royston 2013). This inefficiency, coupled with a temperate national climate in which external temperatures regularly dip below those required for healthy living, presents a very real risk of households subsisting in conditions that range from thermally uncomfortable to the terminally debilitating. It is important to emphasise that to effectively address fuel poverty, it is necessary to tackle the base inefficiencies of the English housing stock. Whilst cash supplements can provide temporary respite for those struggling to pay their energy bills, only efficiency upgrades can insulate against the effects of rising prices and low incomes. However, the delivery of a programme that could represent an enduring solution to fuel poverty in England is likely to be both expensive and operationally complex; herein lies the challenge.
Whilst the impacts of what we now define as fuel poverty have likely been felt in England for centuries, the issue is of comparatively recent concern to policymakers. Isolation of fuel poverty as a distinct form of deprivation is usually traced back to the 1973 oil crisis, when soaring domestic fuel prices resulted in many households facing difficulties affording fuel (see Bradshaw, Hutton 1983). The issue began to gain attention, and in 1975 the National Right to Fuel Campaign (NRFC) was formed with the objective to “end fuel poverty in the UK and secure a warm, dry, well-lit home for all, regardless of income and location” (NRFC 2013). A major advancement in the understanding of fuel poverty came in 1988, when Brenda Boardman’s PhD thesis, *Economic, Social and Technical Considerations for Fuel Poverty Policy* (1988) – later published in book form as *Fuel Poverty* (1991) – provided a pioneering multi-disciplinary account of the problem. This offered the first quantitative definition, whereby fuel poverty was defined as the situation in which expenditure on energy services is equal or greater than 10 per cent of income (Boardman 1991: 201). Despite the ongoing efforts of campaigning groups, fuel poverty was not formally established as a concern of UK Government until 2000, when the *Warm Homes and Energy Conservation Act 2000* (WHECA) required that the Government, “specify a target date for achieving the objective of ensuring that as far as reasonably practicable persons in England or Wales do not live in fuel poverty” (s. 2(2)(d)). Subsequently, a target was established that fuel poverty should be eradicated in England by 2016, and in vulnerable households by 2010 (DEFRA/DTI 2005, DTI 2001). A complementary strategy was published, and a version of Boardman’s fuel poverty definition operationalised for monitoring purposes (DTI 2001).

In the subsequent decade, a range of policies – both economic and technical – have been implemented with the goal of tackling fuel poverty. However, on the face of it, these have been a resounding failure. Figure 1.1 illustrates the rise in fuel poverty levels in England between 2003 and 2011 under Boardman’s ‘ten per cent’ (10pct) definition. This increase is at least partially attributable to substantial fuel price increases, to which the definition of fuel poverty is extremely sensitive (see Hills 2011); UK fuel price indices are also graphed in Figure 1.1 for comparison. However, that official fuel poverty figures steadily rose for year upon year, with little reassessment on the part of Government, can be construed as evidence of an ineffective policy approach. The interim 2010 fuel poverty eradication target was
missed, and achievement of the 2016 target would seem far out of reach given the lack of progress to date.

Based upon compilation of sources: (DECC 2013c: 10, Bolton 2014:14).

Figure 1.1: Number of fuel poor households in England by ‘ten per cent’ definition and United Kingdom Retail Price Index fuel and light component, 2003-2011

This research, conducted primarily in the period from October 2010 to September 2013, has coincided with major changes to the way fuel poverty is considered and tackled in England. Perhaps most fundamentally, the very definition of fuel poverty used for monitoring policy changed substantially within that time period. The October 2010 Spending Review published by the recently elected UK coalition government included a commitment to re-consider the use of the 10pct definition, as part of a drive to reduce state expenditure (HM Treasury 2010b). A subsequent review lead by Professor John Hills of the London School of Economics ran from March 2011 to March 2012 and reaffirmed fuel poverty as a problem both serious and distinct from income poverty (Hills 2012). The review further proposed a new definition, which reconfigures fuel poverty in relative terms, as the situation whereby households “have required fuel costs that are above the median level; and were they to spend that amount they would be left with a residual income below the official poverty line” (Hills 2012: 9). Whilst this conceptualisation does not eliminate the failure of policy
to date, it does go some way to mitigating the distortionary impact of price rises upon official figures. As of July 2013, Hills’ ‘Low Income High Costs’ (LIHC) definition of fuel poverty has been adopted for official purposes (DECC 2013).

This austerity-driven reassessment of the fuel poverty definition has been accompanied by a step-change in the manner in which responsibilities for delivering fuel poverty mitigation measures are apportioned. Warm Front, the sole national state-led, Treasury-funded, energy efficiency programme targeted at low income and vulnerable households, was concluded in January 2013. As of that time the only national scheme delivering energy efficiency measures to fuel poor households is the supplier-led Energy Company Obligation (ECO), which constitutes part of the coalition government’s flagship Green Deal energy efficiency policy mechanism. Further supplier obligations to provide economic support to fuel poor customers have also recently been introduced via the creation of a new economic initiative, the Warm Home Discount Scheme (WHDS). Taken together, the impact of these changes is a shift in responsibilities such that energy suppliers are held entirely accountable for the delivery of energy efficiency measures to fuel poor households, and partially so for the delivery of economic interventions. Thus the role of the state in supporting the fuel poor has been significantly diminished in favour of a model based on supplier obligations, which are funded via energy bills.

The beginnings of this shift predate this work, and served as a catalyst for the research that is reported here. Whilst the requirement that suppliers provide economic support to customers at risk of fuel poverty is a new one, energy efficiency obligations that incorporate some prioritisation of low income households have been in operation since 1994. Moreover, as will be discussed in Chapters Two and Three, this change can be understood as part of a broader trend that has persisted since the Thatcher government of the 1970s, whereby functions previously delivered by the state have been transferred to the private sector in the belief that the profit motive leads such agencies to achieve more efficient delivery. As such, the reassignment of responsibility for supporting fuel poor customers plays into larger dialogues about the role of the private sector in delivering welfare services. Such debates have become increasingly heated in the wake of the global financial crisis. The UK’s coalition government has continued to pursue an austerity strategy based around welfare cuts,
married with an ongoing emphasis upon the pursuit of privatisation. This has been met with dismay by those who believe that particular public services are unsuited to the delivery by the private sector, because they are both too important to place in the hands of the market, and fundamentally unsuited to delivery driven by profit motive. There has been recent contention along these lines in relation to, amongst other things, the perceived quasi-privatisation of the National Health Service (NHS) under the Health and Social Care Act 2012, the introduction of increased private sector involvement in schools via the Academies Act 2010, and the ongoing role of for-profit providers in delivering employment initiatives such as the Work Programme. In the case of energy efficiency, the approach might seem particularly curious given that it requires obligated companies to invest significant amounts in reducing consumption of their own product. However, the previous successes of supplier-led programmes in meeting targets have justified their continuation and expansion. However, in view of the ongoing failure of fuel poverty policy, it is important to consider the implications of this shift upon fuel poor households. The choice of delivery agent has significant implications for the impact of such schemes. One critical example of this is that supplier programmes are funded via levies on bills, whereas the Exchequer meets the costs of state programmes. As levies tend to be much more regressive than income taxes, the comparative net impact of expenditure by suppliers is diminished. It is consideration of such differences that form the focal point of this work.

Whilst research exists examining supplier energy efficiency obligations (e.g., Rosenow 2012), as does work evaluating the ongoing efficacy of fuel poverty policy (such as Boardman 2010), comparatively little work has considered the particular repercussions of the shift from state to supplier-led delivery in terms of fuel poverty alleviation. Furthermore, no work is known to have taken a comparative approach in assessing the choice to use supplier obligations rather than state programmes as a means to alleviate fuel poverty. This work addresses that existing gap in knowledge by responding to the overarching research question, ‘what role is appropriate to the energy supplier in alleviating fuel poverty?’ This incorporates consideration of the impacts of previously mentioned new policies, as well as of the new LIHC definition of fuel poverty, making this one of the first pieces of academic work to employ that conceptualisation of the issue. The aim and objectives of this work are as follows:
**Research Question:**

- What role is appropriate to the energy supplier in alleviating fuel poverty?

**Aim:**

- To compare energy supplier and central government delivery of fuel poverty alleviation policies.

**Objectives:**

- Determine and describe the processes by which energy suppliers and central government deliver fuel poverty alleviation policies.
- Identify where and why structural differences exist between energy supplier and central government delivery of policies.
- Evaluate the likely impact of differences upon the level of fuel poverty mitigation achieved by policies.
- Explore the political and environmental drivers and implications of delivery agent choice.

The approach adopted in this thesis is grounded in social policy analysis. In particular, the policy analysis framework offered by Patton and Sawicki (1993) is applied to compare alternative strategies with a view to establishing which is likely to be most successful in meeting fuel poverty policy goals. For the purposes of responding effectively to the overarching research question, the primary comparison made is between supplier-led models of delivering fuel poverty alleviation policy and state-driven alternatives, with a view to establishing whether those approaches in which the supplier plays the more significant role are likely to have the greater impact in reducing LIHC fuel poverty. A mixed methodology is employed in making this assessment, with a focus upon analysis of the wealth of existent secondary data and pragmatic critical synthesis as a means of establishing likely implications of approaches in terms of fuel poverty mitigation. The work is focused on England, rather than upon the UK as a whole for two primary reasons; because considering the often complex variations to the way in which fuel poverty is handled by the devolved
nations risks complicating matters unnecessarily, and because there is considerably more quantitative data available to researchers relating to the housing stock in England, in the form of the English Housing Survey (EHS). In analysing the comparison, the notion of policy constraints as described by Dunn (2012) is applied as an appropriate descriptive tool, and as a means of understanding the tensions inherent in making fuel poverty policy.

The original contribution of this thesis is in applying a novel approach informed by policy analysis disciplinary perspectives to clarify the impacts of constraints upon two actors in delivering fuel poverty policy under the current institutional formation. It is concluded that a range of factors limit the ability of energy companies to tackle fuel poverty and that suppliers are in many respects poorly suited to meeting the stated goals of policy. However, it is argued, despite the establishment of fuel poverty eradication as a legal obligation of government, ultimately the decision to transfer this responsibility to suppliers seems less informed by the efficacy of that agent in meeting the stated goal than it is by factors such as dominant ideological views regarding the appropriate role of the state and, more recently, the economic policy approach of the coalition government. This work further identifies where gaps in the knowledge base still exist and provides recommendations to guide future research, policy and practice. The thesis is structured as follows:

**Part One** establishes the theoretical and analytical underpinnings of this thesis.

**Chapter Two** opens with a discussion of fuel poverty definitions, justifying the choice of this work to employ the LIHC definition, as currently used in official UK policy. This is followed by an account of the context in which this work has been undertaken, the conflicting political priorities of government, and the policy community that exists around fuel poverty alleviation in the UK.

**Chapter Three** lays out the analytical approach adopted in tackling the overarching research question, first discussing the decision to treat the problem as one of social policy. The policy analysis framework applied is outlined, one based upon comparison of state and supplier approaches in previous delivery. Finally, the methodological means of evaluation are described, a pragmatically mixed approach.
Part Two reports analysis of four critical elements of the fuel poverty process.

Chapter Four considers the manner in which responsibility for meeting the requirements of WHECA have been apportioned. Analysis of Hansard and official documents establishes that the choice to shift to supplier delivery has been not been clearly justified, and that the original legal commitment was based upon an inaccurate appreciation of the scale of the problem.

Chapter Five turns to the historically problematic issue of targeting fuel poverty measures, comparing the ability of energy suppliers and the state to identify both households that are fuel poor, and those that are eligible for measures. It is concluded that government have much better access to data that can help with these tasks, and that suppliers expend considerable, duplicated, effort and resource that is ultimately transferred to household bills.

Chapter Six discusses the manner in which measures are financed. A distinct difference exists here, as suppliers fund delivery via charges on energy bills, whilst the state is expected to collect necessary monies from taxation revenues. Levy funding is shown to be more regressive, not only with reference to income deciles, but also with regard to the LIHC measure of the fuel poverty gap. Whilst a more ambitious programme could mitigate such distributional impacts, it is suggested that this would go beyond the ambition demonstrated by government to date.

Chapter Seven considers the delivery of both technical and economic measures. The supplier-led ‘white certificates’ system employed in delivering energy efficiency measures is assessed as offering considerable benefits to government, e.g., in terms of cost-effectiveness, scope to set ambitious targets, and history of delivery success. By contrast, there is little to recommend supplier delivery of economic measures, particularly given previously discussed problems in targeting and funding programmes.
Part Three offers a final discussion before concluding the thesis.

Chapter Eight draws together findings to provide a response to the overarching research question. It is argued that suppliers are fundamentally less suitable than the state when it comes to delivering measures that will successfully mitigate fuel poverty. However, given the weakness of the legislative incentive, the lack of political impetus to tackle the problem, and the current political pursuit of austerity and a limited role for the state, supplier obligations are likely to be viewed as “appropriate”, if not to fuel poverty alleviation, to the broader aims of government.

Chapter Nine concludes the thesis.
Part One
Scientific studies of poverty in the United Kingdom can be found at least as far back as the work of Gregory King in the late 17\textsuperscript{th} century, arguably further (see Stone 2010, Deeming 2010). By comparison, the consideration of fuel poverty as a distinct social problem is in its infancy, both as an identified concept and as a focus of study and policy. Since Brenda Boardman offered the first extensive description of the problem in her 1991 book \textit{Fuel Poverty}, the development of a policy process that can effectively address the issue described has encountered significant difficulties. Recent changes to the official definition, policies and broader strategy mark what might be regarded as a new paradigm for fuel poverty policy. As this thesis seeks to understand the impact of these changes, it is necessary that the approach be founded upon an appropriate interpretation of the concept and context.

This chapter clarifies the foundations of this research. The first section considers the debate around the definition of fuel poverty and the way the concept has been operationalised, establishing and justifying the choice of definition to be used within this work. The second section discusses the policy context in which this work is situated, including the broader political environment, a general overview of previous alleviation activity, and current fuel poverty policies. The third section examines other significant policy priorities that interact with the goal of fuel poverty alleviation. The final section describes the policy network that exists in relation to fuel poverty, including the roles and responsibilities of key stakeholders.

\textbf{2.1 Defining Fuel Poverty}

In a 2012 interview marking twenty-one years of fuel poverty research, Brenda Boardman offered her views on the role – or absence – of theory in fuel poverty research:

\begin{quote}
I still don’t know that there is a theory around fuel poverty. There is a factual statement which is that fuel poverty is very different from poverty because of the role of capital investment. Capital investment is endemic whenever you
\end{quote}
talk about energy, so as soon as you bring energy into the equation you are looking at something very different from poverty.

Brenda Boardman, interviewed by Christine Liddell (2012: 15)

Boardman’s approach reflects the type of pragmatism that is valuable, even necessary, in addressing a problem that integrates the social and the technical. The “crucial role of the capital stocks”, as originally identified by Boardman (1991: 221) - the physical reality of inefficient homes - introduces an element of objective deficiency to the problem that it is hard to contest. Certain dwellings will undeniably cost more to heat than others, as a function of their physical properties, and it is this that distinguishes fuel poverty from general poverty. However, to define fuel poverty as an integrated concept, it is necessary to introduce some more constructed elements that go beyond what can be empirically established. Some theoretical consideration is required, for example, in deciding whether fuel poverty should be considered as a relative phenomenon, or one that is absolute. This section offers an account of the way in which this requirement has been negotiated in previous work, which has been dominated by two interpretations; Boardman’s early conceptualisation of fuel poverty as the situation whereby a household is required to spend 10% of income to maintain acceptable levels of warmth, referred to in this work as the ‘10pct’ definition, and the much more recent LIHC definition proposed by the Hills Fuel Poverty Review. The section concludes by justifying the choice to use the LIHC definition in this research.

2.1.1 Establishing a Fuel Poverty Definition

Whilst Brenda Boardman’s early work was by no means the first academic consideration of fuel poverty (cf. Bradshaw, Hutton 1983, Bradshaw, Harris 1983), her doctoral thesis (1988), subsequently published as Fuel Poverty: From Cold Homes to Affordable Warmth (1991) represents the first in-depth analysis of the factors affecting fuel poverty and their interactions, synthesising evidence and building on broader definitions to provide the basis for a metric. Boardman proposed

---

1 Some academics have used the terms ‘energy poverty’ and ‘energy vulnerability’ as alternatives to ‘fuel poverty’ (see Bouzarovski et al. 2012, Walker, Day 2012). However, the term ‘fuel poverty’ is
that fuel poverty be defined as the situation whereby a household cannot achieve adequate warmth (clarified in 1991: 103-126) for 10 per cent of income (1991: 227). This figure was derived from then contemporary data as to the energy expenditure of households in the lowest three income deciles, verified with reference to 1979 work undertaken by Isherwood and Hancock that found that 30 per cent of households were spending twice the median amount on fuel, an amount deemed unacceptable (Isherwood, Hancock 1979, as cited by Boardman 1991: 46-47).

Fuel poverty under the 10pct definition can theoretically be alleviated by lowering energy prices, increasing incomes, or by lowering energy requirements. Boardman’s work emphasised the latter of these, the “crucial role of the capital stocks” (1991: 221) in distinguishing fuel poverty from income poverty. A household can be income poor without being 10pct fuel poor, assuming the price paid for energy is low enough and the dwelling sufficiently energy efficient. Equally, a non-income poor household can be 10pct fuel poor if prices paid are high and the home poorly insulated. Whilst the 10pct definition considers all energy use, Boardman’s work focuses on space and water heating as offering the greatest potential savings. This is appropriate, given that those usages account for 82% of overall energy consumption (see Figure 2.1).

![Figure 2.1: United Kingdom domestic final energy consumption by end use, 2012](source: Adapted from Table 3.04 of DECC (2013f))

Whilst investment in energy improvements might initially be more expensive than subsidising income to achieve a commensurate immediate result, the majority of
upgrades should be more cost effective in the long run (Boardman 1991: 189-192). Furthermore, Boardman argues, given the lamentable state of the UK housing stock, the government have a responsibility to support those unable to afford to improve their own homes (1991: 223-224). Boardman’s work on fuel poverty was undoubtedly pivotal, and her 10pct definition was used by government as the official definition from 2001 until 2012 (see DTI 2001, DECC 2013). However, Boardman herself later criticised the manner in which her definition was operationalised by government (2010: 21-45), and suggested that the use of an absolute threshold be reconsidered (2010: 50)\(^2\).

2.1.2 The Hills Fuel Poverty Review

In October 2010, the recently elected coalition government launched a Comprehensive Spending Review focused upon deficit reduction (HM Treasury 2010b). This included a commitment to reassess the manner in which fuel poverty was addressed:

_The Government is committed to focusing the available resources where they will be most effective in tackling the problems underlying fuel poverty. The Government therefore intends to initiate an independent review of the fuel poverty target and definition before the end of the year._

(HM Treasury 2010b: 62)

The resultant review was launched in March 2011, led by Professor John Hills, Director of the Centre for Analysis of Social Exclusion at the London School of Economics (see DECC 2011a). The Hills Fuel Poverty Review lasted for one year, and involved extensive consultation with stakeholders (see Hills 2011: 184, Hills 2012: 178-179). An interim report was published in October 2011 (Hills 2011), and a final report followed in March 2012 (Hills 2012). Hills’ terms of reference for the review called for response to the following issues:

\(^2\) In this context, ‘absolute’ fuel poverty refers to the use of a fixed expenditure threshold in measurement, e.g., 10 per cent of income. By comparison, ‘relative’ fuel poverty is measured using a threshold that responds to standards in wider society, e.g., median income levels.
• Whether ‘fuel poverty’ is, in fact, a distinct problem, or simply a manifestation of more general problems of poverty.
• If it is distinct, how it is best measured and whether the current approach to doing this captures the problems most effectively.
• The implications of measurement for the way we understand the effectiveness of the range of policy approaches to reducing it.

(Hills 2012: 6)

This section focuses upon the first two of these; the third, the primary focus of the final report, will be referenced extensively later in this work.

The Hills Fuel Poverty Review reaffirmed fuel poverty as “a distinct and serious problem” that “deserves and requires attention, as recognised by Parliament when it adopted the Warm Homes and Energy Conservation Act 2000” (Hills 2011: 21). This distinction was identified with reference to the interaction between low incomes and high required spending, a condition that Hills (2011: 93) concluded WHECA was “entirely appropriate” in defining as follows:

...a person is to be regarded as living “in fuel poverty” if he is a member of a household living on a lower income in a home which cannot be kept warm at reasonable cost.

WHECA (s.1 (1))

Whilst Hills praised the ability of the 10pct definition to capture the interactions of the drivers of fuel poverty (Hills 2011: 102-103), he found fault with its ability to effectively represent the nature of that problem described in WHECA. Table 2.1 offers an overview of those particular weaknesses identified by the Review.
Table 2.1: Weaknesses of the 10pct definition of fuel poverty, as identified by the Hills Fuel Poverty Review

<table>
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<tr>
<th>Issue</th>
<th>Description of Issue</th>
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<tr>
<td><strong>The fixed threshold</strong></td>
<td>The threshold used is somewhat arbitrary – which might be unavoidable, to some extent – but that it is fixed means that the definition is extremely sensitive to that choice.</td>
</tr>
<tr>
<td><strong>Sensitivity to price changes</strong></td>
<td>The fixed threshold creates the illusion of rapid worsening or improvement when prices change. This does not effectively capture the true problem, that of a substandard housing stock.</td>
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<tr>
<td><strong>Depth and extent</strong></td>
<td>The 10pct measure offers only a headcount at the national level, and does not consider the extent to which houses are in fuel poverty.</td>
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<td><strong>High incomes</strong></td>
<td>Under the 10pct definition, those with very high incomes can be counted as fuel poor if their fuel costs are sufficiently high. This issue was highlighted in media reports suggesting that the Queen was close to being in fuel poverty (see Blair 2011).</td>
</tr>
<tr>
<td><strong>Policy assessment and the ratio basis of the indicator</strong></td>
<td>The ratio basis of the 10pct definition puts an emphasis on the energy bill as a cause and solution, as any increase to bills necessitates a ten-fold increase to income to compensate. This could result in policies that provide rebates to bills being inappropriately favoured over those that supplement income.</td>
</tr>
<tr>
<td><strong>Sensitivity to low reported incomes</strong></td>
<td>Severely underreported incomes could result in hugely inflated fuel poverty levels.</td>
</tr>
<tr>
<td><strong>Sensitivity to temperature standards</strong></td>
<td>Any change in required temperatures will result in changes to fuel poverty levels.</td>
</tr>
<tr>
<td><strong>Consistency with policy on the ground</strong></td>
<td>For delivery purposes, it is difficult to relate the fuel poverty definition to the actual energy efficiency of the house, or to proxies for income such as the receipt of benefits.</td>
</tr>
<tr>
<td><strong>Treatment of housing costs</strong></td>
<td>Arguably more an issue of operationalisation, but for the purposes of fuel poverty measurement, incomes have been considered before housing costs are subtracted, i.e., inclusive of income that is not truly disposable as it is apportioned to a specific, essential, purpose.</td>
</tr>
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</table>

Source: Summary of Hills (2011: 103-107)
As an alternative, Hills proposed a different conceptualisation of fuel poverty, the LIHC definition. Unlike the 10pct definition, which is based upon whether a household exceeds an absolute threshold for fuel costs, the LIHC definition is relative; a household is fuel poor if its fuel expenditure is comparatively high, and its income is comparatively low. Hills also suggested a further indicator, that of the fuel poverty gap, measured as “the [amount] by which the assessed energy needs of fuel poor households [exceeds] the threshold for reasonable costs” (Hills 2012: 9). This effectively measures the extent to which a given household is in fuel poverty, and can further be aggregated to the national scale. Figure 2.2 illustrates both the LIHC fuel poverty definition and the fuel poverty gap. Households A and B are both in fuel poverty as they inhabit the grey-shaded quadrant of the diagram which is below the income threshold and above the cost threshold. Though household A has a lower income, it has higher energy needs, which results in a similarly sized fuel poverty gap.

Note: the income threshold is sloping because measurement is of income after required expenditure on energy. And so as energy costs increase, the threshold tilts.

Source: Adapted from Hills 2012: 9.

**Figure 2.2: The LIHC definition of fuel poverty and the fuel poverty gap**

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3 Though it should be noted that Sefton (2004) used a similar measure in assessing the Warm Front energy efficiency scheme.

4 However, the aggregated measure does not offer any helpful information as to the distribution of the gap.
The thresholds used are as follows. The income threshold falls where subtraction of required equivalised energy costs from income leaves the household at the Department for Work and Pensions’ (DWP) official poverty line, as defined in Households Below Average Income (HBAI) analysis; less than 60 per cent of median equivalised household income, after housing costs (see Hills 2012: 53). Effectively, this defines a low income household as one that, having paid required energy costs, is below the official poverty line. The cost threshold lies at the point whereby equivalised household bills equal the national median (see Hills 2012: 59-60). Equivalisation is the process by which household incomes are weighted to take account of the impacts of differing occupant compositions upon demand for resources. Though it is highly unusual for incomes not to be equivalised for the purpose of poverty measurement (see ONS 2012a, DWP 2013a), the previous fuel poverty definition did not apply equivalisation when used for official purposes (see DECC 2010b). The reasoning was that the 10pct definition of fuel poverty related incomes to required fuel expenditure, and that required fuel expenditure is also likely to vary based upon household size. The argument, then, is that incomes should only be equivalised if fuel costs are also equivalised; it might be further considered that the scaling of energy needs with household size offers a type of in-built equivalisation (a point argued by Palmer et al. (2008: 35) and restated by Hills (2011: 138)). However, the lack of equivalisation under the 10pct definition likely resulted in more large households failing to be classed as fuel poor: for example, where additional members of a household are children, more space will need to be heated but household income will not increase accordingly (as noted by Sefton, Chesshire 2005: 47-48). Hills recognised that the separation of income and required fuel within the LIHC strengthens the case for equivalisation, and the proposed LIHC definition equivalised both household incomes and required energy (2011: 138). Incomes were equivalised using the standard modification of the Organisation for Economic Co-operation and

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5 The majority of respondents to the Government consultation on changing the measurement of fuel poverty disagreed with the manner in which this threshold was set (DECC 2013: 7). The critique offered by ACE et al. (2012) presented an alternate threshold formulation based upon the modelled potential energy costs of fuel poor households after receiving measures; this was found to strengthen the relationship between fuel poor and energy inefficient households. However, government rejected this proposal on the grounds that “it would skew the priorities of any strategy towards households with costs close to the cost threshold” (DECC 2013: 9). It might be argued that this will be the case anyhow, as cost effective reductions are likely to be favoured by market delivery of measures.
Development (OECD) equivalence factors used by the DWP in HBAI when considering incomes after housing costs, also known as the ‘companion scale’ (Hills 2011: 170; for a more detailed consideration, see National Statistics/DWP 2012: 265-284). The equivalisation of energy use proved more difficult as there was no pre-existing reference methodology, and the process went through several iterations. The Fuel Poverty Review interim report simply applied the HBAI companion scale weightings to fuel use, though recognised that this may be inappropriate (Hills 2011: 172). The final report applied a bespoke index from historical fuel requirement data, based upon five different household classifications (Hills 2012: 182-183). The final DECC consultation response used a similar index, but one based upon the number of individuals in the household (in the manner of the HBAI index) (DECC 2013i: 12-14), a partial acceptance of proposals by ACE et al. (2012: 37-55) that equivalisation should be based upon both number of occupants and property size (in m$^2$)$^6$.

Hills also recommended measuring income After Housing Costs (AHC) rather than Before Housing Costs (BHC). Poverty measures - including HBAI analysis – have tended to consider both BHC and AHC incomes, on the grounds that expenditure on housing costs may be difficult for households to modify in response to income fluctuations (National Statistics/DWP 2012: 254-255). Under the 10pct definition, DECC measured fuel poverty under both AHC and BHC incomes, but used BHC for official statistics (DECC 2010b: 6). Considering AHC income results in a reduction in considered income for those with higher housing costs, manifested as a shift away from pensioners (who are more likely to have paid off mortgages) towards working-age adults, including families with children$^7$. Hills noted that the shift to prioritising AHC as an income measure was a popular proposal with consultation respondents and agreed that AHC more accurately reflects the composition of the fuel poor group, particularly where housing costs are high (Hills 2011: 113, Hills 2012: 32). This change was adopted by DECC (2013i: 14). Hills also recommended that income should be measured exclusive of any disability-related benefits, on the grounds that

$^6$The latter element was rejected by both Hills and DECC on the grounds that it would penalise underoccupancy, which in some cases might be unavoidable (Hills 2012: 185-189, DECC 2013i: 12-14).

$^7$This shift is illustrated in the HBAI analysis for 2010/11, wherein consideration of AHC rather than BHC income results in the proportion of low income households who are pensioners falling from 23% to 14%, whilst the proportion of households with children rises from 45% to 53% (National Statistics/DWP 2012: 73).
said benefits are intended to alleviate the additional costs incurred as a result of said disability (DECC 2012i: 37).

The LIHC definition responds to many of the issues identified with the 10pct definition by removing the absolute threshold and ratio elements, and moving towards a relative definition that reduces the identified sensitivities to temperature requirements, misreported low incomes and incidences of those on very high incomes being considered fuel poor, and which favours adjustments to bills over adjustments to incomes (see Hills 2011: 134-147). The new definition has important implications for the dynamics of policy, as will be considered throughout this thesis (see also ACE, CSE & Moore 2012)\(^8\). One of the more significant impacts of shifting to a relative definition is that the impacts of fuel price rises are neutralised; only fuel rises that disproportionately affect those with higher costs or lower incomes will result in an increase in the fuel poverty gap. Price rises, as opposed to any drop in incomes, inarguably drove the increase in 10pct fuel poverty over the past decade, and Hills identifies that this is likely to conceal the positive impacts of energy efficiency improvements (2012: 31). That said, it could equally be argued that neutralising the impact of prices on fuel poverty so thoroughly means that the LIHC measure risks masking any broad shift towards energy becoming unaffordable; theoretically, under the relative measure all fuel prices could increase ten-fold, leaving only a small minority able to afford heating, and there would be no resultant increase in fuel poverty.

Figure 2.3 illustrates the relationship between the 10pct definition and fuel prices, previously shown in Figure 1.1, but additionally graphs LIHC fuel poverty levels, demonstrating the comparative stability of that measure.

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\(^8\) Some implications of the definition proposed following the Fuel Poverty Review interim report, along with potential ramifications for policy, were previously discussed in Probert et al. (2011). Moore (2012) also offers a preliminary assessment of the LIHC definition (developed in ACE et al. (2012).
Based upon compilation of sources: (DECC 2013c: 10, Bolton 2014:14).

**Figure 2.3: Fuel prices and fuel poverty under two different indicators, 2003-11**

When the intention to review the fuel poverty definition was announced, fuel poverty advocates could have been forgiven for concerns that the intention was to ‘define the problem out of existence’ (see CSE 2011). Whilst the number of fuel poor households did decrease under Hills’ modelling of the LIHC definition, from 4.0m to 2.7m, the number of fuel poor *individuals* increased, from 7.4m to 7.8m (Hills 2012: 52; model uses data from 2009). This shift can be at least partially explained by previously discussed adjustments to the way in which income and expenditure are considered, which result in more larger households being considered as fuel poor. The resultant compositional change is shown in Figure 2.4, which is based on analysis of the 2011 English Housing Survey (EHS) undertaken for this work(DCLG 2013c). The broader use of EHS data within this thesis will be explained further in section 3.4.3.
To be applied as a policy instrument, the fuel poverty definition needs to be ‘operationalised’: that is, framed in terms that lend themselves to real-world usage. Fuel poverty first emerged as a concern of the state within what has been referred to as a ‘measurement culture’, a form of evaluative governance championed by New Labour that placed particular priority on the use of quantitative goals and metrics (see Hudson, Lowe 2009: 274-278). When the 10pct definition was first used within policy, it was operationalised by government statisticians so that it could be used to generate annual national statistics based upon EHS data (see DECC 2010b). Measurement is the primary policy employment of the definition (see Hills 2011: 182) and a key application in this thesis. In the move from the 10pct definition to the LIHC definition, many of the same operationalisation techniques have been
maintained; Figure 2.5 gives an overview of the way high costs and low income are treated under current process\textsuperscript{9}.

![Diagram of fuel poverty definition](image)


**Figure 2.5: Government operationalisation of the LIHC fuel poverty definition**

The method of operationalisation is crucial, as it is the form of the definition that is active in policy, and the process may (and, in the case of fuel poverty, does) involve decisions that have a significant impact on final outcomes. Three elements of the current process have been identified here as being particularly likely to distort the manner in which statistics used to monitor policy represents the experiences of fuel poor households.

\textsuperscript{9} Note that Hills' (2012) assessment blurs the lines between definition and operationalisation in a way that Boardman (1991) did not, because of the context of the consideration; Hills was examining the definition as already in use as a policy tool rather than proposing a wholly new concept. So, for example, Hills considers modelled energy usage as an integral part of the definition (see 2011: 102) in a way that Boardman did not.
• Estimation of Fuel Prices

Whilst the LIHC definition of fuel poverty neutralises the impact of generalised fuel price rises, the official fuel poverty statistics are based upon estimated prices, rather than those actually paid by households (see DECC 2013i: 25-31). This means that in instances where fuel prices could have an impact, i.e., where the actual prices paid by fuel poor households are more than those paid by non-fuel poor households, it is likely that official statistics will not register that effect. The notion of a ‘poverty premium’ – that low income households pay more for goods and services for a range of structural reasons – is well established (see Caplovitz 1964). With respect to fuel, it has been documented that low income households are more likely to have been given prepayment meters (because of previous debt), or be unable to pay by direct debit, because they are less likely to have bank accounts (see Hirsch 2013). Both of these payment methods incur higher costs, though these would be accounted for in official statistics, which consider payment method (DECC 2013i: 25-26).

Limited evidence does, however, suggest that low income households also tend to be on less favourable tariffs for reasons that would not be accounted for by the official methodology. The Office for Gas and Electricity Market’s (Ofgem) Energy Supply Probe identified via consumer interviews and focus groups that low-income households were less likely to change tariffs, switch suppliers, compare offers, be able to access online offers, and be more likely to be prevented from switching because of existing debt (Ofgem 2008a: 11 and 57). These findings were substantiated by follow-up qualitative work undertaken in 2011 (see FDS International 2011). Hills acknowledged that such circumstances are likely to persist, but highlighted a data gap and suggested that the Energy Follow Up Survey (at that time scheduled for release before the end of 2012) might go some way to establishing any price differentials experienced by fuel poor households (Hills 2012: 13). This piece of official research considers the actual energy used and prices paid by a subset of EHS households (see DECC 2012c: 10-11), but has yet to be released (for unknown reasons) at time of writing. If low income households were systematically paying higher prices in the manner described here, it would constitute a further, undetected inequality that would currently be hidden from official monitoring. More research would be beneficial in clarifying the extent of any issue.
• Modelling of Energy Use

Government consideration of cost is based upon modelled required energy usage, rather than on the energy actually used by households. In his review, Hills praises the objectivity of this approach:

*It has long been contended that, since actual spending may be distorted by financial constraint (i.e. some people cut back on heating to make ends meet) – or its reverse, profligacy – measuring fuel poverty on such a basis would be inappropriate.*

(Hills 2011: 102)

There is a strong argument for favouring energy requirements over actual usage; it is clearly inappropriate to count amongst the fuel poor those whose energy costs are too high only because they choose to keep their homes excessively warm. It would also be patently unreasonable to exclude as fuel poor those whose costs are low because they are not spending enough to keep their home adequately heated. However, required usage assumes rational choice with respect to energy consumption, even though it is well documented that such decisions are often based on imperfect information and heavily influenced by factors such as personal habit (see Critchley et al. 2007, Maréchal 2010, Huebner, Cooper & Jones 2013). Hutchinson et al. (2006) found dwelling quality to be a weak indicator of actual indoor temperatures, contrary to what might be expected if households were using energy in line with modelled assumptions. Furthermore, estimated usage could be subject to the ‘building performance gap’, the phenomenon whereby there is a discrepancy between modelled and actual building performance (see Sanders, Phillipson 2006, de Wilde 2014, Menezes et al. 2012). There is a dearth of data relating to the actual energy consumption of known fuel poor households. Again, the Energy Follow Up Survey might usefully fill this gap by providing information on the actual usage of EHS households, including those that are fuel poor, that would enable comparison with modelled figures. The evidence base for actual energy consumption is stronger when expanded to consideration of low income households. A number of studies have found evidence of low income households engaging in what Gibbons and Singler (2008) refer to as ‘fuel rationing’, i.e., curtailing energy expenditure as a means of
coping with poverty (see Doble 2000, Wright 2004, Harrington et al. 2005, O'Neill, Jinks & Squire 2006, Anderson, White & Finney 2012). The Warm Front Study Group (Hong et al. 2009a, Oreszczyn et al. 2006) found that the low income households monitored kept their homes at an average temperature colder than that of the general population, but that internal temperatures and thermal comfort rose after energy efficiency measures were installed. This is evidence of what has been termed the ‘rebound effect’ or ‘take-back’ (see Galvin 2014), whereby improved efficiency does not translate to a reduction in costs because households choose to enjoy those savings as increased thermal comfort\(^{10}\) (a further argument against considering actual costs). Harrington et al. (2005) and Gilbertson et al. (2006) found qualitative evidence of similar behaviours where measures have been installed\(^{11}\). Hirsch et al. (2011) considered a synthesised dataset that estimated consumption of English House Condition Survey (EHCS)\(^{12}\) households and identified systematic under-consumption by those on low incomes. Further research using related datasets by White et al. (2010) identified some particular groups of low income households who did have high levels of consumption, however, the indication from regression analysis was that this was linked to structural causes, e.g., underoccupancy, or electrical space heating. Possible policy responses to high or low levels of consumption are considered later in this thesis; for now, it is simply necessary to highlight that whilst there is a sound theoretical basis for considering required, not actual, energy use in modelling fuel poverty, this gap between official statistics and real world experience needs to be taken into account where those figures are used to guide policy analysis, both in practice and in the context of this work.

- Heating Regime Applied

Defining an adequate heating regime for operationalisation purposes requires assumptions to be declared as to appropriate temperature levels and occupancy patterns. Currently, Department of Energy and Climate Change (DECC) define “an adequate level of warmth” as “21 degrees for the main living area, and 18 degrees for

\(^{10}\) Refer also to Jevons’ Paradox (see Alcott 2005) and the Khazzoom-Brookes postulate (see Saunders 1992).

\(^{11}\) Note that Gilbertson et al. (2006) and Hong et al. (2009) evaluated the Warm Front scheme at different times, the former via technical monitoring and the latter via qualitative interviews.

\(^{12}\) The predecessor survey of the EHS, the EHCS was also used to generate fuel poverty statistics (see DECC 2010b: 4).
other occupied rooms” (DECC 2013i: 2). Heating regimes are based upon BREDEM-12 standards (see Anderson et al. 2002), with occupancy defined according to the Parker-Morris Standard, as established in 1961 (Ministry of Housing and Local Government 1961). Whilst temperature requirement might initially seem objectively verifiable, in practice, the justification for use has been unclear and DECC methodological literature has never provided any sound evidential rationalisation for the choice of temperature level. The source of the definition of an acceptable heating regime is generally traced to a 1987 World Health Organisation (WHO) report (Boardman 2010: 22, further discussion in Ormandy, Ezratty 2012), which recounts the conclusions of a review of contemporary evidence as to the impacts of low temperatures on both general and at-risk populations and concludes that:

*There is no demonstrable risk to the health of healthy sedentary people living in air temperatures of between 18°C and 24°C... for certain groups, such as the sick, the handicapped, the very old and the very young, a minimum air temperature of 20°C is recommended.*

(WHO 1987: 19)

This recommendation appears to have been used only as imprecise guidance. The level of subjectivity in operationalisation choice is demonstrated in that the Scottish application of the 10pct definition is different from that applied in England. The Scottish Government considers a heating regime that is not adjusted for under-occupancy (Boardman 2010: 23) and applies a higher temperature requirement of 23 degrees to households containing certain physically vulnerable groups, in acknowledgement of WHO guidance (Scottish Executive 2002: 7). The LIHC definition of fuel poverty is less sensitive to such variation than the 10pct definition, as it applies a relative consideration rather than an absolute threshold (Hills 2011: 147). However, there remains the possibility that those who require more energy because they are vulnerable are currently being classed as over-consuming. It would therefore seem appropriate to follow Hills’ recommendation (2012: 13) and take account of current medical research, along with work considering thermal comfort (e.g. Shove 2003) in reconsidering assumptions around heating regime.
There are also potential risks around the application of the BREDEM-12 model of domestic energy use. Whilst this is widely used as a model for the average house, it has been argued that some of the underlying assumptions do not hold to an extent that can be problematic, including with specific reference to fuel poor households (see Sefton, Chesshire 2005). A report commissioned by Scottish Government (Cambridge Architectural Research et al. 2009) posited that, amongst other weaknesses, BREDEM-12 underestimates the energy used by domestic appliances (being based on data from the 1980s), assumes average U-values (which may be optimistic), and is based upon dwellings having a single living room (an assumption also raised by Todd, Steele 2006 as being unrepresentative of the practices of certain BME communities). In this respect, BREDEM-12 can be argued to suffer from the same problems observed in other models – including models of poverty measurement – which are based upon the ‘objective’ perceptions of experts rather than the ways in which people actually live (see Gordon, Pantazis 1997).

2.1.4 Research Application of Definition

The definition of fuel poverty used in this research is the LIHC definition as applied by DECC (see DECC 2013i, with amended equivalisation index as detailed in DECC 2013h). The choice to use this definition, despite the fact that it was only formally adopted in July 2013, towards the end of the research process, was made for four reasons.

Firstly, that – subject to any significant change in direction – the LIHC definition will be adopted as the primary means of monitoring fuel poverty policy (see DECC 2013l). To continue to refer to the 10pct definition of fuel poverty, particularly when assessing new policies would therefore be inappropriate. By using the LIHC definition of fuel poverty, and considering the concept of the fuel poverty gap as introduced by Hills, this thesis maintains coherency with current and future policy. The nature of policy research is that principles and perspectives are constantly changing, but by using the LIHC definition, this work can retain relevance into the foreseeable future.
The second justification is simply that the LIHC definition is arguably more appropriate than the 10pct definition. The strengths and weaknesses of the definition and its operationalisation have already been referenced in previous sections, including the valid critiques of ACE et al. (2012). To offer a full critique of the definition is beyond the scope of this work; this section has looked only to identify where particular weaknesses in its application could impact upon its use in evaluating policy. On balance, it is held that – as agreed by government consultation (DECC 2013l) – the LIHC definition more effectively captures the nature of fuel poverty as originally described both by Boardman (1991) and in WHECA, as a problem of fuel affordability experienced by those on low incomes as a function of their living in inefficient dwellings.

The third justification is that this work – as will be explained in the next chapter – examines policy primarily at the national level. Work examining the implementation of schemes on the ground could defensibly consider any means by which fuel poverty is implicitly defined by practitioners (i.e., ways that do not rely upon complex building modelling13). However, at the national level it is the DECC definition that is ostensibly used to track progress, and so it follows that the same definition should be used in this work.

The final justification is that Hills’ approach agrees on a conceptual level with the approach taken in this thesis, which emphasises fuel poverty as a poverty problem, and as a problem of social policy. In reconfiguring fuel poverty as an inequality – comparative, rather than absolute – Hills brings it in line both with current government treatment of child poverty (as defined in the Child Poverty Act 2010), and with the broader academic consensus on the importance of inequality with regards to social wellbeing and cohesion (see, for example, Townsend 1979, Hills 2004, Wilkinson, Pickett 2010a). The Hills Fuel Poverty Review included consideration of common concerns of poverty research that had already been identified in the early

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13 Previous work has considered the potential of consensual and subjective measures of fuel poverty (see Healy 2004, Waddams Price et al. 2012). Whilst exploration of such measures is beyond the scope of this work, the addition of a broader range of measurement with regards to experiences of energy affordability would undoubtedly offer valuable insights into the reality of fuel poverty. In particular, it would be helpful to understand where and why such experiences deviate from fuel poverty as objectively defined by DECC.
stages of this research as crucial in evaluating fuel poverty policy (e.g., targeting, distributional impacts), and the LIHC definition of fuel poverty proposed by Hills is viewed as well-suited to the approach taken in this work. Throughout this thesis, then, the term ‘fuel poverty’ refers to the LIHC definition of fuel poverty as operationalised from August 2013 (see DECC 2013i, DECC 2013h). Where it is appropriate to use Boardman’s definition, for example, in discussing older policies or research, this will be made clear by referring to it as ‘10pct’ fuel poverty.

2.2 Policy Context

The research reported in this thesis was conducted between September 2010 and September 2013, within a turbulent political climate in which unrest was by no means limited to changes in fuel poverty policy. This section provides information on relevant policy context in order to guide understanding of the work that follows, incorporating discussion of the broader political and economic situation and priorities of government, a brief overview of older relevant policies, and a more detailed account of currently active policies linked to fuel poverty alleviation.

2.2.1 Broader Political Context

It is perhaps an understatement to say that the global recession of 2008 to 2009 - often framed as a crisis of capitalism – was the product of complex factors (see Gamble 2009). In the initial recessionary period from 2008 to 2009, UK Gross Domestic Product (GDP) shrank by 7% (ONS 2013f), and unemployment rose by almost 3% (ONS 2014). This was followed by a second smaller ‘double dip’ recession from 2011 to 2012, and recovery has generally been protracted (ONS 2013f). It was against this economic backdrop, in May 2010, that David Cameron’s Conservative Party achieved a narrow electoral victory and joined with Nick Clegg’s Liberal Democrats to form a coalition government capable of commanding a majority in the House of Commons, ending thirteen years of Labour Party rule. A growing body of research has considered the implications of coalition government policies for social welfare (see Hatcher 2011, Hodkinson, Robbins 2013, Cutler, Waine 2013), though as yet little attention has been paid to fuel poverty specifically. The political philosophy of Cameron’s coalition government can be considered as neoliberal, a characterisation
reinforced in the literature (see Wright 2012, Wiggan 2012, Pownall 2013). David Harvey describes neoliberalism as:

...a theory of political economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterised by strong private property rights, free markets and free trade.

(Harvey 2005: 2)

Accordingly, neoliberal governments tend to focus on restricting the role of government to one of regulation, placing greater emphasis on the role of free markets and individual liberties\(^\text{14}\). This school of thought is famously influenced by Friedrich Hayek’s (2006) critiques of centralised planning and the supply-side economics of Milton Friedman (1962), in contrast to the fiscal approach advocated by John Maynard Keynes (1936). Whilst the ideological stance of government colours the policy process in innumerable ways, for the purpose of this research, three articulations of the neoliberal approach taken by the coalition government (and, to some extent, their New Labour predecessors under whom WHECA was enacted) are of particular relevance in considering the shape of current fuel poverty policy.

- Restricting the Role of the State

Firstly, a commitment to privatisation, liberalisation and deregulation is a common theme of neoliberal policy, in line with the belief that markets can achieve a more efficient allocation of resources than central government. The privatisation of the UK energy market is a legacy of this commitment enacted under the government of Margaret Thatcher (as will be discussed further in Chapter Four). Such an approach has been extended to social welfare services, resulting in an expanded role for the private sector in those domains. New Labour adopted something of a compromise approach, the Third Way, which applied market principles but with a stated

\(^{14}\)This broad characterisation of neoliberalism meets the requirements of this work. For a discussion of the more complex definitional debates around the term, see Thorsen (2009). There is no one expression of neoliberal priorities, though Williamson’s (1990) account of the ‘Washington Consensus’, ten policy instruments he believed to have been commonly accepted by the American neoliberal political establishment, is often cited as a prominent articulation. In the interests of concision, the focus here is on three elements that are both uncontroversial and of particularly relevance.
prioritisation of social justice, resulting in some level of increased market involvement in the delivery of government services, for example, via the expansion of Private Finance Initiatives (Wilks-Heeg 2009, Toms, Beck & Asenova 2011). Cameron’s coalition government has pursued a more vigorous agenda on this front, declaring in the Conservative Party’s 2010 general election manifesto that their election would represent a shift “from big government to Big Society” (Conservative Party 2010: vii), pledging to reduce regulation (2010: 20), encourage private investment, including in the low carbon economy (2010: 31), and increase the overall share of the economy held by the private sector (2010: 23). To date, this commitment has been articulated via increased private sector involvement in the delivery of a range of public services, including health (see Davies 2013), policing (see Jones 2012b) and the postal system (see Parker 2014b).

• Lower Marginal Tax Rates

Secondly, neoliberal governments usually support lower taxes on individuals and businesses on the grounds that, again, markets are better at allocating funds than the state. Lower marginal tax rates are generally supported by neoliberal administrations as a means of stimulating the economy via supply-side measures. The broad impact of New Labour tax and benefit policy over their three terms was a net increase to government accounts, progressively distributed (see Browne, Phillips 2010). By contrast, the 2010 Conservative general election manifesto made repeated references to low taxes, particularly for business (see Conservative Party 2010) with the 2013-14 UK budget cutting income taxes, council taxes and the main rate of corporation tax in a manner which, when considered alongside welfare cuts, has a generally regressive impact (see Joyce, Phillips 2013). It should be further noted that one notable increase to the marginal tax rate made by Conservatives – the 2010 uplift in the rate of VAT from 17.5% to 20% – is, if not inarguably regressive (see Crossley, Phillips & Wakefield 2009, Murphy 2010), certainly likely to be less progressive than an equivalent income tax.

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15 This is a necessary simplification; for more discussion of the Third Way as enacted by New Labour, see Giddens (1998) and Powell (1999).
16 Though as Gingrich (2011) explains, markets in the welfare state can take many distinct forms.
Thirdly, neoliberal policies tend towards the limitation of government budget deficits. The reasoning for this links into those principles of the philosophy already discussed, that the role of government should be restricted, with a consequent reduction in the level of public expenditure. Reduction of the national debt (for which New Labour were blamed) via deficit reduction was central to the platform on which the Conservative Party ran for election, with a pledge to “cut wasteful government spending to bring the deficit down and restore stability” (Conservative Party 2010: 7). Following the general election, the coalition government undertook a comprehensive spending review across all departments that, as already discussed, led to the Hills Fuel Poverty Review. The coalition government’s target to “achieve cyclically-adjusted current balance” (HM Treasury 2010a: 1) was originally forecast to end in 2015/16; however, the 2012 Autumn Statement indicated that the expected period of austerity had been extended into 2017/18 (see Osbourne 2012). The coalition government’s commitment to reducing public spending has to date resulted in dramatic cuts across government (see Jones 2012a), including the pursuit of £20bn in savings to the NHS by 2015 (see DoH 2010) and £22bn in welfare expenditure savings by 2014-15 (see CPAG 2013).

2.2.2 Policy Evolution

The primary research focus of this thesis is analysis of fuel poverty policies. The specifics of such policies and relevant legislation are clarified in subsequent chapters as appropriate, however, it is it is useful at this preliminary stage to clarify which policies have been identified as targeted at fuel poverty alleviation in order to provide the level of familiarity necessary going forward. The task of identifying these policies is not so straightforward as one might assume. Whilst fuel poverty is frequently mentioned in policy documents, it is rarely stated as an explicit aim of any policy, and there is no official document that clarifies which defined policies are expected to contribute to fuel poverty mitigation (as is discussed in Chapter Four). Within this

17 Though this ‘Nicholson Challenge’ pre-dated the coalition government (see Wollaston 2013), the Health and Social Care Act 2010 expands the role of the private sector in achieving efficiency gains (see Davies 2013).
work, drawing upon the basis of the LIHC fuel poverty definition, ‘fuel poverty policies’ are defined as those legislated activities for which official documentation indicates that they sought (or seek) to support low income households in a manner specifically related to the reduction of energy costs. With regards to the latter factor, two primary types of intervention are available to policy makers:

- *Technical interventions* are those physical measures that reduce the amount of energy required in order to meet required heating standards. These could include, for example, improvements that lower the heat transfer coefficient (U-value)\(^{18}\) of the building envelope, or the installation of more efficient water or space heating systems.

- *Economic interventions* are those monetary measures that either supplement the income of households (with the specific intent of improving fuel affordability) or reduce the cost of energy, e.g., via a direct rebate to the bill.

Furthermore, for the purposes of this work, policies are divided into two distinct classifications:

- *Supplier-led policies* are those policies based upon energy suppliers delivering a legally obligated level of activity; these are often termed ‘supplier obligations’. Government then monitors delivery success.

- *State-led policies* are those policies where activity is delivered (or procured) by central government directly.

This division informs the analytical approach taken in this work; this is discussed further in the next chapter. Note that both intervention and policy types are also directed at non-fuel poor households, often within the same programme. This work is focused specifically upon delivery directed at fuel poor households. Figure 2.6 gives an overview of fuel poverty policies since November 2000, when WHECA formalised fuel poverty eradication as a policy objective (some earlier initiatives are discussed in Chapter Four). Consideration here is restricted to supplier and state-led national-level English policies through September 2013; this constraint in scope is discussed further in the next chapter.

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\(^{18}\) The heat transfer coefficient, or ‘U-value’ is a quantitative measure of heat transfer, or heat loss. A low value indicates that the building elements resist thermal transfer, i.e., are more efficient to heat. Thus adding insulation to a wall might be expected to lower its U value.

**Figure 2.6: Overview of English fuel poverty policies, November 2000 - September 2013**
Two prominent programmes are perhaps notable omissions from Figure 2.6, but do not meet the stated criteria. Firstly, local authorities (LAs) have since 2000 been obligated to ensure their stocks of social housing meet the Decent Homes Standard, which includes a requirement that public sector housing provide a reasonable degree of thermal comfort (for more details, see DCLG 2006). A 2010 report by the National Audit Office concluded that the Decent Homes Programme had been broadly successful, with 14.5 per cent of social housing ‘non-decent’ in 2009, down from 39 per cent in 2001 (following spend of £29.37bn) (see Morse 2010). The corresponding delivery of energy efficiency measures saw the average SAP rating of social housing increase by 5.9 points in the period 2001 to 2007 (against four points for housing in the private sector) (Morse 2010: 34). Analysis undertaken for this project (reported in section 5.2.1) found that households living in social housing are less likely to be fuel poor than the wider population, despite the strong likelihood of such households being low income; the Decent Homes Programme has no doubt contributed to this. Whilst the Decent Homes Programmes has indisputably had a positive effect on energy affordability, it was not a state-led policy in the manner described previously: the state set the standard, but LAs drove activity.

Secondly, whilst WHDS is the first legally mandated supplier-led economic programme, its clear precursor was the 2008-2011 Voluntary Agreement under which the Big Six energy suppliers pledged to assist vulnerable and fuel poor customers. Over its three-year duration, suppliers spent £488.7m on initiatives including rebates, trust funds and energy efficiency initiatives (see Ofgem 2011b: 4). Around 70% of Voluntary Agreement expenditure was through offering social tariffs (building on Ofgem 2004), which enabled eligible households to purchase energy at unit rates at least as low as the supplier’s cheapest direct debit tariff (Ofgem 2011b: 15). Again, though, whilst all Big Six suppliers opted to participate in this programme of activity, it was not mandatory.

2.2.3 Current Policy Approach

As illustrated in Figure 2.7, until January 2013 a progression of supplier obligations were delivered alongside Warm Front, the state-led technical scheme. From that
point, ECO became the only technical scheme in operation. Table 2.2 offers more detail on those policies active after January 2013.

**Table 2.2: English fuel poverty policies active after January 2013**

<table>
<thead>
<tr>
<th>Policy</th>
<th>Period active</th>
<th>Description</th>
<th>Agent tasked with delivery</th>
<th>Responsible governmental department</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical Interventions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Company Obligation (ECO)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Saving Community Obligation (CSCO)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Heating Cost Reduction Obligation (HHCRO)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Economic Interventions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold Weather Payments (CWPs)</td>
<td>1986-</td>
<td>Payments made to low income households during periods of cold weather.</td>
<td>Government</td>
<td>DWP</td>
</tr>
<tr>
<td>Winter Fuel Payments (WFPs)</td>
<td>1997-</td>
<td>Payments made to all households meeting age-based criteria.</td>
<td>Government</td>
<td>DWP</td>
</tr>
<tr>
<td>Warm Home Discount Scheme (WHDS)</td>
<td>2011-2015 (anticipated)</td>
<td>Rebates on energy bills applied to qualifying low income households.</td>
<td>Energy suppliers</td>
<td>DECC</td>
</tr>
</tbody>
</table>

CERO is included here as an element of ECO, however, it does not target low-income households and so does not meet the definition of a fuel poverty policy applied in this work; this is discussed further in section 3.2.2.

Based upon compilation of sources: (DECC 2012j, Kennedy 2010, Kennedy 2013b, DECC 2011h)
ECO is one element of a broader programme of changes to energy policy introduced by the coalition government under the auspices of the *Energy Act 2011*, including the Green Deal, the coalition government’s flagship energy efficiency policy, of which ECO is a component. The mainstream element of the Green Deal is a pay-as-you-save scheme to fund energy efficiency improvements, touted as “the biggest home improvement project since the Second World War” (see DECC 2011j). Both the Labour and Conservative parties included similarly styled energy efficiency financing measures in their 2010 general election manifestoes (see Conservative Party 2010: 93, Labour Party 2010: 8:4) and the launch of the Green Deal was confirmed in the 2010 Spending Review (HM Treasury 2010b: 61). The principle is that eligible households can receive a loan towards the installation of an energy efficiency measure that is effectively an advance on the financial savings they are expected to enjoy from that technology, with this sum then paid back over a period of years via the dwelling energy bill. The idea, then, is that the cost of improvements are eventually repaid by those receiving the benefit, and that the barrier of potentially prohibitively expensive initial financial outlay is removed or reduced. Eligibility, though, is contingent upon measures meeting the so-called ‘Golden Rule’ of the Green Deal; that savings earned must be greater or equal to the cost of installation. DECC (2010c) offers more detail around the operation of the Green Deal mechanism. Despite a £2.9m marketing campaign at launch (see Lloyd 2012), the Green Deal had something of a rocky start, with the Minister of State for Energy and Climate Change, Greg Barker, pushed to defend low take-up (see Murray 2013). A range of criticisms of the scheme design have also emerged, including that the interest rate on loans made is too high, that the Golden Rule relies upon unrealistically high calculations of likely savings, and that the scheme is unlikely to appeal to homeowners who do not live in the property themselves, e.g., landlords (see Vidal 2013, Collinson 2014, Haddon 2013).

In developing the Green Deal, the government recognised a need to drive delivery of measures to low income and vulnerable households given the likely reluctance of those households to self-finance (DECC 2012h: 191) and the potential for such households not to meet the Golden Rule because they may consume less energy in order to save money (DECC 2011i: 120). The HHCRO and CSCO (‘Affordable Warmth’) elements of ECO are designed to fill this gap by providing subsidised measures to low income households (see DECC 2012h: 4). The primary interaction
between ECO and the Green Deal pay-as-you-save mechanism applies to the CERO element of the scheme, which considers hard-to-treat homes for which required measures might be too costly to meet the Golden Rule; in this instance, the homeowner may apply for additional financial support under ECO CERO to meet the cost difference (see DECC 2012h: 21). ECO CERO is particularly focused towards the delivery of Solid Wall Insulation (SWI) and hard-to-treat Cavity Wall Insulation (CWI), the measures which have been identified repeatedly as offering the greatest technical potential for savings (see Element Energy/EST 2013: 75-77). The mainstream Green Deal and ECO CERO are not, then, aimed specifically at low income households, and as such do not meet the definition of a fuel poverty policy used in this work. Accordingly, the focus of this research with regards to ECO is on the HHCRO and CSCO elements of the scheme, as these are aimed at reducing the energy costs of low income households and can consequently be considered to be fuel poverty policies.

The overall ambition of the Green Deal and ECO represents a significant reduction on previous supplier obligations. Rosenow and Eyre (2012) show that, considered in terms of projected annual carbon savings, the current programme is on par with EEC 2 (which ran from 2002 to 2005), with an expected impact around a quarter of that of CERT and CESP (see Figure 2.7).

Source: Adapted from Rosenow and Eyre (2012: 4).

Figure 2.7: Changing ambition of energy efficiency programmes in the UK
2.3 Interacting Policy Priorities

This thesis is focused primarily on fuel poverty mitigation as a goal of policy. However, there are three other policy areas with which fuel poverty policies have considerable interaction; carbon reduction, energy security, and the promotion of health and wellbeing. This section discusses the interaction of fuel poverty reduction with those other objectives, identifying potential tensions where policy goals conflict.

2.3.1 Carbon Reduction and Energy Security

Energy affordability constitutes one element of what has been termed the energy ‘trilemma’, as illustrated in Figure 2.8.

![Figure 2.8: The energy trilemma](image)

Based upon various accounts: (WEC 2013, Pond 2013, E.ON UK 2014a)

The trilemma characterises current energy policy challenges. The three elements – energy affordability, environmental objectives and security of supply – represent policy goals. As the resources available to policymakers are finite, they will face choices as to how these are balanced, and compromises will be necessary. So, for example, shifting supply to 100% domestic renewables would reduce carbon emissions and enhance security of supply, but would likely come at an enormous cost to bill payers. The World Energy Council (WEC) recommends that governments seek to maintain a balanced profile in managing these elements, and release annual
In addition to fuel poverty eradication targets, UK government is committed under the *Climate Change Act 2008* to “ensure that the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline” (s. 1(1)). The UK is also under international scrutiny as a party to the Kyoto Protocol to the United Nations Framework Convention on Climate Change (1998), and to European Union ‘20-20-20’ climate and energy policy targets (see European Commission 2014). UK government also seeks to maintain energy security, to “minimise the risk of any unplanned interruptions, whether from severe weather, malicious attacks, technical failure or industrial action.” (DECC 2012g: 1). Improvements to the energy efficiency of the UK housing stock can support the achievement of all three elements. In addition to potentially reducing the fuel costs of low income households, energy demand reduction has been identified as a more cost effective means of reducing carbon emissions than investing in new supply technologies (see Eyre et al. 2011). Reducing fuel demand can further support supply security by minimising dependence; DECC identifies energy efficiency as one of the six ‘pillars’ upon which energy security rests (2012g: 17).

The relationships between fuel poverty mitigation and carbon reduction and energy security might, then, appear unproblematic. However, despite a broad compatibility, there are areas of tension. As LIHC fuel poverty is a relative poverty, its mitigation requires that inequality be reduced, i.e., that fuel poor households be improved at a faster rate than non-fuel poor households (this constraint is expanded upon in the next chapter). However, fuel poor households are not necessarily the most desirable from energy security or carbon reduction perspectives, which would favour households that are high consumers or ‘carbon rich’. Whilst having high costs (as the LIHC definition requires) might imply high usage, as discussed previously, research indicates that the actual usage of low income households tends to be lower than that modelled; Preston et al. (2013c) estimated that the carbon emissions from household fuel of the richest

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19 The WEC’s account of the energy trilemma terms the affordability node ‘energy equity’. However, their methodology bases this metric upon national electricity access and affordability rather than intra-national equality (see WEC 2013; 96-97). LIHC fuel poverty mitigation, in effect, represents a further requirement of equity for low income households upon the ‘affordability’ node.
10% of households are twice those of the poorest 10%. This introduces an ‘opportunity cost’ in carbon terms to improving the dwellings of low income households, i.e., to prioritise low income households in line with the requirements of fuel poverty mitigation would result in lower carbon emissions savings for any given rate of expenditure than would otherwise be possible. There is also the troubling implied assumption that low income households are choosing to save, whilst those on higher incomes could effectively (and problematically) be rewarded for consuming too much. A further tension – one that is core to the notion of an ‘energy trilemma’ – is that many measures designed to reduce carbon emissions or improve energy security are funded via levies on bills, for example, the Renewables Obligation (RO), which added £21 to the typical household electricity bill in 2013 (see Ofgem 2013i). Whilst across-the-board increases to energy prices will not create further fuel poverty under the LIHC definition, they will add to the cost burden from an absolute affordability perspective.

2.3.2 Health and Wellbeing

The association between fuel poverty and negative health and wellbeing outcomes might appear self-evident. However, in practice the relationship is methodologically difficult to clarify and quantify due to the array of confounding factors involved. The link between cold environments and negative outcomes is more straightforward. In 2011, the Marmot Review Team undertook a comprehensive review of the health impacts of fuel poverty and cold homes and compiled evidence that living in a cold environment can exacerbate a range of conditions, including – but not restricted to – circulatory diseases, respiratory problems and mental health, with older people, children and infants being particularly vulnerable (Geddes et al. 2011: 26-29). There is also ongoing evidence of Excess Winter Mortality (EWM) in the UK, an increased rate of deaths during colder months often used as a metric to demonstrate the link between low temperatures and poor health. Figure 2.9 illustrates this relationship for the period August 2012 to July 2013.
Prior research has shown that variance in EWM is subject to a range of explanatory factors including influenza rates, depth and duration of low outdoor temperatures, and level of precautions taken against cold weather (see Curwen, Devis 1988, The Eurowinter Group 1997, Wilkinson et al. 2004). The explanatory power of indoor temperatures – and, by extension, dwelling quality and fuel poverty levels – is harder to establish. Wilkinson et al. found “strong, although not conclusive, evidence that winter-mortality and cold-related mortality are linked to sub-optimal home heating” (2001: 18). Pan–European analysis by Healy (2003) found a similarly inconclusive but probable causal link between the thermal condition of national housing stocks and EWM levels. Liddell and Morris’ (2010) review of studies considering the broader health impacts of specific fuel poverty interventions found limited evidence of resultant improvements to adult physical health, though there were stronger indications with regard to adult and adolescent mental health, and the physical health of children and infants. Overall, Liddell and Morris conclude that the current evidence base drawn from evaluation of energy efficiency programmes is somewhat methodologically limited, with a greater emphasis on perceived (rather than demonstrable) improvements to health. Gilbertson et al. (2012) has further drawn
attention to the many positive impacts reported by householders in receipt of Warm Front measures that were not recorded by the Health Impact Assessment methodology used to evaluate that scheme (Green, Gilbertson 2008). Again, it is emphasised that the causal pathways between fuel poverty, inefficient dwellings, thermal comfort and negative health outcomes are complex, and that approaches to monitoring the impact of energy efficiency schemes should reflect this.

A further, more restricted research base considers the impacts of the inability to afford adequate home heating upon wellbeing more generally. Work by Day and Hitchings, for example, found that strategies developed by older people in dealing with cold had implications for self-esteem tied to ageism (Day, Hitchings 2011, Hitchings, Day 2011). Evidence on the specific wellbeing impacts of cold homes on children is sparse, but analysis of Families and Children Study survey data by Barnes et al. (2008) found a significant association between incidence of inadequate heating and children who reported having nowhere quiet to do their homework; it is suggested that this may be because those households only heat a main living area. Increased levels of worry and stress are commonly associated with heating affordability; in 2013, 59% of all respondents to DECC’s Public Attitudes Tracker survey reported being worried about energy bills (DECC 2013e: 1). A number of evaluation studies have found that participants report improved emotional wellbeing following the installation of energy efficiency measures (see Gilbertson et al. 2006, Shortt, Rugkåsa 2007). It is self-evident that households with high costs and low incomes will face greater constraints in balancing budgets. The use of fuel rationing as a coping strategy has already been discussed; the incidence of households resorting to ‘heat or eat’ as a common trade-off between two costs perceived as flexible (as described by Anderson, White & Finney 2012: 41) has also been documented (see O’Neill, Jinks & Squire 2006, Beatty, Blow & Crossley 2011, Anderson, White & Finney 2012).

Existing evidence indicates a causal link between tackling fuel poverty via improvements to the housing stock and improved health and wellbeing. However, despite these synergies (and few sources of tension\(^\text{20}\)), there is a noted lack of

\(^{20}\) It has been demonstrated that insulation measures could create a risk of overheating (see ARCC CN 2012, Lomas, Kane 2013), with potential negative health impacts, particularly for older people (see
evidence quantifying the demonstrable impacts of energy efficiency interventions, including in terms of economic benefit to the NHS (see Stewart, Habgood 2008, Boardman 2010: 167-168). Professor Christine Liddell has undertaken a number of cost benefit analyses of fuel poverty alleviation programmes (see Liddell 2011, Liddell, Morris & Lagdon 2011). By way of example, analysis of the Kirklees Warm Zone Project by Liddell et al. estimated that, of the £24m total capital investment in that project, twenty pence from every pound would be recouped via health benefits (Liddell, Morris & Lagdon 2011: 32). Taking a different approach, the Warm Front Health Impact Assessment estimated expenditure of £12,905 per life year saved where insulation was installed under that scheme (Green, Gilbertson 2008: 18). However, current evidence of this type is sparse. Recent systematic analysis of international evidence on the health impacts of housing improvements by Thomson (2013) found that opportunities to gather data were often missed when delivering interventions. Further research - ideally capturing the full range of impacts - would support the integration of health and fuel poverty policy objectives, making a potentially compelling argument that investment in energy efficiency is not only socially important but also economically sensible.

2.4 Fuel Poverty Policy Networks

The interactions between sets of stakeholders within policy networks have the potential to shape both agendas and outcomes. Any thorough attempt to apply policy networks theory as a means of analysing the dynamics between key players engaging with fuel poverty policy in England is beyond the scope of this work, however a description of the main stakeholders is helpful in terms of establishing a foundation for the chapters that follow. Figure 2.10 illustrates the primary interactions of key actors in fuel poverty policy as understood by this work, and the remainder of this section then describes how they are perceived for the purposes of this research. This assessment is derived from multiple methodological approaches – particularly literature synthesis and professional engagement – to be described further in section 3.4.

NHBS 2012). Whilst the current evidence on heat-related impacts is more limited than that on cold-related impacts, risk levels are likely to increase as the UK climate becomes warmer.
Numerous academic and policy community events were attended over the period in which this work was undertaken. Inevitably, participation in such events – which included representatives from all stakeholders discussed in this section – resulted in informal exchange of knowledge. In the interests of transparency, a record of events attended is included as Appendix Two.

2.4.1 Central Government

The supreme legislative body for England\textsuperscript{21} (and the UK as a whole) is Parliament, which holds responsibility for passing primary legislation. Central government ministerial departments are then responsible for overseeing the administration and development of policies, including the creation of the secondary legislation that support delivery (i.e., Statutory Instruments) and the negotiation of budgets with HM Treasury (see Jones, Norton 2010). As already discussed, the current UK Government

\footnote{The devolved administrations of Scotland, Wales and Northern Ireland have their own legislative bodies, with differing levels of oversight with regards to fuel poverty (and interacting policies). However, as will be justified in section 3.2.2, the focus of this work has been limited to England.}
is a Conservative-led coalition with the Liberal Democrat party. In this thesis, consideration of central government activity mainly refers to the fulfilment of the requirements of WHECA (though reference is also made to other legislation that sets duties or confers powers, e.g., Utilities Act 2000, Energy Act 2010). The Department for Energy and Climate Change (DECC) is the ministerial department with primary responsibility for overseeing fuel poverty policy, producing the annual statistical reports, managing the current review of fuel poverty policy and supervising the supplier obligated programmes, ECO and WHDS (see UK Government 2014c). However, the current state-led policies, WFPs and CWPs (both of which are benefits supplements), are administered by the Department for Work and Pensions (DWP) via the Social Fund (see DWP 2013b).

2.4.2 Regulator

Ofgem is a non-ministerial government department, which acts as the primary instrument of regulatory governance for energy policy in the UK. Ofgem’s primary objective is to “protect the interests of existing and future electricity and gas customers”, which primarily entails the promotion of competitive markets (see Ofgem 2014h). The management of supplier obligations – both ECO and WHDS – is one of Ofgem’s key responsibilities; they are tasked with assigning individual supplier obligations (serving as ECO Administrator), monitoring compliance against targets and penalising underperformance as necessary (see Ofgem 2014c). Previously, Ofgem also played a role in monitoring and defining the social programmes that suppliers delivered under the Voluntary Agreement. Ofgem are overseen by the Gas and Electricity Markets Authority (GEMA), whose members are political appointees (see Ofgem 2014g).

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22 DECC was only established in 2008; before this time, a number of other departments played a role in fuel poverty policy (the possible impact of changes in this respect are discussed further in Chapter Four). For example, until 2009, Annual Progress Reports on the UK Fuel Poverty Strategy were published by DEFRA, either alone or with the Department of Trade and Industry (DTI), and then the Department for Business, Enterprise and Regulatory Reform (BERR). In 2009 DECC published one final report before they were seemingly abandoned entirely, as is discussed in Chapter Three (see DEFRA/DTI 2003, DEFRA 2004, DEFRA/DTI 2005, DEFRA/DTI 2006, DEFRA/BERR 2007, DEFRA/BERR 2008, DECC 2009).

23 Ofgem’s role has been entirely limited to supplier obligations; they play no role in monitoring CWPs or WFPs, nor did they participate in Warm Front delivery (monitored by the National Audit Office and the House of Commons Committee on Public Accounts, see for example Burr 2009, CPA 2009). They did play a more pronounced role in the earlier supplier obligations, for which they set targets, however, this power was revoked under Utilities Act 2000.
2.4.3 Energy Suppliers

For the purpose of this work, energy suppliers are considered to be that group of for-profit companies established as a result of the *Gas Act 1986* and the *Electricity Act 1989* and licensed by Ofgem for the supply of domestic electricity or gas (see Ofgem 2014a, Ofgem 2014b). That is, not those companies responsible only for generation or import of energy, but those who supply energy directly to households and receive payment for it. More specifically – as is further justified in section 3.2.2 – this research focuses on those energy suppliers who are obligated to deliver the set of national-level programmes under consideration here to fuel poor households – at the moment this is under the ECO and WHDS programmes. The focus of this research is therefore on the so-called ‘Big Six’ energy suppliers who account for 98% of electricity and gas accounts in Great Britain (see Figure 2.11).

![Market share of energy suppliers, Great Britain, December 2012](image)

Source: Ofgem (2013a: 59, 110)
Note: Percentages do not sum to 100 per cent due to rounding.

**Figure 2.11: Market share of energy suppliers, Great Britain, December 2012**

A trade association, Energy UK, exists to represent energy industry stakeholders, commenting on policy and produce research on behalf of their membership.

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24 The terms ‘energy supplier’ and ‘energy company’ are used interchangeably here, in line with common practice.
By Ofgem’s own assessment, the UK energy market is not sufficiently competitive for a number of reasons, including that barriers to market entry and exit are high, customers rarely change supplier, and that the Big Six energy suppliers are also responsible for the majority of generation (see OFT/Ofgem/CMA 2014). Research has indicated that the general public does not trust energy suppliers; one survey undertaken by Ipsos MORI for Ofgem found that 43% of customers did not trust their energy supplier to be open and transparent (Ipsos MORI 2013a: 52). Elsewhere, Ipsos MORI found that 79% of MPs surveyed did not trust energy suppliers to protect the vulnerable from high prices (Ipsos MORI 2013b).

2.4.4 Local Government

Local government in England is undertaken by a system of LAs. Whilst the exact specifics vary between areas, these authorities tend to be responsible at the local level for functions such as housing, waste management, transport and education (see Wilson, Game 1994). LA involvement in energy efficiency policy, and fuel poverty policy more specifically, has been variable, both over time and between different areas. LAs have been obligated since 2000 to deliver energy efficiency measures under the Decent Homes Standard, which includes a requirement that public sector housing provide a reasonable degree of thermal comfort (as discussed in section 2.2.2). LAs are also required, under the Home Energy Conservation Act 1995\(^{25}\) (HECA), to prepare annual reports on the current state of the housing stock in their localities, and on the costs of potential improvements. Under the Local Area Agreements (LAAs) that ran between 2004 and 2010, ‘Tackling fuel poverty’ was National Indicator (NI) 187, and LAs who adopted this NI as part of their LAA were required to report annually on the number of low income households in inefficient homes (DCLG 2008: 51, see Hossain 2009 for an examination of impact). In practice, LA involvement in delivery has been largely discretionary, and whilst some have chosen to deliver their own fuel poverty alleviation schemes (the ambitious Kirklees scheme being a well-known example of such activity, see Liddell, Morris & Lagdon 2011), this is by no means widespread. Probert (2010) found evidence that the discretionary nature of LA involvement impacts on the ability of

\(^{25}\) The coalition government proposed revoking this requirement during the research period, but ultimately opted to retain and revise it (see Cabinet Office, 2012).
individual households to access support. The role of LAs under the Green Deal is similarly discretionary, though DECC have looked at ways of encouraging their participation (see DECC 2011k). Establishing the appropriate role of LAs in fuel poverty alleviation would in itself be a valuable topic of further research. However, such an investigation is beyond the scope of this work, and as such consideration of LAs here tends to be incidental.

2.4.5 Wider Policy Community

The policy networks model proposed by Marsh and Rhodes (1992a) features two broad categories of policy network – issue networks and policy communities – at either end of a continuum. Issue networks are those networks containing a large number of varied types of actor, with the nature of the membership and their interactions fluctuating over time. Policy communities, meanwhile, are more tightly constructed, with a comparatively fixed set of member organisations that tend towards the technocratic and professional. Applying Marsh and Rhodes’ approach, the policy network that engages with, and influences, fuel poverty policy tends toward the policy community end of that spectrum. A core group of professional stakeholders engage substantially with fuel poverty issues, publishing robust research and engaging in public dialogue with government. This group includes National Energy Action (NEA), the Centre for Sustainable Energy (CSE) and the Association for the Conservation of Energy (ACE). A more peripheral group of stakeholders - still tending towards the professional - participate in similar ways, but do not have fuel poverty as a core organisational concern. These include Friends of the Earth (FoE) and the Joseph Rowntree Foundation (JRF). A third group of actors have some form of official (though non-departmental) remit, though the roles performed are extremely varied, e.g., consumer representation by Consumer Futures, independent policy advice from the Fuel Poverty Advisory Group (FPAG). Many fuel poverty stakeholders have been campaigning around the issue for decades, and observation

26 It must be emphasised that the description offered here is not intended as a detailed network analysis, as such an investigation is beyond the scope of this research. However, the particularly professional nature of the fuel poverty policy network means that key actors are prominent in the ensuing account of analysis undertaken. As such, an account of those actors, drawn from the research process (e.g., attendance at events, collection and analysis of grey literature) is helpful to support understanding.

27 As will be discussed in Chapter Four, the work of some of these groups was instrumental in the successful proposal and passage of WHECA.
suggests that often individuals move between organisations within the community. Table 2.3 describes key actors within the fuel poverty policy community as featured in this work.

Table 2.3: Key members of fuel poverty policy community

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Type of organisation</th>
<th>Core focus</th>
<th>Types of activity undertaken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Association for the Conservation of Energy (ACE)</td>
<td>Membership organisation for companies working within the energy conservation industry</td>
<td>Energy efficiency, energy policy, fuel poverty</td>
<td>Campaigning and research</td>
</tr>
<tr>
<td>Centre for Sustainable Energy (CSE)</td>
<td>Charity</td>
<td>Sustainability, greenhouse gas emission reduction, fuel poverty</td>
<td>Advice and guidance, training, energy project management, research and policy analysis</td>
</tr>
<tr>
<td>Committee on Climate Change (CCC)</td>
<td>Independent statutory body established under the Climate Change Act 2008</td>
<td>Climate change, greenhouse gas emission reduction</td>
<td>Provide independent advice to government on matters relating to climate change, undertake monitoring and analysis</td>
</tr>
<tr>
<td>Consumer Futures</td>
<td>Non-departmental public body</td>
<td>Energy policy, consumer advocacy, vulnerable customers, fuel poverty</td>
<td>Consumer advocacy organisation, undertake policy and research activity</td>
</tr>
<tr>
<td>eaga Charitable Trust (eaga-CT)</td>
<td>Independent grant-giving trust</td>
<td>Fuel poverty, energy equity</td>
<td>Funds action and research projects, hosts database of completed work</td>
</tr>
<tr>
<td>Energy Bill Revolution (EBR)</td>
<td>Campaigning group</td>
<td>Fuel poverty, energy policy</td>
<td>Campaigning (advocates a more ambitious approach to fuel poverty mitigation).</td>
</tr>
<tr>
<td>Energy UK (formerly the Energy Retail Association (ERA))</td>
<td>Trade association</td>
<td>Energy policy, energy industry</td>
<td>Representation, campaigning on behalf of energy industry</td>
</tr>
<tr>
<td><strong>Energy Saving Trust (EST)</strong></td>
<td>Social enterprise and charitable trust funded largely by UK Government</td>
<td>Energy efficiency, energy consumption, greenhouse gas reduction</td>
<td>Energy project management, assurance, testing, development of low carbon technology</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
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</tr>
<tr>
<td><strong>Friends of the Earth (FotE)</strong></td>
<td>Charity</td>
<td>Greenhouse gas emission reduction, climate change</td>
<td>Campaigning, part of an international network</td>
</tr>
<tr>
<td><strong>Fuel Poverty Advisory Group (FPAG)</strong></td>
<td>Advisory non-departmental body of DECC, membership includes representatives of stakeholders</td>
<td>Fuel poverty</td>
<td>Advice on policy effectiveness and co-ordination of organisations, produces annual report</td>
</tr>
<tr>
<td><strong>Joseph Rowntree Foundation (JRF)</strong></td>
<td>Charity</td>
<td>Poverty, communities, older people</td>
<td>Social policy research and development</td>
</tr>
<tr>
<td><strong>National Energy Action (NEA)</strong></td>
<td>Charity</td>
<td>Fuel poverty, energy efficiency</td>
<td>Campaigning, research, advocacy, energy project management</td>
</tr>
</tbody>
</table>


**Conclusions**

This chapter has offered an account of the theoretical context for this work, in particular clarifying and justifying the use of the new ‘LIHC’ definition of fuel poverty. Fuel poverty is overtly technical, being based in part on consideration of the physical properties of the dwelling in which a household resides. It might therefore seem that fuel poverty is more objective in nature than other ‘poverties’. However, like any form of poverty, fuel poverty is, to some extent, a constructed concept and the choices made in establishing a definition to be used as a metric in policy maintenance have important implications for the implementation of those policies. As this thesis is primarily concerned with analysis of fuel poverty policies, it is therefore important that the definition, its operationalisation, and any potential weaknesses be clarified from the start. This chapter has further offered an account of the broader political context in which the work is situated, including of the manifested priorities of the current coalition government, a brief overview of previous fuel poverty...
policies, a more detailed account of the current policy framework for domestic energy efficiency, a discussion of major interacting objectives, and a description of the network of stakeholders linked to fuel poverty. Whilst much of this is expanded upon in the remainder of this thesis, the information offered thus far provides the necessary foundation for the next chapter, which details the analytical approach adopted in this thesis as a means of responding to the overarching research question, and the methodological techniques applied in the ensuing work.
3 | Analytical and Methodological Approach

The multifaceted nature of fuel poverty presents challenges in defining a research approach. The overarching research question addressed by this thesis is broad, and requires deconstructing in order to provide an effective outcome. One major decision made in this respect has already been touched upon; the choice to address the work as a comparative policy analysis that considers the two most prominent responsible agents for national-level fuel poverty programmes, energy suppliers and the state.

This chapter explains in detail the analytical approach and research methods applied in this thesis. The first section discusses the choice to approach the overarching research question from a social policy perspective, and the implications of that decision for the work. The second section then discusses further the aims and objectives of this research, and the limitations that have been applied to the scope of inquiry. The third section justifies the choice of policy analysis framework primarily used in this work – that proposed by Patton and Sawicki (1993) – before explaining how it has been applied, along with analytical techniques such as Dunn’s (2012) notion of policy constraints, within the rest of the thesis. The final section details how the research has been operationalised in methodological terms, the types of data used, and the means of analysis.

3.1 A Problem of Social Policy

Fuel poverty mitigation is intrinsically interdisciplinary. Our attempts to combat the impacts of a physical world that is inhospitable to the welfare of human inhabitants has, to date, incorporated technical improvements to the housing stock, political and economic interventions, study of social and environmental implications, and epidemiological research. A coordinated solution to fuel poverty will require contributions from these perspectives and more. Whilst there is by no means any requirement that disciplinary boundaries be strictly observed, for the purposes of this work, the decision has been made to focus on what is primarily the consideration of fuel poverty as a problem of social policy. This section provides a justification for that
approach. In the first instance, an overview of the core concerns of social policy is offered. The manner in which fuel poverty fits into such a conceptualisation – and the implications of the approach – are then discussed.

3.1.1 The Remit of Social Policy

There is no single agreed interpretation as to the remit of social policy, though there does tend to be a fair degree of accepted flexibility with regard to boundaries (see, for example, the different interpretations offered by Marshall, Bottomore 1992, Becker, Bryman 2004, Alcock 2008, Dean 2012). The establishment of social policy as a defined field of academic study is generally attributed to Professor Richard Titmuss, who discussed conflicting definitions in an essay originally published in 1974 (Titmuss 2008). Titmuss observes that whilst perceptions of the purpose of social policy are influenced by political and ideological expectations, definitions tend to include three values-driven objectives; that social policies should provide welfare to citizens, that they should be based on both economic and non-economic objectives, and that they should involve an element of progressive redistribution towards those on low incomes (2008: 144). For the purposes of this discussion, social policy is considered according to the general consensus drawn by those scholars cited above, who broadly agree that social policy is the study of policies that promote social welfare. Furthermore, social policy fulfils Dean’s description of a field of study that is necessarily interdisciplinary and pragmatic (2012: 5). There are numerous comparatively uncontroversial definitions of ‘policy’; Jenkins, by way of example, defines a policy as “a set of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and means of achieving them within a specified situation where these decisions should, in principle, be within the power of these actors to achieve” (1978: 5). However, the notion of what it is to promote social welfare – particularly when this is extended to consideration of how that is best achieved – is more subjective and potentially ideologically driven, thus creating further definitional difficulties whilst also driving much of the academic debate that takes place within the field.

A core element of this discussion – and a fundamental concern of social policy – is that of the appropriate role, responsibilities and limits of the state in addressing
problems of welfare via policy interventions. Perhaps the most prominent manifestation of this is in social policy’s continued focus upon the workings of the welfare state, the system of government policies that in the UK that were originally created in response to the Beveridge Report (1942), which identified five ‘Giant Evils’ in society – want, disease, ignorance, squalor, idleness – and proposed a role for the state in addressing these. The result was what has been called the Keynesian Welfare National State (Jessop 2000), a programme of state intervention that sought to create a system of social protection whilst also providing a means of managing the economy via fiscal measures. It is generally agreed that recent decades have brought a paradigmatic shift away from this form of welfare state towards a ‘competition state’ (see Evans, Cerny 2003, see, Hudson, Lowe 2009: 41-65 for an overview). The ‘winter of discontent’ of 1978-79 under Labour Prime Minister James Callaghan saw trade union strikes that immobilised many public services. Subsequently, the 1979 general election took Margaret Thatcher’s Conservatives to power, bringing a doctrine of neoliberal monetarist policy and commitment to ‘rolling back the state’. This amounts to what Jessop (1999, 2000) christened the Schumpeterian Workfare Post-National Regime, in which state intervention is viewed as inefficient and the role of markets is greatly increased, with social policies made subordinate to economic policy. That approach that was aggressively introduced by Thatcher continued by New Labour (see Cerny, Evans 2004) and is pursued with renewed vigour by the current coalition government, as has already been touched upon in the previous chapter. This paradigmatic shift is one of the core current topics not only of social policy, but also of political economy, and is deeply entrenched in ideological beliefs. The broader political and economic context cannot be disregarded in considering the role of the market in the delivery of fuel poverty policy.

3.1.2 Fuel Poverty in a Social Policy Context

The potential for living in fuel poverty to be detrimental to welfare was discussed in the previous chapter, with risks of negative impacts to health and wellbeing. Poverty alleviation is a common focus of social policy research given the widely established negative impacts on welfare (see Lister 2004, Alcock 2006, Ridge, Wright & Social 2008). Fuel poverty can be seen as a manifestation or cause of at least three of Beveridge’s Giant Evils; squalor, want and disease. Access to quality housing has
also historically been a concern of social policy (see Lund 2011). UK lawmakers have already acknowledged that policy action is necessary to tackle fuel poverty, most prominently by passing *WHECA*\(^{28}\). This recognised that, as Bradshaw and Hutton (1983) argued seventeen years earlier, fuel poor households may be unable or otherwise reluctant to invest in energy efficiency, and that governments need to engage in the sort of redistribution referred to by Titmuss (2008). However, as is discussed in Chapter Four, the limits of this responsibility remain unclear.

Fuel poverty, therefore, can be taken as a social policy problem in the sense that it is a social welfare issue that policies seek to tackle. There is a strong precedent for such a treatment. In one of the earliest academic treatments of fuel poverty, Bradshaw and Hutton argue that, “until everyone lives in adequately insulated, efficiently heated homes, conservation measures must be given priority as a *social policy*” [emphasis in the original] (1983: 264) and register that at that time there was disconnection between energy policy and social policy. Boardman’s (1991) treatment of the subject was, to some extent, a policy approach (as was her 2010 work), and it was a social policy academic – John Hills – who was selected to lead the 2011 review of the fuel poverty definition. Hills identified three perspectives from which fuel poverty is a concern– poverty, health and social wellbeing, and environmental (Hills 2011: 812). The literature review undertaken for this work (some of which has already been reported) found that the latter two perspectives tend to dominate; there is a significant body of work considering the health implications of fuel poverty, and a smaller subsidiary body looking at social wellbeing. A separate area of research considers environmental policies, and some of those authors have also addressed the distributional impacts of policies (this is considered in Chapter Six). There is also a small but focused literature that considers the targeting of fuel poverty policies, including work measuring local incidence of fuel poverty, which is discussed in Chapter Five. However, little academic literature has been found examining fuel poverty from a policy analysis perspective, certainly in recent years. This thesis seeks to fill that gap in taking a core concern of social policy identified previously – the role

\(^{28}\) Boardman (1991: 223) further argues that fuel poverty contravenes Article 25(1) of *The Universal Declaration on Human Rights*, which states that, “everyone has the right to a standard of living adequate for the health and well-being of himself and of his family”
of the state in delivering policies that seek to improve welfare – and applying that perspective specifically to fuel poverty.

This approach has implications for the scope of the work; the focus of analysis is the broad effects of multiple policies at the macro-level. The research design accordingly, is based primarily upon analysis of official documents and nationally representative quantitative data. This work tends away from being overtly theoretical, as a more pragmatic method befits both the approach of policy analysis and the comparatively unexplored (from that perspective) nature of the topic. However, some useful concepts are applied relating to the study of institutions, as befits the level of enquiry, e.g., Marsh and Rhodes (1992b) on policy networks, and Pierson (2000) on path dependency.

3.2 Research Scope

This work responds to an expansive research question, and it has been necessary to more closely define the scope of the inquiry in order that a satisfactory response can be provided within the limitations of a thesis. This section first outlines the aim and objectives of this work, and explains the underlying rationale for these. Then, the main limitations applied to the scope of the research are discussed, and the choices made in this respect justified.

3.2.1 Aim and Objectives

The research reported here was supported by an Industrial Co-operative Award in Science and Engineering (CASE), co-funded by the Engineering and Physical Science Research Council (EPSRC) and E.ON UK, one of the largest six energy suppliers in the United Kingdom. The work responds to the overarching research question, ‘What role is appropriate to the energy supplier in alleviating fuel poverty?’ The broad question was devised by E.ON UK, alongside the supervisory team at Loughborough University. E.ON UK had recognised that their role, in common with other energy

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A member of staff from E.ON UK attended project meetings regularly and offered guidance and support (e.g., with regard to access issues), but did not seek to influence or repress findings in any respect.
suppliers, was evolving with regards to fuel poverty and a previous project – Challenge 100 – undertaken in partnership with Loughborough University had focused on this at the implementation level. In the Challenge 100 project, E.ON UK sought, via a range of interventions, to eradicate fuel poverty for 102 households (see E.ON UK 2010). The project involved a range of stakeholders and one of the goals was to establish what role E.ON UK, as an energy supplier, could best play in fuel poverty alleviation projects on the ground. The follow-up research reported here looked to examine the same broad research question but from a policy analysis angle. Some of the more academic reasons for such an approach have already been discussed. From a more pragmatic perspective, the work coincided with major changes to fuel poverty policy made by the coalition government, elected five months before research began. As such, the timing of the project was apposite for a critical analysis of emergent policy strategies. This question is by no means new, with two of the earliest academic considerations of fuel poverty highlighting the need for the role of energy suppliers to be clarified (Bradshaw 1983, Boardman 1991: 163). However, whilst the shape of the industry has changed substantially since those works were published, but the issue remains unresolved.

Ultimate responsibility for fuel poverty mitigation falls to government, as it holds ultimate responsibility for ensuring WHECA is fulfilled. However, government is also able to define, via policy, how it chooses to meet this obligation. It is here that suppliers may play a role, as government is empowered to obligate suppliers to promote energy efficiency (a capability first granted under section 41 of the Electricity Act 1989), and to levy fines for non-compliance of up to ten per cent of global turnover (see Utilities Act 2000, s. 59; s. 95). To date, two clear groups of national-level fuel poverty policies can be identified, as already discussed in section 2.2.2. Hill and Bramley (1986: 103-105) describe models of state and market division of policy delivery along a continuum, which serves as a helpful descriptive tool. The first group of policies, classed here as ‘state-led’, are those where the state is either at the far end of that continuum as sole delivery agent (as is the case for CWPs and WFPs), or engages in what Hill and Bramley describe as “state purchase of packaged services” (1986: 104), e.g. the model used for Warm Front whereby government decided which households were eligible and what level of support should be given, and then simply procured that provision from private companies. The second group,
described here as ‘supplier-led’ fall nearer the other end of the continuum, meeting Hill and Bramley’s classification of “state as regulator,” a scenario whereby, “the relationship is legalistic rather than financial” (1986: 105). As will be discussed in section 7.1.2, there are some unusual elements to the particular form of supplier obligations, notably their ability to trade obligations, and that the obligations are in an industry that is separate to, even in conflict with, their primary activity. However, Hill and Bramley’s descriptors are otherwise fitting. Effectively, supplier obligations are a policy instrument that government use as a means of transferring their legal obligations towards fuel poverty eradication. As shown in Figure 2.6, both economic and technical measures have been delivered under each model, and in recent years there has been a clear shift towards supplier obligations, as articulated in the 2010 Spending Review; “DECC will develop innovative ways of working with the private sector, acting as an enabler rather than the default provider.” (HM Treasury 2010b: 62).

In the context of this shift, the decision was made to interpret the overarching research question as considering the appropriate role of the energy supplier by comparison to that of the default agents of responsibility, the state. A comparative research design was therefore selected, comparing energy supplier and state delivery of policy with a view to establishing which is more appropriate to the legislative goals of WHECA. As such, the aim of this work is to compare energy supplier and central government delivery of fuel poverty alleviation policies. In summary, this research critically evaluates current fuel poverty policy with a view to establishing whether a supplier-led approach is likely to be more or less effective than a state-led approach in reducing LIHC fuel poverty30. Figure 3.1 shows, in matrix form, where both the state and suppliers have delivered technical and economic schemes and – accordingly – the main sources of comparison explored.

30 The Hills Fuel Poverty Review, which took place alongside this work, also applied a comparative approach in some of the analysis undertaken of policy options (see Hills 2012).
Achievement of this broad aim is supported by four more defined research objectives. The first objective is to determine and describe the processes by which energy suppliers and central government deliver fuel poverty alleviation policies. Policy delivery is a complex endeavour, and it is a necessary first step to establish how this is designed for the schemes under consideration. The second objective is to identify where and why structural differences exist between energy supplier and central government delivery of policies. Having mapped out policy processes, the next step in assessing the comparative efficacy of two different delivery agents is in identifying differences that are likely to have an impact, and understanding the reasons for these. The third objective is to evaluate the likely impact of differences upon the level of fuel poverty mitigation achieved by policies. Having established where and why policy approaches differ between agents, the next step is to consider the relationships that exist between those areas of difference and fuel poverty eradication. The fourth objective is to explore the political and environmental drivers and implications of delivery agent choice. As already discussed, fuel poverty policy does not exist in a vacuum. Whilst fuel poverty eradication is the main focus of this investigation, it is
also valuable – and in some instances necessary - to reflect upon the ways in which political and environmental priorities interact with delivery agent choice.

In summary this research responds to the following research question, aim, and objectives:

**Research Question:**
- What role is appropriate to the energy supplier in alleviating fuel poverty?

**Aim:**
- To compare energy supplier and central government delivery of fuel poverty alleviation policies.

**Objectives:**
- Determine and describe the processes by which energy suppliers and central government deliver fuel poverty alleviation policies.
- Identify where and why structural differences exist between energy supplier and central government delivery of policies.
- Evaluate the likely impact of differences upon the level of fuel poverty mitigation achieved by policies.
- Explore the political and environmental drivers and implications of delivery agent choice.

One important decision made in framing the overarching research question was the choice between referring to the “eradication” or the “alleviation” of fuel poverty. This decision was not made lightly, and the wording was not finalised until late in the research process. *WHECA*, crucially, refers to eradication of fuel poverty (“as far as [is] reasonably practicable”) (s.2). However, as will be discussed in section 4.3.1, that target was undermined – arguably fatally – by a 2008 judicial review. More recent re-evaluation of policy has seen the government explicitly rejecting eradication as a goal of policy (see DECC 2013j: 12-13), effectively framing the target as one of
alleviation. In such a context, the choice to use “alleviation” in both the overarching research question – and, by extension, the thesis title – might be read by those fighting to keep the focus firmly on eradication as an acceptance of that downgraded ambition. It should be made clear, then, that the choice is intended, firstly, to emphasise that government have effectively abandoned a legally binding policy commitment. Secondly, the title wording reflects the ultimate conclusion of this work: that, considering specifically the role of the energy company, any policy programme in which suppliers are required to take a leading role is unlikely to result in the eradication of fuel poverty for at least another generation. The choice, then, should be read not as an acceptance, but as a reflection of the government’s increasingly limited commitment to fuel poverty policy, as detailed throughout this thesis.

3.2.2 Defined Limitations

As in all research, certain limitations to the scope of this work are inevitable, detailed below.

- Timescale

This work was been undertaken during a time when English fuel poverty policy has been undergoing substantial revision. Table 3.1 presents a timetable of policy changes that have occurred, and their proximity to the main research period of this work.

Table 3.1: Policy changes occurring over the main research period, October 2010-October 2013

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>UK General Election, Coalition Government formed.</td>
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<tr>
<td>October</td>
<td>Commencement of research.</td>
</tr>
<tr>
<td></td>
<td>Publication of Spending Review confirms Green Deal, re-evaluation of fuel poverty definition.</td>
</tr>
<tr>
<td>2011</td>
<td></td>
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<tr>
<td>March</td>
<td>Hills Fuel Poverty Review commences.</td>
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<tr>
<td>April</td>
<td>Launch of WHDS.</td>
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<tr>
<td></td>
<td>Government consultation on the Green Deal and ECO opens.</td>
</tr>
<tr>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>Government response to consultation on Green Deal and ECO published.</td>
</tr>
<tr>
<td>Month</td>
<td>Event Description</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>September</td>
<td>Consultation on changes to fuel poverty definition opens.</td>
</tr>
<tr>
<td>2013</td>
<td>January: Warm Front, the national Exchequer-funded energy scheme targeted at low income households, closes.</td>
</tr>
<tr>
<td></td>
<td>Launch of Green Deal and ECO.</td>
</tr>
<tr>
<td>May</td>
<td>Fuel poverty statistics methodology published reflecting Hills Review definition.</td>
</tr>
<tr>
<td></td>
<td>Government response to consultation on changes to fuel poverty definition published, with the LIHC definition adopted subject to minor adjustments.</td>
</tr>
<tr>
<td>August</td>
<td>Further revisions to the fuel poverty methodology published.</td>
</tr>
<tr>
<td>October</td>
<td>Conclusion of data collection period.</td>
</tr>
</tbody>
</table>


Note: Unshaded cells relate to the policy process or other external event; grey shaded cells relate to the research process.

As Table 3.1 demonstrates, this project has taken place against a background of significant change, with a mixed impact. Some elements – such as the changing of the official definition of fuel poverty midway through the project and the introduction of major new policies – have presented substantial challenges in terms of producing work that will retain relevance into even the near future. However, in some respects the timing has been beneficial; with fuel poverty policy receiving renewed political attention, the relevance of this work has been reaffirmed, new data have been made available for consideration, and this thesis takes the opportunity to be amongst the first pieces of academic work to offer analysis of a fresh approach. Politics is a process, and current policies were being refined even during the writing up period (e.g., the consultation on the future of ECO launched in March 2014, see DECC 2014f). The lengthy policy process was helpful in enabling new evidence to be considered on an ongoing basis, however, to make thesis completion feasible, a limit was imposed whereby only policy changes occurring within the core research period were included in analysis, i.e., through 30th September 2013. This restriction has also been broadly applied to literature considered, though some later publications have been included where particularly relevant.
• Policies Considered

This research focuses upon those national-level English policies meeting the definition of ‘fuel poverty policy’ as discussed in section 2.2.2, active between January 2013, when ECO came into operation, and September 2013, when data collection concluded. This incorporates all major policies active at the end of the core research period, as already detailed in Table 2.3, making the work somewhat unusual in considering both economic and technical measures (Note that ECO CERO will be excluded from the majority of analysis, as it is not targeted at low income households). However, consideration of earlier policies is integrated where it can add value to the comparison being made. Most prominently, the now-defunct Warm Front remains the only state-led energy efficiency scheme, and so is taken as a basis for comparison. Due to practical limitations, consideration is limited to technical and economic interventions, as described in section 2.2.2. This means that programmes such as Fuel Direct, schemes looking to change energy consumption behaviour, and the impact of building regulations are not considered. Whilst the Decent Homes Standard remains active, as a Local Authority programme, it will not be evaluated, only used as evidence where appropriate. The same applies to the Voluntary Agreement, which has now concluded but was the clear predecessor of WHDS (though the potential of social tariffs is considered in detail in section 7.2.3). Energy efficiency measures considered are limited to those provided under these policies (see Ofgem 2014e), with a resultant focus upon thermal retrofit and heating system upgrades as opposed to more advanced measures or appliance replacement.

• Geographic Boundaries

The United Kingdom is currently the only country in which the government has a legal obligation to tackle fuel poverty. The UK is a sovereign state made up of three legal jurisdictions; England and Wales, Scotland, and Northern Ireland. The

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31 I.e., as policies seeking “to support low income households in a manner specifically related to the reduction of energy costs.”
32 The combination of policies considered in this research is validated by the fact that other researchers have generally identified the same group, e.g., Hills (2012: 16), Jansz and Guertler (2012).
33 Retrofit is particularly important in the UK given that an estimated two-thirds of the 2050 housing stock is already standing (see Boardman et al. 2005: 5).
geographical extent of \textit{WHECA} is limited to England and Wales, though Wales has its own legislature that has some degree of jurisdiction over delivery. Some suppliers and policies are active across the United Kingdom, but there remains some variation, particularly with regard to Northern Ireland. Furthermore, Scotland and Northern Ireland have not yet adopted the LIHC definition of fuel poverty\textsuperscript{34}. Accordingly, for the purposes of this work, Scotland and Northern Ireland are excluded from consideration. Furthermore, Wales has been excluded for practical reasons; the data used for the quantitative element of this research, the English Housing Survey (DCLG 2013c) relates, as the name suggests, only to the English housing stock, and no similar accessible dataset exists for Wales (or, for that matter, Scotland or Northern Ireland). With this in mind, this work should be taken as applicable only to England. However, given the economic, political and geographical similarities between the countries as well as the correspondences in policy approaches applied, the findings of this research are likely to have some bearing beyond England; the extent to which they can be generalised are discussed in the concluding chapter.

- Institutional Structure

For the purpose of this research, it is assumed that the institutional structure (as laid out in section 2.4) will remain broadly unchanged, i.e., it is assumed that the same actors will remain in place, with no substantial changes to the system described thus far (such as the renationalisation of domestic energy supply) or the broad roles of actors described previously.

- Characterisation of Energy Suppliers

As this work evaluates supplier obligations, it follows that only obligated suppliers\textsuperscript{35} should be considered. Suppliers are obligated to deliver ECO and WHDS if they have

\textsuperscript{34} Historically, the devolved administrations have used the basis of the 10pct definition, but have operationalised it differently, or selected different targets (see Scottish Executive 2002, DSDNI 2004, WAG 2010).

\textsuperscript{35} Under CESP, all electricity generators, whether or not they were also suppliers, were subject to a delivery obligation, (Ofgem 2009: 2). However, generators are not obligated under ECO and are not a focus of this work.
over 250,000 customer accounts. Currently, the only obligated suppliers are the Big Six and – under ECO – one much smaller company, First Utility (see Ofgem 2013c). Whilst exact customer numbers appear not to have been published, First Utility’s Chief Executive Officer (CEO) reported in October 2013 that the firm then had 200,000 accounts (see Cave 2013), comprising less than 1% of the energy market (making them approximately 10% the size of the next largest firms, see Ofgem 2013a). Furthermore, a number of other smaller suppliers have opted in to delivery of WHDS (see UK Government 2014d). Obligation levels are informed by company size, and so smaller suppliers should not bear a larger burden. Whilst the findings of this work may apply to suppliers regardless of size, the natural focus is upon the Big Six companies that account for 98% of delivery, and specific implications for smaller companies are not considered. This research treats energy suppliers as homogenous. In practice, this is not accurate; organisational cultures and the influence of individuals (particularly those in high-ranking positions) will influence the character of any company (see Handy 1993, Schein 2004). Understanding the way in which firms behave is the subject of an enormous body of academic work (for example, Winter, Williamson 1991, Putterman, Kroszner 1996), however, mapping out inter-firm differences is beyond the scope of this work. In terms of the motivation of firms, this thesis adopts the “theory of the firm” in its simplest form; the assumption, rooted in neoclassical economics, that the ultimate motivation of private companies is the optimisation of profit (for a more advanced discussion, see Spulber 2012). For the purpose of this thesis, only obligated activity is evaluated, though other activity, including that undertaken under the auspices of Corporate Social Responsibility, is considered as evidence where appropriate.

- Characterisation of the State

Catherine Mitchell (2013) has written of “the inevitability of politics in energy policy decisions”; the political character of the state undoubtedly has an impact on the shape of political commitment to fuel poverty eradication and the favoured means of

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36 For ECO, “licensed gas and electricity suppliers that have 250,000 domestic customers or more, and supply more than 400 gigawatt hours of electricity or 2,000 gigawatt hours of gas to domestic customers, in any relevant year.” (Ofgem 2013: 17).

37 Presumably First Utility is only obligated under ECO because their customer base was not yet at 250,000 when WHDS launched eighteen months prior.
effecting change, including the role of the supplier. As with suppliers, the internal machinations of government are hard to access (a second theme of Mitchell’s article), and again, there is a considerable literature dedicated to this subject (Easton 1981, Hill, Ham 1997, Müller, Strøm 1999, Stone 2002, Sabatier 2007). Some level of transparency is ingrained in the UK political process via public debates on legislation, committee hearings and consultations around new policies, all of which are considered in this work. However, inevitably, some decisions are made behind closed doors. It is difficult to assess precisely, for example, exactly the extent to which the government prioritises fuel poverty in comparison to carbon reduction mitigation. Whilst the existence of international carbon reduction targets under the Kyoto agreement might indicate that that this is likely to be the higher priority, it is not clear how this preference might be manifested in policy. An underlying theme of this analysis is consideration of the level of governmental ambition, particularly given competing priorities. While any attempt to fully interrogate the ranking of governmental policy priorities is beyond the scope of this work, it would be remiss to exclude the priorities of government from analysis entirely; the manner in which this is done will be discussed shortly.

3.3 Policy Analysis Framework

William N. Dunn describes policy analysis as:

...a process of multidisciplinary enquiry aiming at the creation, critical assessment, and communication of policy relevant information... draw[ing] on social science methods, theories and substantive findings to solve practical problems.

Dunn (2012: 2)

Dunn further represents policy analysis to be “methodologically eclectic”, characterising the approach as pragmatic, and open to consideration of any source of reliable knowledge as informing assessment (Dunn 2012: 3-4). This depiction agrees with the approach of this work, which looks to apply policy analysis techniques as a means of considering responses to a complex problem to which no single
‘experiment’ or method could provide a satisfactory answer and in which data were often inaccessible.

For the purposes of this work, the six-step policy analysis framework proposed by Patton and Sawicki (1993) has been applied as the primary analytical structure, however, other policy analysis techniques have been used alongside this, most prominently Dunn’s (2012) classification of policy constraints. This section first justifies the selection of Patton and Sawicki’s policy analysis framework over the other options available, and gives an overview of its structure. The remainder of the section discusses in turn each of the applicable ‘steps’ of that framework, and how they are used in the context of this research.

3.3.1 Patton and Sawicki’s Policy Analysis Framework

A substantial literature considers the process of policy analysis, with numerous analytical frameworks proposed by different authors. At the most basic and consistent level, such frameworks identify key elements of the policy process as a means of guiding analysis. Most tend towards the pragmatic, as befits the study of policy as a real-world activity. The value of both quantitative and qualitative methodologies as tools of analysis is also generally accepted. Indeed, as might be expected given the common topic of study, there tends to be significant overlap in the frameworks proposed, and many authors acknowledge the influences of others. However, there are also substantial differences between frameworks in terms of complexity (e.g., the extent to which methods are encompassed), in emphasis, (e.g., whether they are intended for use by academics or practitioners), and in scope (e.g., the scale of consideration). In selecting a policy analysis framework to be used, a thorough review of literature was undertaken and many options considered, including those frameworks proposed by Sabatier (2007), Dunn (2012), Hogwood and Gunn (1984), Hill (2009), and Bardach (2011). It was necessary that the selected framework be suited to the pre-established aims of this work, particularly in that analysis was to be undertaken at the national-level, that the focus was to be a comparison of state and supplier-led policies, and that the analysis was to combine consideration of prospective policies with evidence from retrospective evaluation; whilst policies such as ECO and WHDS are new, evaluation of previous supplier obligations offer a
means of assessing impact. The six-step policy analysis framework proposed by Patton and Sawicki (1993) was selected from the review as most effectively meeting these criteria; Figure 3.2 below gives an overview of the framework.

![Figure 3.2: Patton and Sawicki's (1993) Six-Step Policy Analysis Framework](image)

Adapted from Patton and Sawicki (1993: 53).

Note: Dotted lines are used to indicate iterative nature of the policy analysis process, as approaches are constantly re-evaluated (this research itself being an example of that).

Compared to some other frameworks reviewed, Patton and Sawicki’s model is undeniably minimalist, something the authors themselves recognise in referring to it a “basic” model (1993: 53). However, in the context of this work that simplicity is taken as an asset. A simpler framework enables greater flexibility in application, as less adjustment is required to meet policy-specific needs. Patton and Sawicki suggest their framework as one upon which diverse approaches can be projected: “we expect people who read this book to devise their personal versions of the policy analysis process” (1993: 53). Such a potential is particularly valuable in this work where, as will be explained shortly, the policy process is broken down and stages analysed individually via differing methodologies. A model with too many moving parts would

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That said, based on review of frameworks undertaken for this work, their approach is no more “basic” than many others reviewed, including more academically-focused texts; that characterisation is perhaps more tied to the pragmatic framing of their work, as a guide aimed at practitioners.
be less amenable to such an approach. More generally, Bardach (2011) emphasises simplicity as a virtue in policy analysis given that the effective application of research generally requires that results can be effectively communicated to policymakers, who are often both time poor and non-specialists.

Patton and Sawicki's model is also a rationalist one, conceptualising the policy process as almost mechanical in nature: a problem is identified, solutions established, progress measured. Alternate conceptions of the policy analysis, heavily influenced by post-structuralism (and in particular the work of Michel Foucault), have focused on interrogating the process by which problems are represented by government, and the implications of power dynamics (see, for example, Rose, Miller 2010, Bacchi 2009). Whilst such an approaches undoubtedly offer an important perspective (and have been used to analyse fuel poverty policy previously, see Powells 2009) a rationalist perspective is viewed as more appropriate to this thesis, which is largely concerned with critiquing the manner in which programmes have been enacted rather than the formation of the problem itself.

The remainder of this section explains how the framework has been applied in the analysis undertaken here. Please note that the first step (‘verify, define and detail the problem’) has been subsumed into discussion of the second step (‘establish evaluation criteria’) given that significant discussion of the fuel poverty definition has already been undertaken in the previous chapter. Furthermore, the sixth step (‘monitor the implemented policy’) is excluded as extraneous to the work undertaken here, though outputs from the monitoring of previous policies are included as a means of analysis.

3.3.2 Establishing Evaluation Criteria

Policy analysis literature tends to discern between the descriptive elements of analysis – those that consider the form and consequences of how policy is – and the prescriptive elements – those that make recommendations about how policy should be (see Patton, Sawicki 1993: 23-24, Dunn 2012: 4). This analysis tends towards the former, taking as a starting point the normative assertion of WHECA, to which fuel poverty policies respond, that the government have a duty to facilitate fuel poverty eradication. In line with the overarching research question, fuel poverty prevalence is
taken as the primary metric by which policy alternatives will be evaluated. As already established, the definition applied will be that used by DECC for monitoring purposes as operationalised from August 2013 (see DECC 2013i, DECC 2013h).

However, the change in the fuel poverty definition does present some difficulties in establishing evaluation criteria. Under the 10pct definition, progress towards eradication was weighed against a fixed threshold. Under the LIHC definition, thresholds will shift in line with changes in income levels and in energy costs, including where the latter are lowered due to increased energy efficiency. Thus eradication is inherently more difficult (though not impossible) under the LIHC definition; as national energy efficiency increases, the threshold for ‘high costs’ will move upwards, pushing more households into fuel poverty (see Whitham 2012 on the use of median thresholds). By extension, in order for fuel poverty levels to drop, fuel poor households would need to be the relative beneficiaries of policies; if all households benefited equally from a policy, fuel poverty levels would remain the same. Eradication of LIHC fuel poverty would require either that no household be of a relatively low income, that no household pay relatively high costs, or (most feasibly) that no low income household pay relatively high costs. Furthermore, such a condition would have to be maintained even as the ‘high costs’ threshold rose in response to improvements made. Hills acknowledged in his review that his proposed definition “makes literal eradication of fuel poverty extremely challenging (though not theoretically impossible)” (Hills 2012: 68). The eradication target could, then, be maintained, though achieving this by 2016 is now beyond the realms of possibility under either definition (Hills 2012: 176). At time of writing, the fuel poverty target was being re-evaluated, with DECC contemplating a move to minimum or average standards for fuel poor households:

*We therefore propose focusing our efforts primarily on ensuring that those households who are fuel poor (as defined by the LIHC indicator) attain a certain standard of energy efficiency in their homes. Progress could be measured against an average or minimum standard of energy efficiency for fuel poor households.*

(DECC 2013j: 13)
Further speculation on the form of any future target is beyond the scope of this work. Evaluation therefore focuses on the comparative impact of policies on the level of fuel poverty, and on the fuel poverty gap. However, in recognition of the need for policies to favour fuel poor households in order for progress to be made, equity weighting (see HM Treasury 2011: 91-94) is used to highlight distributional impacts of policies, and the impact across the fuel poverty gap distribution is also used as a measure. Where possible, assessment of policy impact on fuel poverty prevalence is quantitative. However, as will be established, in some respects the opportunity to do this is limited (particularly with regards to energy efficiency measures), and so qualitative assessments are also given.

As discussed previously, the operationalisation of the fuel poverty definition as applied by government (and within this work) is subject to three main limitations; energy price modelling might not register where fuel poor households are on more expensive tariffs; low income households might systematically underuse energy; and some vulnerable households may need to use more than is assumed in modelling. In recognition of these, where applicable, the work will reflect upon the implications, of these assumptions being violated.

It is undeniable that a large element of policy choice is ideological. Whilst this research tends away from normative judgements, it is helpful to consider some of the criteria by which policymakers select an approach. The previous chapter included a discussion of some of the political priorities of the current coalition government. The choice to require greater supplier involvement in fuel poverty alleviation would inherently be in line with current governmental support for market delivery of welfare functions. This work seeks to evaluate the likely impact of policy choice upon the public purse, with its implications for the size of the deficit and tax levels. This information is of interest to policymakers across the political spectrum (the austerity-driven perspective of the current government having already been recorded). However, proponents of fiscal policy are not in favour of spending for spending’s sake; the underlying principle behind Keynesian economics is that increased

39 Use of the LIHC definition has resulted in there being less consideration of factors that influence broader price trends, such as those influenced by Electricity Market Reform (see DECC 2012a), than might have been appropriate in work considering the 10pct definition.
government expenditure can stimulate economic growth. Accordingly, this work also
reflects on the broader economic implications of policy choice, e.g., for employment
and growth.

Section 2.3.1 noted tensions between environmental objectives and fuel poverty
reduction. Advanced modelling of the implications of policies for greenhouse gas
emissions is beyond the scope of this work, though evidence from other studies is
included as available and appropriate. Given these limitations, for the purposes of this
work it is assumed that the policies under consideration prioritise fuel poverty
reduction. However, as a broad consideration of environmental impact, the risk of
policies violating the ‘polluter pays’ principle is considered. This is a general
principle of international environmental law that requires that those creating negative
externalities (such as pollution) pay, proportionately, the resultant costs (see OECD
1972). In considering policies designed to promote energy affordability, there exists
the potential that, for example, reducing the unit price of fuel for certain households
might violate this principle, incentivising greater consumption; evaluation of this risk
will be incorporated.

In summary, evaluation criteria applied are as follows:

**Primary:**
- Impact on fuel poverty levels (by numbers of households and individuals).
- Impact on fuel poverty gap (average and aggregate).

**Secondary**
- Distributional impacts of policies.
- Potential repercussions where actual energy use and prices do not comply
  with modelled assumptions.
- Likely costs of policies to the public purse and broader economic implications
  (e.g., for employment and growth).
- Identification of possible tensions with environmental goals (e.g., violation of
  the ‘polluter pays’ principle).
Other evaluation criteria were considered, and would have been equally valid and worthwhile as means of evaluating policies. For example, social justice, environmental justice, or human rights perspectives could have guided alternate ways of framing criteria. Achievement of environmental goals was strongly considered as a possible criterion, but – whilst considered to some extent within the secondary criteria – it was ultimately decided that the quantification necessary to include this effectively went beyond the scope of the project. The final evaluation criteria were selected after extensive consideration as best reflecting the aims, objectives and scale of the work.

Results of evaluation are reported as appropriate throughout the thesis, and summarised in Chapter Eight, the discussion.

3.3.3 Identifying Alternative Policies

An account has already been given of the policies covered by this analysis. To clarify further, the direct comparisons made are as follows. With regards to economic interventions, the comparison is between a supplier obligated rebate scheme modelled after WHDS, and state benefit enhancements modelled after WFPs and CWPs. With regards to technical interventions, the comparison is between supplier obligations of the type currently exemplified by ECO CSCO and HHCRO, and a state scheme similar to the now defunct Warm Front scheme. However, given that no state technical scheme is currently in effect, further consideration is also given to the form a new state-led programme might take, given the more recent emphasis on market delivery of welfare policies.

3.3.4 Evaluating Alternative Policies

Fuel poverty is a complex policy problem, with alleviation involving multiple, interacting stages. No single research design can effectively respond to the overarching research question\(^{40}\). The analysis structure adopted is reflective of the purpose, with the process broken down into a number of distinct stages that are

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\(^{40}\) Brenda Boardman has discussed how her own doctoral consideration of fuel poverty at the state-level necessitated a similar structural approach; see Liddell 2012.
independently examined. In developing this structure, reference was initially made to the extensive body of literature relating to the policy implementation process (e.g., Hogwood, Gunn 1984, Hill 2009). Whilst, as might be expected, no existing account perfectly fits the policy process as it relates to fuel poverty, considering such theories alongside the existing literature base highlighted a number of distinct elements as worthy of particular focused consideration. These were used to define the structure applied in this thesis, illustrated in Figure 3.3.

![Figure 3.3: Fuel Poverty Policy Process](image)

Existing literature on fuel poverty reflects this emphasis, with state-level whole-system analysis undertaken by Boardman and Hills acknowledging the importance of the elements identified here (see Boardman 1991, 2010, Hills 2011, 2012). Each of these elements are the focus of a chapter of this thesis; however, with a view to avoiding reductionism, findings are then brought together in the final chapter of the thesis, which then offers a unified conclusion.

Within each set of analysis, the procedure followed was guided by the established objectives. First the processes undertaken were mapped out, considering both state and supplier delivery of technical and economic policies. Those processes were then examined to establish where differences existed, and – as far as possible - the reasons for variation. The focus of this work is on major differences between delivery processes, which occur as a result of the nature of the delivery agent\(^{41}\)\(^{42}\). One novel

\(^{41}\) Chapter Four, ‘Establishing Responsibilities’ is somewhat different in scope, as it considers an element of the process in which suppliers and the state play an inherently different role. Nevertheless, it is framed as a comparison; more details of the analytical approach and distinct methodology applied are included in that chapter.
feature of the analytical process used in this work is the application of the concept of policy constraints as a comparative tool. Dunn describes policy constraints as “limitations and obstacles that stand in the way of achieving policy and program objectives” (see 2012: 226). Majone (1974) considers the identification of such constraints as “a crucial step of policy analysis” and argues that one of the key contributions social scientists can make to the policy process is “pointing out all the constraints (economic, sociological, organisational, etc.) which effectively limit the set of feasible alternatives.” Such an approach is valuable in the type of comparative analysis applied here, as a key objective is to map out the differences faced by delivery agents, and establish how they will impact upon outcomes. To this end, Dunn’s classification of policy constraints (see 2012: 226-227) was found to be valuable both as a descriptive tool, and in guiding analysis. Table 3.2 describes Dunn’s policy constraints model as applied in this work.

Table 3.2: Dunn’s (2012) categories of policy constraint

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technological</td>
<td>Dunn termed these ‘physical’ constraints, however, ‘technological’ would seem more appropriate to this context. These are limitations subject to current state of knowledge or technology development. This constraint is less of a factor in this work, though fuel poverty itself is the result of the ongoing technological constraint of a low-quality housing stock that is currently difficult and costly to upgrade.</td>
</tr>
<tr>
<td>Legal</td>
<td>Legal and regulatory constraints. In the scenario considered here, one of the agents, the state, do have some power to amend such requirements, though work begins from an assumption of no significant changes in that respect.</td>
</tr>
<tr>
<td>Organisational</td>
<td>Organisational (and in this interpretation, institutional) structures may limit progress.</td>
</tr>
<tr>
<td>Political</td>
<td>Ideological perspectives, political objectives and competing priorities are likely to impact on policy activity. For the purposes of this work, constraints relating to environmental goals are generally also treated as political.</td>
</tr>
<tr>
<td>Distributional</td>
<td>Distributional constraints are largely disregarded here as a constraint type in itself, as fuel poverty reduction – which requires progressive distribution – is assumed as the objective of policy.</td>
</tr>
</tbody>
</table>

42 In comparing processes, many differences were also noted which were minor in nature, which related to specific technical details or were otherwise clearly independent of delivery agent choice. Such differences are not the focus of this thesis, and are therefore not detailed here.
43 Though the term ‘constraint’ is fairly widely used in policy analysis literature, Dunn’s classification of types of policy constraints is the only one of its type identified via the review undertaken here.
Dunn termed these ‘budgetary’ constraints, as his classification implicitly assumed the public sector as delivering policies. However, ‘economic’ is more apt where suppliers are delivering policy, as their response is to profit margins.

Adapted from Dunn (2012: 226-227).

The strength of constraints is discussed when relevant, though no attempt at quantification is made. Whilst it is assumed that institutional structure remains constant, ways in which constraints might be circumvented are discussed, where they are apparent.

To maintain complete objectivity is extremely difficult⁴⁴, if not impossible, when carrying out social science research. As researchers we can try to mediate the impact of personal influence upon the final argument by reflecting upon our own perspective throughout the process. We must ensure that we draw conclusions from the evidence available, and seek to prevent personal political beliefs from clouding analysis. This is perhaps particularly difficult when researching a subject matter such as poverty, which is inherently political. The process of researching this thesis required a constant interrogation of assumptions on the part of the author so as to try to ensure that all policy options were weighed in as unprejudiced a manner as possible. In this respect, the notion of policy constraints offered an unexpected additional value, particularly as a means of assessing policies against the priorities of the coalition government in an objective a manner as possible. The three core ideological elements identified as guiding the broader undertaking of the coalition (see section 2.2.1) were established prior to analysis with extensive reference to the literature, and then applied as a sort of yardstick in analysis. This proved an effective means of gauging political constraints in a manner that was clearly focused and as apolitical as possible. That said, whilst researchers should strive to ground their arguments in evidence, it is important that we do not neglect our duty to effectively communicate findings, even where they have political implications. This is arguably a particular responsibility when researching a topic with consequences for human wellbeing. The concluding chapters of this research seek to maintain an effective balance in this respect; no judgement is made as to whether the neoliberal project is the best way forward for society overall,

⁴⁴ And, some would argue, not necessarily desirable (see Letherby, Scott and Williams 2012).
but the evidence evaluated in this thesis indicates that its ideological influence on policymaking serves as a barrier to fuel poverty eradication.

Having identified any constraints, the next stage is to consider how these have causal relationships with the evaluation criteria. In respect to fuel poverty, the most obvious impact is where a factor has a clear impact on incomes or fuel costs. However, similar consideration is extended to the other evaluation criteria, e.g., in considering political implications, tensions with environmental objectives, costs to the public purse, etc. Where possible, a variety of methodological techniques are used to consider the impacts of constraints.

3.3.5 Displaying and Distinguishing Amongst Alternative Policies

As discussed above, the approach taken here considers elements of the policy process separately. However, as Brenda Boardman cautions, an entirely “reductionist approach” to fuel poverty policy is likely to be unsuccessful (2010: 190). Accordingly, the final chapters of this thesis draw earlier findings together to present a unified response to the overarching research question. Chapter Eight provides a discussion of findings that spans the entire process, though necessarily separating out assessment of technical and economic measures. It should be noted that the form of this discussion is not one of quantitative comparison; such a response is limited both by the current availability of data and by a lack of transparency around the priorities of fuel poverty policy that enable options to be accurately weighted (Patton and Sawicki (1993: 61-63) discuss this type of limitation). Policy Analysis Matrices and graphical mapping are used throughout the work to summarise findings where appropriate, and the broad implications of policy options, the limits of the work undertaken, and potential areas for future research are discussed.

3.4 Methodological Approach

Having established the analytical framework adopted, this section describes the methodological approach applied, one based upon synthesis of multiple techniques.

45 Consideration of balance between technical and economic policies is beyond the scope of this project.
This section first gives an overview of the research design, justifying the choice of a mixed methodology as appropriate to the research topic, and establishing the manner in which synthesis of secondary data has been applied as a method of inquiry. The methods employed are then discussed in turn.46

3.4.1 Research Design

This research employs a diverse strategy, applying mixed methods to respond to the stated objectives. As already outlined, the analysis of policy has generally tended towards mixed method approaches, applying available evidence pragmatically to assess complex problems. The approach taken here is recognised to tend towards the rationalist and positivistic in the assessment of causal factors linked to fuel poverty prevalence, even in its employment of non-quantitative data. This is largely a function of the conceptualisation of fuel poverty used in the work. The growing ‘measurement culture’ in policymaking (see Hudson, Lowe 2009: 275-277) has led to an increased use of metrics and targets as policy instruments. Fuel poverty policy is no exception to this, and whilst in practice a multifaceted social problem, fuel poverty as framed in policy terms is a constructed metric used primarily as a measurement tool. The metric applied reduces the problem to a latent variable, one measured via a set of observable factors that accordingly infer clear causal inputs (e.g., incomes, dwelling quality). As already discussed, this conceptualisation is shared by this work as a means of reflecting upon government approach to a policy problem.47 However, it is recognised that such a formulation may be inappropriately reductionist or otherwise unsuitable in reflecting the experiences of fuel poor households, and that there is undoubtedly scope for consideration of alternate approaches, i.e., the subjective options mentioned in Chapter Two.48 Furthermore, the institutions that are the object of study are,

46 On a few occasions distinct methodologies are applied within individual sections of this work to specific ends, most notably the analysis of Hansard undertaken in Chapter Four. Where this is the case, those methods are discussed within the relevant chapters for ease of reference.

47 Morçöl and Ivanova (2010) suggest there is a circularity in effect; public policy as taught in academia emphasises positivist approaches, these are transferred into practice when academics become practitioners, and subsequently academic study tends to apply the same positivist approaches used by government.

48 This is not to say that the use of quantitative methods and metrics don’t have a crucial role to play in monitoring progress and promoting equity, only that it is important that they be applied effectively, as argued by Cokley and Awad (2013).
themselves, clearly societal constructions and so some level of epistemological pluralism is necessary.

Mixed methodology refers to the combination of quantitative and qualitative methods within a single research design. This approach is increasingly popular given the potential for different strategies to be complimentary and reinforcing; a mixed methodology enables complex, real-world phenomena to be pragmatically examined via multiple avenues (see Robson 2002: 13-41). Fuel poverty as a topic is perhaps particularly well served by a mixed methods research design, as it considers the manner in which the technical reality of cold homes further exacerbates the experiences of those living in poverty. The focus of this research is upon attempts to respond to the resultant problem via policy. As has already been discussed, the manner in which government considers fuel poverty is strongly quantitative in nature. Policy research is neither inherently qualitative nor quantitative. Whilst measurement by its nature relies on quantitative data, the definition, identification and management of problems draw on both types. The means of measuring progress in fuel poverty alleviation might be quantitative, but the role of policy in tackling fuel poverty is less tied to any notion of an objectively correct outcome; it involves negotiating a constructed political and social reality, and the methodology adopted in researching fuel poverty at the state-level must reflect this. Such a diverse approach is also well suited to a research topic in its infancy; qualitative and quantitative evidence can both help to identify and understand relevant issues.

The question of how to mix methods is in some respects dictated by the analytical approach adopted, comparing policy alternatives to assess likely impacts upon fuel poverty alleviation. Figure 3.4 illustrates the broad design employed; note that only core methods are illustrated, and in practice on occasion there was further cross application.
The procedure can helpfully be divided into two parts; the first describes processes and analyses differences, the second considers the impacts of those differences. The key respect in which methods are mixed in this thesis applies to the latter, particularly with regards to fuel poverty measurement. Mason describes six ways in which mixed methodologies can be applied. The approach described here fits her description of their use to “ask questions about connecting parts, segments or layers of a social whole” (2006: 6-7). Here, the connection between fuel poverty policy approaches and outcomes is being explored. Mason cautions that when integrating methods in this manner, it is vital to ensure that there is a coherent logic to the interaction. In the case of fuel poverty itself, this logic is pre-substantiated as the relationships between elements such as income, fuel prices and energy requirements have been established via the government operationalisation of the problem. Elsewhere, care is taken to describe the relationships, and the use of multiple methods is helpful in reinforcing connections made. Crang (2003) discusses analysis as an active and repetitive process, and that characterisation is appropriate to the approach undertaken here. The
synthesis of multiple methods, including as a means of triangulation, along with the need to reassess analysis throughout the process as new material emerged (including changes to the policies under consideration), meant the process of developing a response to the research question was unavoidably iterative in nature.

3.4.2 Policy Document Analysis

A core requirement of the analysis was a detailed understanding of the operational structure of policies. This proved to be a complex undertaking; this work incorporates a range of scheme types, some of which were under development during the research period. Such activity is comparatively removed from the public realm and highly technical in nature. To this end, policy documents – those materials produced for the purposes of supporting or communicating the implementation or delivery of schemes - constitute a rich source of data. These documents serve as primary instruments of policy, the formal articulations of goals and the means of achieving them, and prove particularly valuable in considering policies during the developmental stages, as this work frequently does, offering points of stability for analysis in an otherwise tumultuous policy environment. Increased emphasis on the use of evidence, engagement and transparency in UK governance has further enabled policy development to be tracked, i.e., via open consultation processes (see Cabinet Office 2013a for an overview of government consultation principles).

Scott (1990) established four criteria that are commonly applied in assessing document quality for analysis: authenticity, credibility, representativeness and clarity of meaning. Whilst official documents are comparatively unproblematic in terms of meeting these standards of data quality, two attributes need to be considered here. Firstly, in terms of credibility, care needs to be taken where documents are evaluative or discursive in nature, for example, consultation documents cannot be taken as giving full insight into the ‘black box’ of the policy development process; whilst they undoubtedly offer a useful insight into the process, it cannot be assumed that they represent it in its entirety. The second issue relates to representativeness. Bryman argues that this is not necessarily a desirable quality in official documents, as “materials like this are in a sense unique, and it is precisely their official or quasi-official character that makes them interesting in their own right” (2008: 521)
However, when analysing such documents it is important to consider what perspective is being represented by the material, as authorship is often attributed to an organisation rather than any individual. This is further complicated where, for example, consultation documents report the input of stakeholders but via the filter of the compiling government department, or in FPAG annual reports, which are based upon the meetings of a diverse committee and declare that opinions shared sometimes conflict (see FPAG 2012: 35). Atkinson and Coffey (2004) advise that the specific purpose and audience for which documents have been produced is of critical importance, both because these factors give the material considered its value, but also in appreciating the limits of what it can tell us.

In this context, policy documents are effectively limited to publications by government departments (primarily DECC) or by Ofgem. The aforementioned increased transparency in governmental processes, along with the rise of e-governance (e.g., the government’s “digital by default” service standard, see Cabinet Office 2013b) has made policy documents increasingly accessible to researchers. Documents are available online relating to the majority of current and some predecessor schemes. Documents from older schemes have been considered as evidence where available. As might be expected, the older the scheme, the harder it is to access relevant documents; schemes that pre-date governmental initiatives towards online transparency tend to have little documentation available. The National Archives hold selected government documents for the permanent record (see National Archives 2014), however, catalogue searches indicated that there was little available with the potential to contribute to this research. The limitations of the data in this respect are recognised, however, this is not seen as unduly problematic given the focus of this work on recent policy. The document collection process was as systematic as possible given ongoing changes to government and Ofgem websites (both underwent complete overhaul during the research period). Publications tend to be issued on a reasonably methodical basis (e.g., annual report updates), and databases were scrutinised for miscellaneous materials. The core types of fuel poverty policy documents are detailed in Table 3.3, though a minimal number of documents did not fall into any of these categories (for example, the Warm Front application form was considered (see Carillion Energy Services Ltd. 2011), as was a one-off open letter written by the Secretary of State (see Davey 2012)).
Table 3.3: Categories of fuel poverty policy documents

<table>
<thead>
<tr>
<th>Document Type</th>
<th>Description/Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Statistics</td>
<td>Annual reports on fuel poverty statistics have been published since 2009; before that time, this information was contained within the annual strategy reports. Statistical outputs are accompanied by methodological guidance for users, which are updated periodically as appropriate.</td>
</tr>
<tr>
<td>Consultation Documents</td>
<td>Documents relating to policies under development, formal means of acquiring stakeholder input. Generally comprised of two stages with separate documents for each; initial proposals and specific questions for stakeholders, and summary of responses, government conclusions, and implications for policy.</td>
</tr>
<tr>
<td>Evaluation Materials</td>
<td>Government and regulators produce and publish evaluation of policies, though not to a fixed schedule. Warm Front was subject to independent evaluation by both the National Audit Office (NAO) and the House of Commons Committee for Public Accounts (CPA) every five years.</td>
</tr>
<tr>
<td>FPAG Advisory Reports</td>
<td>FPAG produce annual reports on progress in delivering the fuel poverty strategy. These are distinctive documents, produced via committee; however, they still meet the broad characterisation of ‘policy document’ used here and demonstrate policy development.</td>
</tr>
<tr>
<td>House of Commons Publications</td>
<td>The House of Commons Library produce and maintain briefing material for Members of Parliament, including research papers and ‘standard notes’ on topical issues. Whilst policy documents in a more tangential sense, these provide a valuable source of information, particularly with regards to older policy activity for which primary sources may no longer be accessible.</td>
</tr>
<tr>
<td>Impact Assessments</td>
<td>Documents linked to the consultation process but more technical in nature, mandatory tools of policy development prepared according to a prescribed template. Impact Assessments usually make direct comparison of a number of policy options.</td>
</tr>
<tr>
<td>Legislation</td>
<td>The laws to which policy ultimately respond, these are made available online.</td>
</tr>
<tr>
<td>Progress Reports</td>
<td>Examples of these include annual reports on Warm Front activity and more frequent publications concerning ECO compliance by DECC and Ofgem.</td>
</tr>
<tr>
<td>Research Outputs</td>
<td>Departments commission research outputs as a means of producing evidence to guide policy decisions.</td>
</tr>
<tr>
<td>Strategy</td>
<td><em>WHECA</em> required the publication of both an initial strategy and “from...</td>
</tr>
</tbody>
</table>
Documents were downloaded directly as PDFs (Portable Document Format) and analysed via the Preview application, which enables freeform annotation of documents. The analysis approach employed a systematic yet pragmatic strategy matched to the objectives of the study and the particular material considered (see section A1.1 for more methodological detail). This was heavily influenced by the thematic analysis approach advocated by Ryan and Bernard (2003), with some themes pre-established based upon preliminary document analysis and review of literature, and others established on emergence. The coding process was broad, with tight textual analysis not generally being appropriate to the types of document under consideration here. It should be emphasised that the material associated with fuel poverty policy implementation tends to be highly technical, making multiple readings a particular necessity. Subsequent analysis matched the description of a “cutting and sorting” processing technique, as described by Ryan and Bernard (2003: 94-96), albeit conducted electronically via text editing software. The primary level of thematic grouping was that reported here as individual chapters. The previously discussed classifications of policy constraints, introduced as an explanatory conceptual tool, also represented important thematic groupings. In describing processes, graphical representations proved valuable as a means of developing ideas, and some of these are reproduced in this work. Established themes were then considered individually in relation to the research question, aims and objectives (see section 3.2.1) and written up as appropriate, with the guidance offered by Ryan (2006) proving particularly useful at that stage.

49 The “strongest response” to the request for general comments on the ECO consultation related to the complexity of the consultation documents and accompanying information (DECC 2012j: 90)
3.4.3 Quantitative Methods

Although it is often difficult to assess policy choices purely numerically, where quantitative assessment is possible, such techniques offer valuable insights as to the potential impacts of alternative strategies. With respect to fuel poverty in England, the principal dataset used in analysis is the EHS, which is unique in providing detailed information linking housing stock condition with data on the circumstances of occupants. This is used by DECC to generate annual reports on fuel poverty statistics (see DECC 2013i), but has also been used by external researchers as a tool of fuel poverty analysis, notably the Hills Fuel Poverty Review (see Hills 2011, Hills 2012), Fahmy et al.’s (2011) mapping of fuel poverty prevalence, and work by CSE and EBR considering the potential costs of fuel poverty eradication (see Preston, Moore & Guertler 2008, Guertler, Preston 2009, Washan 2012).

The quantitative work undertaken here is primarily based upon the 2011 EHS release (DCLG 2013c). A detailed account of the survey methodology for the EHS Housing Stock Dataset\textsuperscript{50} used in this analysis is supplied in the accompanying user guide (DCLG 2013a). This dataset includes data from both a physical survey and interviews with occupants\textsuperscript{51}. The sample is stratified, and taken on a two-year rolling basis (for the dataset use here, this was the period April 2011 to March 2012). Grossing and weighting factors are supplied to enable national level estimates to be made from the initial sample of c.14000 households. The derived datasets provided go through a rigorous editing and imputation process, resulting in a very ‘clean’ dataset with no missing values. In addition, a dataset of fuel-poverty-specific derived variables is included in the release; these form the basis of the official fuel poverty statistics.

This research uses analysis of the EHS dataset as a means of assessing the impact of policy options upon fuel poverty. As previously described, fuel poverty, as defined by the government - and in this analysis - is a latent variable constructed from directly measurable indicators. Where policies affect one of these causal factors, the impact of

\textsuperscript{50} The EHS is comprised of two datasets, housing stock (physical and interview data) and household (interviews only). The former is used here as it includes the data on dwelling condition needed to establish incidence of fuel poverty.

\textsuperscript{51} The housing stock dataset also includes information on the physical characteristics of vacant dwellings; for obvious reasons, these are disregarded when undertaking fuel poverty analysis.
the change upon the output variable, fuel poverty, can be modelled. This process is undertaken here using SPSS, a computer programme for statistical analysis (see IBM 2014). The decision to use the LIHC definition of fuel poverty in this work presented significant challenges in terms of establishing an evaluation metric as it was necessary to replicate the LIHC fuel poverty measure created by John Hills and DECC statisticians. Three years of EHS datasets were released during the core research period, and while the last of these included variables relating to the LIHC measure of fuel poverty, it was still necessary to reproduce the definition from the base inputs in order to allow the effects of manipulating those factors to be modelled. This process proved complex; the definition went through numerous revisions over the course of this research, as minor adjustments were made. As such, establishment of an indicator variable was an ongoing process, undertaken with extensive reference to the reports produced by Hills (2011, 2012) and follow-up methodological guidance from DECC civil servants (2013i, 2013h). Descriptive statistics included in those reports were used to assess the accuracy of replication, and in some instances DECC statisticians were able to clarify the process via email. Table 2.10 shows descriptive statistics comparing outputs from the replicated indicator with the derived variables provided in the 2011 EHS.

Table 3.4: Comparison of replicated fuel poverty variable with EHS release fuel poverty variable

<table>
<thead>
<tr>
<th></th>
<th>Sample</th>
<th>Grossed and Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Replicated Variable</td>
<td>Release Variable</td>
</tr>
<tr>
<td>Total households</td>
<td>14386</td>
<td>-</td>
</tr>
<tr>
<td>Households in fuel poverty</td>
<td>1649</td>
<td>1649</td>
</tr>
<tr>
<td>Individuals in fuel poverty</td>
<td>4550</td>
<td>4570</td>
</tr>
<tr>
<td>Fuel poverty gap (£)</td>
<td>6.42k</td>
<td>6.64k</td>
</tr>
</tbody>
</table>

Note: Where possible, totals were verified with reference to official releases (i.e., DCLG 2013a, DECC 2013h)

Although the number of fuel poor households is the same for both variables, nine cases were misclassified each way, which has an impact upon the grossed and
weighted outputs. Despite best efforts, it has not been possible to resolve these unaligned cases. However, despite these minor discrepancies, the replicated measure is sufficiently aligned with the official measure to enable modelling to be undertaken with the level of accuracy required by this work.

In processing the EHS fuel poverty datasets, the receipt of WFPs and WHDS are imputed (see DECC 2013i). In some of the analysis undertaken, it is reasonable to disregard the receipt of additional support (for example, in assessing targeting efficacy of a policies, it makes sense to do so assuming support is not being received). Whilst it is possible to disregard WFPs, WHDS is imputed using a more complex Monte Carlo simulation technique that cannot be reverse-engineered by users (DECC 2013i: 33). This represents a limitation of the work, however expenditure on the Core and Broader Group elements of WHDS in 2011/12 was £112.3m (Ofgem 2012b: 5-6), 5.2% of the £2.15bn spent on WFP (Kennedy 2013b: 29) and so this issue is a minor one. Where WFP has been disregarded, this is highlighted in the accompanying text.

A further issue encountered in the quantitative analysis process was in the time period under consideration. The collection and analysis process necessary for the EHS means that the 2011 dataset released in August 2013 comprises data collected the period April 2011 to March 2012. As a result, comparison of policy options, including those introduced with ECO, can only be carried out using data predating the introduction of that policy in January 2013. However, it must be emphasised that the goal of the analysis undertaken here is to consider differences between state and supplier delivery at the broader level. Accordingly, examination of 2011 data as a means of analysing 2013 policies is not viewed to be problematic so long as the difference is recorded where it occurs. The statistical modelling of policies is a complex endeavour, and there are innumerable other factors – such as substitution effects, and the influences of other policies – that are beyond what can be considered in this work. Assumptions and limitations within the modelling are explained when reported, but the goal of quantitative analysis in this thesis is only as a means of illustrating the broad effects of policy. Furthermore, attempts to project future impacts of policies are beyond the scope of this work. Further details of specific elements of the quantitative methodology employed are included in section A1.3.
3.4.4 Literature Synthesis

Describing her own doctoral thesis on fuel poverty, Boardman reflects that she, “never thought of doing a chapter called a Literature Review because the whole thing was a literature review” (Liddell 2012: 13). In researching fuel poverty, the synthesis of literature is of particular value given the exceptionally interdisciplinary nature of the problem. This usefulness is intensified in analysis that considers multiple policy responses, as Boardman’s work did and as this research does. The critical analysis and synthesis of existing evidence from a diverse range of fields constitutes a powerful means of assessing the differing impacts of policy options, one that government have notably employed in their own impact assessments\(^{52}\). It has further been suggested that, as policymakers increasingly value evidence-based work, literature reviews present an effective means for policymakers, who are often time poor, to effectively assimilate a body of evidence (see Petticrew, Roberts 2006: 11-12).

A traditional literature review process was undertaken, with the objective of applying a critical analysis of the existing literature base as a means of assessing policy options. Every effort was made to be methodical in this process, drawing from available procedural guidance (particularly Jesson, Matheson & Lacey 2011, Booth, Papaioannou & Sutton 2012)\(^\); however, a wholly systematic approach to review (of the sort described by Petticrew, Roberts 2006) was judged to be ill-suited to the diverse and disparate scope of the research topic and the limits of the existing literature base\(^{53}\). Instead, the process incorporated an initial scoping review, taking in all relevant academic literature relating specifically to fuel poverty (much of this already reported in Chapter Two). As the research entered the analysis phase, further focused searches were undertaken as a means of exploring emergent themes; these are integrated as appropriate into the relevant chapters. In recognition of the way in which fuel poverty intersects with many other topics of research, particular care was taken to pragmatically read around the topic, considering work beyond more the more restricted base of fuel poverty focused literature.

\(^{52}\) See, for example, DECC (2012b).
\(^{53}\) Though such a method is employed as a means of assessing the more contained set of evidence on the costs of interventions, reported in section 6.1.
Contributing to the complexity of the literature synthesis process is the need to effectively incorporate the significant body of relevant ‘grey’ literature into the analysis. Grey literature is “that which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers” (see Grey Literature Report 2014). As a function of their very nature, such materials can be difficult to access via conventional channels. In undertaking the scoping review, it was immediately evident that a large body of such work existed considering fuel poverty that would prove invaluable to the analysis process. The aforementioned technocratic fuel poverty policy community accounts for a significant proportion of this; many organisations produce research, and the work produced by stakeholders tends to be both robust and be published more quickly than that which emerged via academic channels. The grey literature base is also able to be more reactive to policy changes as the publication process is less formal; the launch of new policies over the period in which this work was undertaken resulted in a profusion of additional material being published. News articles and press releases – particularly from trade sources – were used to a similar end, as often these types of media are the main avenues for communicating changes and stakeholder opinion. While there is a value to such rapid responses, this also means that work tends not to have been peer-reviewed, thus it is particularly important, in considering such work, to critically assess the validity of the research, and recognise the potential for authorial bias. As grey literature is not disseminated via conventional channels, it also means that, by definition, systematic collection is more difficult. Efforts have been made to be as methodical as possible in collating grey literature. The primary means of accessing such material is via the websites of those organisations already described in Table 2.2, many of which index their own research publications. These were reviewed on an ongoing basis throughout the research process. However, there is a naturally a pragmatic element to grey literature search, for example, where researcher involvement in fuel poverty networks resulted in documents being passed on informally.
3.4.5 Professional Engagement

A particular barrier to researching energy suppliers is that of access; the desire to maintain commercial confidentiality limits the extent to which companies are willing to share information about, for example, the manner in which cost are recovered, how tariffs are set, and how and to whom products are marketed. Even with E.ON as a co-sponsor of this work, this information remains if not inaccessible, then at least unavailable for publication. Although DECC and Ofgem do publish some statistics on obligation compliance, for the most part the energy supplier remains a ‘black box’. However, E.ON’s involvement did extend to facilitating access to interview subjects (not limited to employees of E.ON) who were able to discuss the practical reality of energy supplier management of fuel poverty obligations (see section A1.7 for more details of interviews and approach). This was valuable in clarifying how suppliers carry out obligations; because although much of the work at the structural level considered in this thesis is prescribed, there remains scope for suppliers to select a delivery approach. It should be noted, though, that as the overall availability of interviewees was limited, their role in the overall project is largely as a corroborative methodology, e.g., in substantiating messages from consultation responses and clarifying the manner in which policies are enacted in practice. Interviews were semi-structured, in line with Bernard and Ryan’s guidance on interviewing ‘elite’ participants (2010: 371), digitally recorded, and transcripts were analysed along the thematic lines previously described. The TAMS Analyzer qualitative analysis tool was selected to facilitate coding, as it is better suited to handling transcripts (see TAMS Analyzer 2012). Access to E.ON employees and partners proved particularly valuable given difficulties encountered in accessing energy suppliers for research purposes; as it is an extremely competitive industry, companies are unsurprisingly unwilling to share information with outsiders, particularly those sponsored by other organisations. To some extent this limitation applied to E.ON as well, and interviewees were keen to highlight where they could not share information because it was commercially confidential. A member of E.ON staff was a member of the supervisory team for the project, and had access to thesis drafts to ensure no sensitive information had been included, however, it must be emphasised that this input did not extend to any censorship of the results.
Privileged access to E.ON meant that in some respects this is a case study of one company. Bryman (2008: 55-56) suggests a number of types of case study: this example is taken to be a ‘representative’ or ‘typical’ case given that E.ON are one of only six major suppliers subject to same legislation and Ofgem guidance, and it is assumed that there is some level of similarity in the way in which companies fulfill their obligations. However, the most commonly cited weakness of the case study approach is generalizability (see Stake 1995: 7-8), and it is appreciated that E.ON’s approach may not be fully representative of all suppliers. Indeed, E.ON are notable in their success in meeting obligations (see Ofgem 2014d: 3), if not to the point of being an ‘extreme’ case (see Bryman 2008: 55). However, in all the use of E.ON as a case study is seen as useful both in enabling privileged access to data, and as a framework within which to situate the mixed methodological analysis (see Yin 2014: 65-67).

Whilst the normal limits of generalisability exist with regard to the examination of a single case, the application is valid so long as those boundaries are recognised, and it is believed that the limited number of overall cases and use of data triangulation serve to further mitigate this risk.

Though participant observation was not a formal element of this work, involvement in the policy community undoubtedly shaped the final product. Academics and researchers have long been active in fuel poverty policy communities (one clear example being Brenda Boardman’s work as an advocate), and this trend continues to be encouraged. Over the course of the research, a large number of professional network events were attended, ranging from Local Authority meetings to E.ON internal consultations; a full list of events attended is included in Appendix Two. More intensive involvement of professionals from fuel poverty policy networks was considered as a possible methodological approach, for example, via a wider set of key informant interviews, or the use of the Delphi method (see Adler, Ziglio 1995). Whilst this would have been a valid avenue of investigation, it was decided that similar outcomes could be achieved via analysis of the large volume of policy documents produced by those stakeholders, which often contain both opinions and analysis (as discussed in sections 2.4.5 and 3.4.4).

This work adhered to the ethical protocols and guidance offered by Loughborough University (see Loughborough University 2014), with the Economic and Social
Research Council’s Research Ethics Framework (ESRC, 2010) consulted for further guidance. Departmental ethical approval for this project was sought and obtained; the approved Ethical Clearance Checklist is included at section A1.4. In undertaking this research, the four key ethical principles identified by Diener and Crandall (1978) were observed. These are to prevent: harm to participants; invasion of privacy; lack of informed consent; deception. As interviewees were speaking in a professional capacity, harm to participants was not judged to be a particular risk in conducting this work. However, care was taken to ensure that participation did not have any professional impact by ensuring all interviewees remained fully anonymous. As the research did not consider the private lives of individuals, there was not judged to be any significant potential for invasion of privacy. In advance of interview, all interviewees were provided with a Participant Information Sheet (see section A1.5) and given the opportunity to ask any question they might have about the research. All participants agreed in advance that interviews could be tape-recorded and transcribed, and that whilst their opinions, contributions and quotes might be included, they would remain anonymous in any work produced. Each participant signed and returned an informed consent form (see section A1.6) indicating that they had understood and were comfortable with this policy. All quotes and opinions cited in this work are taken from the transcriptions of formal interviews conducted within this consent framework, not from any more informal engagement (e.g., at stakeholder events). To ensure deception did not occur, every effort was made to be transparent as possible to the work being undertaken. A high level of clarity is generally helpful to the process when interviewing professionals, as it gives interviewees a clear understanding of the nature of research, enabling them to better understand the type of contributions that are relevant. When engaging with professionals at network events, care was taken to disclose researcher status, and to offer to provide more information on the project as appropriate.

Conclusions

This chapter has discussed the analytical approach adopted in this work, and explained the methodology applied. Many different approaches can and have been used to investigate the causes and impacts of fuel poverty, and other strategies might have been suited to the question under investigation. However, for reasons that have
been described in this chapter, a social policy analysis approach has been taken in this work. Whilst previous work has explored fuel poverty from a social policy perspective, the approach has been somewhat neglected given that treating fuel poverty as a problem of social welfare is undoubtedly appropriate; this is the gap that this work seeks to begin to fill. The defined aim of this project is to compare supplier and state delivery of fuel poverty policy, with a view to establishing the impact at the national level of new policies on fuel poverty under a revised definition. To this end, Patton and Sawicki’s (1993) policy framework guides a comparative research design that evaluates the differences between supplier and state provision, with particular reference made to the notion of policy constraints, as classified by Dunn (2012). A pragmatic methodological approach has been applied, incorporating analysis of official documents, quantitative analysis, literature synthesis and professional engagement. The second part of this thesis will report the findings of analysis described here, beginning with consideration of the manner in which fuel poverty was established as a concern of the state, and how responsibilities for its eradication have consequently been apportioned.
Part Two
4 | Establishing Responsibilities

The state has had a legal responsibility to take steps towards fuel poverty eradication since the passage of *WHECA* in 2000, though measures that meet the definition of ‘fuel poverty policy’ used in this work predate even that. It might, however, be argued that – just as the private sector has taken an increasing role in the broader delivery of welfare functions (see section 3.1.1) – fuel poverty policy is entering a new paradigm, one in which energy suppliers take on the primary responsibility for its mitigation. This work compares supplier and state delivery of fuel poverty policy in order to establish which agent can best meet the goals of *WHECA*. In the first instance, then – in line with the aim and objectives of this work – it is necessary to determine and describe the political foundations of policy responsibilities as they stand and consider the drivers and constraints guiding that element of the process.

This chapter takes a different approach to subsequent chapters in that it does not compare supplier and state delivery of similar elements of policy; the roles at this stage in the process are very different, with the state holding ultimate political responsibility. Nevertheless, the chapter highlights the distinctions in roles played, and themes introduced in this respect are important throughout this research. Drawing upon analysis of the Hansard transcripts of the *WHECA* debates, it is argued that the state’s legal commitment to tackle fuel poverty was based upon a misunderstanding of the scale of the problem, and is undermined by weaknesses in the legislation itself. It is then demonstrated via close analysis of policy documents that the transition towards the use of supplier obligations as a means of tackling fuel poverty was incremental, and not based on any clear evidential justification. Finally, a broader assessment of the policy process, again via documents, highlights significant weaknesses when compared with ‘ideal’ practice (here represented by the model proposed by Hogwood, Gunn 1984).

The first section gives a brief overview of pre-2000 policies relating to affordable warmth. The second section then reports the results of analysis of Hansard that sought to establish how responsibilities were viewed in the formation of the original *WHECA*
legislation. The third section describes how responsibilities have developed since *WHECA*, including the process by which energy suppliers began to play a role in supporting vulnerable households. This incorporates the results of further analysis of policy documents that considers the intended role of schemes in meeting targets, and of the rationale underlying the shift to a supplier-led approach. The final section then offers a critical examination of failures in policy maintenance through this early period, and of the particular constraints that have been identified as having an impact at this stage.

**Methodological Overview**

The objective of the analysis reported in this chapter was to ascertain and evaluate the manner in which responsibility for fuel poverty mitigation has been established, requiring additional methods beyond those already reported in Chapter Two. A number of possible approaches could have been used, but given practical constraints, two main sources of data were selected for analysis; the Hansard transcripts of *WHECA* parliamentary debates as a means of clarifying initial intentions (results primarily reported in section 4.2), and policy documents as a medium by which to trace developments in the intervening years (results primarily reported in sections 4.3.3 and 4.3.4).

Hansard, the official edited verbatim report of proceedings of UK Parliament, is a source of data largely specific to this chapter. As previously discussed, much of the political process occurs behind closed doors and it can be hard to discern the priorities of policymakers, a particular obstacle in considering older policies. Hansard provides a valuable means of assessing the process of legislation development. The approach undertaken was similar to that employed by Ellis et al. (2002) who analysed Hansard not as a means of establishing the undeclared motives of politicians, but as a way of identifying key arguments made by policymakers. In this instance, the primary goal was to understand how, in passing *WHECA*, policymakers expressed that responsibilities for eradication should be apportioned. However, analysis also sought to establish a more general understanding of the way in which legislators understood the problem of fuel poverty, and the rationale underlying their choice to pass *WHECA*. Electronic transcripts of all *WHECA* Hansard debates were downloaded
from the UK Parliament website (Parliament.uk 2014a), and coded using the thematic approach described in section 3.4.2. Each transcript was considered twice, and following first pass-through any themes not satisfied by the predetermined category set were then added and applied on second consideration. The list of coding categories applied is included within section A1.2. From here, the established themes were considered individually with regard to the research objectives, and written up as described in section 3.4.2.

Whilst policy documents are used as a source of data consistently throughout this research (as described in section 3.4.2), the analysis undertaken here followed a distinctive methodology appropriate to the purpose of the investigation. The objectives were: firstly, to establish which policies (and which delivery agents) were intended by government to contribute to WHECA goals, and to what extent; and secondly, how that division of responsibility had been discussed and justified. Both of these goals were pursued via a more directed content analysis approach, applying pre-established coding categories (see Hsieh, Shannon 2005), a list of which are included in section A1.1. While not conceived as a discourse analysis, consideration of the way in which policy rationales were presented – as well as the direct content of such rationales – did come naturally into analysis. Four types of official policy document were selected for analysis on the grounds that they could be expected to communicate information about government policy intentions, rather than simply technical details. These were; consultation documents, FPAG advisory reports, fuel poverty strategy documents and impact assessments (all described in Table 3.3). These documents cover, to greater and lesser extents, the entire post-WHECA period, enabling analysis to consider the temporal development of policy. The analysis process was otherwise as described in section 3.4.2.

It is worth at this point highlighting one category of theme that proved particularly prominent in the analysis of this element of the process, that which Ryan and Bernard (2003) describe as “missing data”, i.e., features that we might expect to be present in the data, but which are absent. This type of consideration is particularly valuable in this context for two reasons. Firstly given that the analysis was seeking particular information about policy intentions, it is equally pertinent if that information is not present. Secondly, as will be discussed, fuel poverty policy strategy was designed in
line with the New Public Management-influenced ‘measurement culture’ that incorporated extensive use of targets, prescribed metrics and performance monitoring as a rational means of supporting successful delivery (on New Public Management, see Lane 2000, McLaughlin, Ferlie & Osborne 2001; on measurement culture in the UK, see House of Commons Public Administration Select Committee 2003). Critical examination of fuel poverty policy requires that the failures in the process be recognised, and – as will become apparent – requires acknowledgement of conspicuous gaps where the process has deviated from the intended course.

4.1 Early Affordable Warmth Policies

For households in England to face particular struggles in maintaining comfortable internal temperatures is certainly not a new phenomenon. As chronicled by Rudge (2012), dwellings in the United Kingdom are of comparatively poor quality, in part because early and rapid industrialisation set an enduringly low standard for the national housing stock. Income inequalities, which are increasingly problematised in the literature (e.g., Wilkinson, Pickett 2010b), are also a longstanding and widely acknowledged function of the political and economic societal structure. However, most accounts of fuel poverty as a concern of the state begin in the early 1970s. The 23% increase in real domestic energy prices that occurred between 1973 and 1983 (see Utley, Shorrock 2008: 69) was the result of two primary factors. Firstly, the Organisation of the Petroleum Exporting Countries (OPEC), angered by the political involvement of industrial nations in the Arab-Israeli conflict, raised the price per barrel of oil by 70%. Secondly, Harold Wilson’s Labour Government removed price caps that had been instated to ward off inflation, allowing the state-owned energy suppliers to return to economic pricing that was reflective of costs (see Boardman 1991: 18-19). To a populace which had become accustomed to rising post-war living standards this brought home developments that had long been in motion: that energy sources were finite and that market forces could be expected to reflect this in future; that the state was moving away from subsidising the provision of necessities; and that these shifts would have very real impacts on living conditions, particularly for those whose fuel needs and economic circumstances left them vulnerable to rising energy

54 See also Hermann Muthesius’ famous 1904 critique of the “insubstantial structure” of the English house (1979: 67).
costs. This section offers a brief contextual review of early policies used to tackle what has become known as fuel poverty.

4.1.1 Economic Interventions

Table 4.1 gives an overview of pre-2000 economic interventions designed to support low income households in affording fuel, derived from review of multiple sources.

<table>
<thead>
<tr>
<th>Programme Name</th>
<th>Years Active</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National Assistance</strong></td>
<td>Pre-1965</td>
<td>Prior to 1966, the National Assistance Board (established via the National Assistance Act 1948) would make discretionary payments at times of perceived need, including for fuel during cold winters. The Board was abolished following the passage of the Supplementary Benefit Act 1966, but parliamentary discussions around the need for financial support towards heating costs (see, for example, Hansard HC vol. 672 col 30-96) set a clear precedent for subsequent policies such as Heating Additions.</td>
</tr>
<tr>
<td><strong>Heating Additions</strong></td>
<td>1965 - 1988</td>
<td>Boardman identifies that in 1965, 669,000 benefits claimants were recorded as receiving additional support towards heating costs (1991: 17). These payments were to evolve into Heating Additions, a class of Supplementary Benefit paid to those receiving other state welfare support. Further Exceptional Circumstances Allowances and Exceptional Needs Payments were also available based upon perceived need, or to help pay off fuel debts.</td>
</tr>
<tr>
<td><strong>Electricity Discount Scheme</strong></td>
<td>1977 - 1979</td>
<td>Renewed concerns about fuel affordability following the 1973 oil crisis resulted in the introduction of this short-lived scheme. It was eventually replaced, in part, by an extension to Heating Additions.</td>
</tr>
<tr>
<td><strong>Exceptionally Severe Weather Payments</strong></td>
<td>1985 - 1986</td>
<td>Payments during periods of cold weather made at discretion of Department of Health and Social Security local offices.</td>
</tr>
<tr>
<td><strong>Cold Weather</strong></td>
<td>1986 - Present</td>
<td>Additional fixed payments made to recipients of certain income-</td>
</tr>
</tbody>
</table>

55 Documents relating to the very earliest affordable warmth schemes have proved impossible to access, and indeed may no longer exist. In accounting for this gap, early literature on energy affordability policies and House of Commons Library Research Papers serve as a useful record of initial policy activity.
related benefits for every seven consecutive days wherein in the average mean daily temperature falls below a given threshold, based on Met Office measurements (originally −1.5°C, later 0°C).

<table>
<thead>
<tr>
<th>Payments</th>
<th>Winter Fuel Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1997 - present</td>
</tr>
<tr>
<td></td>
<td>Annual payments made to those of pensionable age. Those over 80 receive a payment at a higher rate.</td>
</tr>
</tbody>
</table>


All of the policies included in Table 4.1 were state-led, though this is somewhat immaterial where policies predated the privatisation of energy supply. There are effectively two core classes of policy that have taken multiple forms; supplementary benefits specifically targeted at heating costs, and conditional benefits applied to eligible households in the incidence of cold weather. Versions of these remain in operation, WFPs and CWPs, although it should be noted that WFPs have been targeted at older people universally, regardless of income. This is discussed in more detail in Chapter Five. It is also worth highlighting that all of these policies were delivered as supplements to existing income benefits, and overseen by departments in charge of social security policy, as opposed to energy policy.

4.1.2 Technical Interventions

The earliest known state recognition of the impacts of poor quality housing stock on the ability of households to affordably heat their homes comes from a building regulatory perspective. Boardman (1991: 12) cites an early mention of the comparative inefficiency of British homes within a 1946 report by the government’s Fuel and Power Advisory Committee. Fifteen years later, the influential 1961 Parker Morris Committee report *Homes for Today and Tomorrow* observed the same impacts of inadequate heating installations in domestic homes and proposed minimum standards (Ministry of Housing and Local Government 1961: 51), though Boardman notes that these were not implemented (1991: 13).

56 Changes to the rate of VAT on fuel might be included as a further class of intervention (energy is currently taxed at the reduced rate of 5%, as are many technical interventions; see HMRC 2014). Though such a reduction is enjoyed by households across all income groups, it is likely to have progressive impacts (see Crawford et al. 1993).
Despite this early recognition of the role played by the housing stock in ensuring affordable warmth, the state was slow to adopt energy efficiency as an issue of social welfare rather than of economic resource management. In one of the very earliest academic considerations of fuel poverty, Bradshaw and Hutton (1983) argued that the capacity for energy conservation to serve as a means of promoting social welfare had been neglected by government at that time, describing contemporary energy efficiency initiatives as “piecemeal”, a description that supports Boardman’s account of a scattering of small-scale initiatives around the same period (1991: 68-74). Table 4.2 provides an overview of pre-2000 public sector technical interventions designed to support low income households in affording fuel, derived from review of multiple sources.

Table 4.2: Public sector technical affordable warmth interventions, pre-2000

<table>
<thead>
<tr>
<th>Programme Name</th>
<th>Years Active</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homes Insulation Scheme</td>
<td>1978 – 1990</td>
<td>Under the Homes Insulation Act 1978, required Local Authorities to make part grants to private sector households in receipt of certain state benefits to support installation of thermal insulation measures, primarily loft insulation and boiler cladding.</td>
</tr>
<tr>
<td>Draughtproofing</td>
<td>unknown - 1988</td>
<td>One time payment covering only materials available to Supplementary Benefits recipients.</td>
</tr>
<tr>
<td>Community Insulation Groups</td>
<td>1975 – unknown</td>
<td>Department of Employment projects that provided work experience for the long-term unemployed via the delivery of efficiency measures and advice to disadvantaged groups.</td>
</tr>
<tr>
<td>Energy Conservation Programme</td>
<td>1978 – 1980</td>
<td>Local Authority projects delivering measures to their own housing stock.</td>
</tr>
<tr>
<td>Energy Grant</td>
<td>1988 – c.1991</td>
<td>Grant available to recipients of certain state benefits, covering 90% of cost of draughtproofing materials. Installation had to be carried out by a Community Insulation Group (see above).</td>
</tr>
</tbody>
</table>
Funds allocated to certain vulnerable groups for home improvements at Local Authority discretion. Boardman (1991: 74) states that at that time these were primarily for thermal insulation improvements. However, an informal review of LA websites indicates that individual policy is now hugely variable, and often explicitly excludes expenditure on energy efficiency measures (for example, Sheffield City Council 2013), presumably because there are now alternative channels for such funding.

Established under the Social Security Act 1990, this scheme enabled recipients of certain state benefits to apply for grants towards home energy efficiency upgrades. It was later rebranded as Warm Front, and ran under that name until January 2013.

Note: In some cases it has not been possible to establish precise duration of scheme operation from reliable sources (e.g., policy documents).


In addition to this activity in the public sector, energy supplier obligations were introduced starting in 1994, and even the first obligation, EEC, included some expectation that activity would focus on vulnerable groups. These are discussed further in section 4.3.2. A likely cause of this early, disjointed, approach to energy efficiency for low income households was that the government had no mandate to tackle fuel poverty. This changed in 2000, with the passage of WHECA.

4.2 The Warm Homes and Energy Conservation Act 2000

*When Mr Williams started to talk about fuel poverty, I thought, “Goodness gracious. I am a Conservative and he is talking about poverty.*

David Amess MP (Con., Southend West)
Hansard HC vol. 345 col 1297 (10 March 2000)

It was with this slightly unconventional opening speech that fuel poverty began its journey into the statute books. David Amess had come fifth in the ballot for Private Members’ Bills, and so won the opportunity to introduce a piece of legislation on to the floor of the House. Despite early misgivings, he was ultimately convinced of the
merits of a fuel poverty bill by a fuel poverty campaigner, Martyn Williams\textsuperscript{57}. The intentions of the Warm Homes and Energy Conservation Bill (WHECB) were positively received across both house and party lines; debates were well attended and passage straightforward. The final result of this legislative process was to create in November 2000 what has remained the most important piece of legislation in terms of defining state responsibility towards fuel poverty eradication:

\textit{An Act to require the Secretary of State to publish and implement a strategy for reducing fuel poverty; to require the setting of targets for the implementation of that strategy; and for connected purposes.}

\textit{The Warm Homes and Energy Conservation Act 2000, preamble}

Consideration of \textit{WHECA} is important to this work because it is that legislation that makes fuel poverty eradication a legal requirement that government must take action to meet\textsuperscript{58}. Without this, the question under consideration would be very different, as there would be no legal requirement to pursue fuel poverty alleviation, and so the underlying assumption of this work – that \textit{someone} should be responsible – would not exist. Given the foundational importance of \textit{WHECA}, analysis of the legislation and supporting parliamentary debates was taken as a starting point in understanding the intentions of lawmakers who felt fuel poverty eradication should be legally mandated\textsuperscript{59}. This section presents the findings of that analysis. As discussed previously this has not been limited to lawmakers’ understanding of responsibilities alone, but other emergent themes. Notably, analysis identified several important topics of debate that would prove important in shaping the subsequent policy process.

\textsuperscript{57}Though this was not the first attempt; earlier, similar, Private Members’ Bills include the \textit{Fuel Poverty and Energy Conservation Bill} and the \textit{Warm Homes and Energy Conservation (Fifteen Year Programme) Bill}. Boardman records that the Labour party had already begun to recognise fuel poverty as a policy problem when \textit{WHECB} came before parliament in 2000 (2010: 2-3).

\textsuperscript{58}Ideally, other relevant legislation would have been added to analysis (e.g., the Utilities Act 2000, the Energy Act 2010). However, given the practical limitations of this research, \textit{WHECA} was selected as most pertinent to the topic under consideration.

\textsuperscript{59}As will be observed throughout this work, politicians do not often seem to consider fuel poverty a high priority. It is worth then at this stage recognising one steadfast supporter in the House of Commons, the late Malcolm Wicks, who not only wrote one of the earliest academic texts on energy affordability (Wicks 1978), but also was later Minister for Energy (see Wicks 2013), and worked closely with fuel poverty advocacy organisations, including NEA (see NEA 2012).
4.2.1 Assigning Responsibility

WHECA itself is a comparatively short piece of legislation, allowing scope for government to establish a definition of ‘fuel poverty’ and to decide how it should be tackled. In that sense, the legislation itself is almost solely about establishing the principle that there is a responsibility to end fuel poverty, and there is no ambiguity about whose responsibility that is: the Act requires the Secretary of State – as the appropriate authority – to publish a strategy (see WHECA s. 2). Although there is scope for this strategy to require that suppliers play a role, the WHECB debates did not acknowledge such a possibility, or indicate that it might be expected. The vast majority of discussions of responsibilities under WHECA relate to the notion of establishing that the government has a responsibility to pass legislation relating to fuel poverty eradication, e.g.:

...we would have been establishing in law the responsibility to end fuel poverty, which is extremely important. We would have had to argue about how to do it and how quickly, but no longer about whether we should do it.

David Amess MP (Con., Southend West)
Hansard HC vol. 352 col 684 (21st June 2000)

Responsibility now lies firmly in the Government's hands. If they want this Bill or a version of it to reach the statute book, they can make it happen. They have promised to eradicate fuel poverty and senior Ministers are on the record as saying that fuel poverty must be ended, that it is a scandal and a preventable scourge.

Damian Green MP (Con., Ashford)
Hansard HC vol. 345 col 1351 (10 March 2000)

We need collective political action on these issues to take the responsibility away from the individual.
References were made at various points to the possible responsibilities of Local Authorities, Housing Associations and regulators under WHECA. However, comparatively little reference is made to energy suppliers. On only one occasion is reference made to the possible contribution of supplier obligations via the Utilities Bill (later passed as the Utilities Act 2000), which would transfer power in setting obligation targets from Ofgem to government. However, more common are instances of debaters applauding voluntary initiatives by suppliers, e.g.:

Some of the big companies, such as PowerGen, TXU Eastern Energy, and Scottish Power have been particularly active in working on these issues and--on energy efficiency though not on pricing--Transco has recently launched a £30 million project, which will help to build on the Bill.

Linda Gilroy MP (Lab., Plymouth Sutton)
Hansard HC vol. 345 col 1322 (10th March 2000)

Though such comments recognised that suppliers could play a role in delivering measures, this was not equated with an obligation or responsibility. At one point in the Commons Second Reading, Edward Garnier (referencing a clause that was ultimately deleted) asks David Amess to clarify whether, if suppliers were required to offer social tariffs:

...that means that there will be subsidies for energy companies such as gas, coal or electricity suppliers, to enable them to reduce the tariff to a particular section of society, whether the individual consumers of those energy products will get the subsidy directly, or whether there will be no subsidy at all?

Edward Garnier MP (Con., Harborough)

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60 See, for example, comments made by Louise Ellman MP (Lab., Liverpool Riverside), Hansard HC vol. 345 col 1342 (10th March 2000).
61 Christopher Mullin MP (Lab., Sunderland South), Hansard HC vol. 345 col 1352 (10th March 2000).
The debate ended before Amess could respond, but this is the type of question that – as shall be explored in this thesis – became crucial as supplier responsibility was expanded; in the WHECB debates, it was barely touched upon. A possible explanation for this general lack of consideration as to where responsibilities might lie is that, as will be discussed in section 4.2.5, fulfilment of WHECA was not expected to involve activity above and beyond what was already occurring.

4.2.2 Defining ‘Fuel Poverty’

The first provision of WHECA is primarily concerned with defining fuel poverty, offering this initial broad conceptualisation:

\[
\text{For the purposes of this Act, a person is to be regarded as living “in fuel poverty” if he is a member of a household living on a lower income in a home which cannot be kept warm at a reasonable cost.}
\]

\textit{Warm Homes and Energy Conservation Act 2000 (s. 1(1))}

Crucially, the Act then allows that the Secretary of State can specify the parameters of the terms “lower income”, “reasonable cost” and “warm” (s. 1(2)(a))). David Amess offered his rationale for this loose definition during the Bill debates:

\[
\text{The definition of fuel poverty is a general one, but it may be changed from time to time in order better to target people who need help.}
\]

David Amess MP (Con., Southend West)

Hansard HC vol. 354 col 702 (21st July 2000)

In the debates themselves, the 10pct definition of fuel poverty was universally used (see, for example, Hansard HC vol. 345 col 1299). However, inclusion of the term ‘fuel poverty’ in the final legislation was a contentious issue. A small but vocal minority of MPs questioned the legitimacy of the concept, and whether it was distinct
from income poverty. The issue became something of a political pawn with campaigning groups happy to lose the terminology so long as the bill was passed. Ultimately, though, it was decided that the term should be included, but that the precise definition should be left to secondary legislators. Some parliamentarians - particularly in the Lords - voiced scepticism as to this ability of government departments to redefine “fuel poverty” as they saw fit:

*It is a Henry VIII clause par excellence.*

Lord Skelmersdale (Con.)
Hansard HL vol. 617 col 628 (13th Oct 2000)

Others hurried to offer assurances that observers would reject any convenient redefinition of the term:

*A new definition which miraculously removed a million households from "fuel poverty" would be highly suspect and would almost certainly be fiddling the figures.*

Lord McColl of Dulwich (Con.)

The new definition proposed by the Hills Fuel Poverty Review has indeed taken 1.2m households out of fuel poverty (though it also classified almost 0.5m more individuals as fuel poor) (Hills 2012: 184). However, this review came a decade later, in recognition of problems with the 10pct definition. Furthermore, Hills emphasised the broad conceptualisation of *WHECA* (s.1 (1)) as fundamentally correct, and fashioned the LIHC definition accordingly (see Hills 2011: 17).

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62 See in particular the House of Commons Third Reading; though the context is not clear from the Hansard transcripts alone, several speakers refer to external lobbying on the matter from Friends of the Earth.

63 “A provision to a Bill which enables the Government to repeal or amend it after it has become an Act of Parliament” (see Parliament.uk 2014b).
4.2.3 The Practicability Question

...that as far as reasonably practicable persons do not live in fuel poverty.

Warm Homes and Energy Conservation Act 2000 (s. 2(1))

Unlike previous bills with similar intentions the word “practicable” was included from the earliest drafts of WHECB. However those previous bills had included assertions that eradication of fuel poverty should not require infringement of individual liberty, e.g., that authorities should not be able to forcibly enter a private dwelling (see Warm Homes and Energy Conservation (Fifteen Year Programme) Bill (s. 4(b))). It is in this same context that ‘practicable’ is used in the WHECB debates. Whilst the phrase itself was not discussed at any length, where it does appear the intention is transparent:

I would dearly love to eliminate fuel poverty altogether but, although I hope that the Bill will address some of the problems, some households--perhaps many--will refuse to co-operate with the scheme. Some houses simply cannot be insulated to the necessary standards and some households will be genuinely remiss, but I am advised that the Bill's intention to eliminate fuel poverty as far as is practicable is a sensible test.

David Amess MP (Con., Southend West)
Hansard HC vol. 345 col 1304 (10th March 2000)

The meaning here is clear - again, that legislators wanted to ensure that Government was not penalised for missing the target where householders were unwilling to take-up measures. However, the interpretation of the word ‘practicable’ would later be fundamental to an application for 2008 judicial review that was the difference between WHECA being treated as an adaptable guideline rather than as a binding commitment; this is discussed further in section 4.3.1.
4.2.4 Targets and Strategy

The second provision of WHECA is the most detailed, and is concerned with establishing the role that the government should be required to play in tackling fuel poverty. The two primary elements are the establishment of a fuel poverty eradication target and the creation of a strategy to meet this target. WHECB went before parliament at a time when the ‘measurement culture’ of New Labour was a dominant force in policy implementation (see Hudson, Lowe 2009: 274-278). Techniques drawn from New Public Management were influential in encouraging the development of quantifiable policy targets. This type of evaluation methodology has endured, but in 2000 it seemed rather new-fangled to some:

Then Mr. Williams talked about targets. I thought, "Goodness. Targets. That sounds like the new sort of politics that I am trying to cope with."

David Amess MP (Con., Southend West)
Hansard HC vol. 345 col 1297 (10th March 2000)

However, Members were extremely positive about the proposed use of strategy and quantifiable targets to support the fulfilment of WHECA 2000.

Colleagues on both sides do not want a sham Bill: we want it to contain figures and targets so that we can judge what the Government have achieved and whether or not they have succeeded.

David Maclean MP (Con., Penrith and The Border)
Hansard HC vol. 345 col 1302 (10th March 2000)

The final WHECA required that a target for the eradication of fuel poverty “as far as is reasonably practicable” be set for “not more than fifteen years after the date on which the strategy is published” (s. 2). A strategy for the achievement of this fifteen-year target was to be produced within a year of Royal Assent, and reviewed and revised as

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64 It is also worth mentioning that this provision explicitly recognises energy efficiency measures as the appropriate solution (see s.2 (2)(b)).
necessary to ensure success. Some participants in the WHECB debates felt, however, that this was not ambitious enough:

*Mr Green*: I do not expect the Minister to commit the Government to another target this morning, but it would be valuable if he could say whether it is practical even to think that we might be able to hit a target that is less than 15 years.

*Mr Mullin*: The hon. Gentleman asked me whether we could achieve the objective in under 15 years. We may do, but as he knows, we are a prudent Government as well as a listening Government, so we have set what we consider to be a prudent target.

Despite debaters’ enthusiasm for ambitious targets and metrics that would enable policy monitoring, in 2011 3.2m households were 10pct fuel poor, up from 1.2m in 2003 (DECC 2013c: 10); possible contributory reasons for this policy failure – including failures to review strategy – are discussed in sections 4.3 and 4.4.

4.2.5 *“There shall be paid out of money provided by Parliament...”*

The third provision of WHECA was the result of what is termed a money resolution; a clause enabling public money to be spent in the fulfilment of legislation. In the case of WHECA, the debates that led to this provision being included were rather seriously misinformed. Proponents of the bill were keen to emphasise that fulfilment of the bill would require little if any public expenditure.

*The Warm Homes and Energy Conservation Bill . . . enshrines current commitments and mirrors measures that we already have in hand. For that*

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65 Also then-Parliamentary Under-Secretary of State for the Environment, Transport and the Regions.
66 This is the standard opening text of the Money Resolution in UK legislation.
reason, we do not believe that anything in the Bill would increase public expenditure above and beyond current commitments.


Several Members raised concern about the lack of any costing for the Bill, and expressed concerns that it might be much higher than expected. Again, those supporting the Bill reassured them that all it was intended to do was underscore intentions:

A number of hon. Members have asked about cost. Nothing in the Bill would increase spending per se. In any case, the Government have greatly increased spending in this area, as I have outlined. The Bill would enshrine existing commitments.

Christopher Mullin MP (Lab., Sunderland South)
Hansard HC vol. 345 col 1351 (10th March 2000)

This turned out to be hugely inaccurate. The scale of the discrepancy was foreshadowed during the Money Resolution debate:

If the cost of this measure turns out to be £2 billion over 20 years, it is reasonable, but if it is £15 billion over five years, that is an enormous cost.

David Maclean MP (Con., Penrith and The Border)
Hansard HC vol. 347 col 946 (4th April 2000)

The latter number quoted by David Maclean is likely to be much closer to the truth, if not conservative; Guertler and Preston (2009: 14) model a scheme that would alleviate 10pct fuel poverty in the seven years between 2009 and 2016 and estimate the cost at around £24bn. Although it is possible that it was considered that the money for such a programme could come from non-Treasury sources, this is not evident in
debates. This failure could be classed as a forecasting error. However, it is also evidence of something more fundamental about the perceived role of **WHECA**. This exchange, from the Third Reading of the Bill in the House of Commons, is telling:

*Mr Mullin: Much money is already being spent on combating fuel poverty, but the Bill by itself does not commit us to further funding. We are already spending a great deal on such matters.*

*Mr Forth: In that sense, anyone who claims that many extra homes will be heated because of the Bill is obviously not correct.*

*Mr Mullin: A good deal of work is already under way, and many extra homes will continue to be heated.*

Christopher Mullin MP (Lab., Sunderland South) and Eric Forth MP (Con., Bromley and Chislehurst)

Hansard HC vol. 354 col 708 (21st July 2000)

In fact, Eric Forth’s suggestion goes to the heart of the intention of **WHECA**; from analysis of debates, it seems clear that the legislation was never expected to catalyse any enormous drive of activity. It is hard to argue that the parliamentarians who passed **WHECA** saw it as anything more that an expression that existing work should continue to focus on the vulnerable, which seems to plausibly explain why they might have neglected to consider any expanded role or responsibility for energy suppliers in the future.

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67 Another forecasting lapse is that the potential for fuel prices to rise was entirely disregarded; at the time of debates, they were falling post-privatisation (see Utley and Shorrock 2008:13). Eric Forth MP suggested in the Second Reading “that there is a certain irony in the fact that we are debating the issue against the background of secular falling fuel price” (Hansard HC vol. 345 col 1345 (10th March 2000)). Recognition that this would not continue indefinitely would presumably have made for a very different perception of the problem.
4.3 Post-WHECA Fuel Poverty Policies

Given the emphasis of the *WHECA* debates, it is perhaps not surprising that its passage did not herald a new dawn for fuel poverty reduction in England; the only initial, modest requirement was that a strategy be produced. In the thirteen years since the passage of *WHECA* no new state-led national level fuel poverty programme has been launched. However, energy supplier obligations – already in place in 2000 – have evolved to become the only technical fuel poverty schemes, with an additional supplier-led economic scheme, WHDS, added to the mix. The result is that from having been barely considered when *WHECA* was passed, energy suppliers now deliver a significant proportion of fuel poverty mitigation activity. This section describes key developments in fuel poverty policy between the passage of *WHECA* in late-2000 and ECO’s launch in January 2013. Firstly, Government activity is considered, then the emerging role of supplier obligations as a means of tackling fuel poverty. The latter part of the section covers the findings of policy document analysis, both with regard to the expected contribution of schemes towards the requirements of *WHECA*, and in terms of the rationale for the shift towards supplier obligations as the core means of delivery.

4.3.1 Government Schemes

As required by *WHECA*, the government published *The UK Fuel Poverty Strategy (UKFPS)* in November 2001 (DTI 2001). This included an overview of the problem, a discussion of how government proposed to define and monitor it (applying the 10pct definition and indicator metrics), and a discussion of existing – not new – programmes expected to contribute to eradication, including Warm Front, WFPs, CWPs and energy supplier obligations. The target declared in that document was “an end to the blight of fuel poverty for vulnerable households by 2010” (DTI 2001: 10). The target date for full eradication – 22nd November 2016, as required by *WHECA* – was not declared until the publication of the first annual progress report (see DEFRA/DTI 2003: 6). The *UKFPS* contained two further objectives tied to operation of the Warm Front and (then forthcoming) Decent Homes schemes, but these were not quantifiably linked to the overall eradication target.
In the years following UKFPS publication, fuel prices rose and fuel poverty levels consequently escalated (see Figure 1.1). WHECA required that progress towards eradication targets be monitored, and strategy revised as necessary (s. 2(6)). However this did not happen. As Boardman observes:

*The government’s successive annual fuel poverty reports continued to be ‘reports’, not amendments to the strategy. The strategy became a sacrosanct article, an end in itself, beyond the original intentions. According to the act, it had to be produced, it was produced, so the act had been complied with.*

(Boardman 2010: 8)

The findings of the document analysis undertaken in this work agree with Boardman’s assessment that the annual progress reports released by government merely described work undertaken without considering how it contributed to the overall target (see, for example, DECC 2009). Furthermore, since 2010 the UKFPS progress reports have stopped entirely, with only annual reports of fuel poverty statistics being released. These describe the problem and drivers, but do not consider mitigation schemes in any detail (cf. DECC 2013c).

A further blow for proponents of fuel poverty eradication came with a judicial review of policies in October 2008. Friends of the Earth and Help the Aged launched a joint claim against government departments, contending that they were failing to meet the responsibilities of WHECA. This was dismissed (an account of the process is given in Boardman 2010: 13-14):
I do not consider that it is open to the court to review the policy decisions of the Defendants as to the way they should go about the implementation of the Strategy. It is open to Government to have regard to its overall budget and the other calls upon its resources in deciding what steps to take in implementation of the strategy, including its requirements that efforts should be made to achieve the 2010 and 2016 targets as far as reasonably practicable.

Friends of the Earth and Help the Aged v Secretary of State for Business Enterprise and Regulatory Reform and Secretary of State for Environment, Food and Rural Affairs [2008] EWHC 2518

This ruling substantially undermines the power of WHECA by allowing the government to decide for itself what constitutes “reasonably practicable” activity. In the context of the debate analysis reported above, this seems both out of keeping with the original spirit of those discussions, as well as an apparently accidental loophole, given that the original references to ‘practicability’ focused on the liberty of householders.

As of January 2013, Warm Front, the state-led technical scheme, on which the UKFPS hinged, has ended, without any replacement. The only other Exchequer-funded programmes – CWPs and WFPs – are economic schemes overseen by DWP. With no clear strategy in place (and the power of WHECA undermined by judicial review), the once-ignored energy supplier obligations now appear to be the primary means by which the government expects to achieve fuel poverty alleviation.

4.3.2 Energy Supplier Obligations

In the few decades in which fuel poverty emerged as a distinct social problem, the energy industries underwent significant change. The privatised system that we know today is the legacy of the widespread economic and political reforms delivered by the Thatcher Conservative government that was first elected in 1979. The rationale underlying Thatcher’s aggressive privatisation of public services has been exhaustively documented (see Riddell 1991, Roy, Clarke 2005, Feigenbaum, Henig
In summary, implementing a neoliberal doctrine, Thatcher set about “rolling back the frontiers of the state,”\(^{68}\) privatising state-owned industries with a view to improving efficiency. An initial experiment with the privatisation of British Telecom in 1984 was considered successful, and privatisation of other core utilities followed, including gas (via the Gas Act 1986) and electricity (via the Electricity Act 1989). Accounts of the privatisation of the energy industries are united in agreement that, while the efficiencies of privatisation were expected to lower fuel prices, there were no initial plans to harness the new structure to deliver energy efficiency measures or promote equity. Greenhouse gas emissions were beginning to raise concern in some quarters, and the so-called ‘greening of the Conservative Party’ was in progress\(^{69}\). However, Roberts et al. (1991: 123) describe the Conservative government at the time of the Electricity Act as suspicious of any market intervention, including those directed at energy efficiency. Boardman corroborates this account of a focus upon supply side measures over demand side, i.e., that a more efficient market will lower prices, not that energy efficiency interventions should be used to restrict need (1991: 30, 195-196).

Despite that inauspicious political context, the Electricity Act 1989 did include some limited provisions enabling the promotion of energy efficiency\(^{70}\). The Labour peer Lord Shepherd originally introduced an amendment to the Bill seeking to:

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\(^{68}\) A goal Thatcher herself expressed on a number of occasions, see Margaret Thatcher Foundation (2014a, 2014b).

\(^{69}\) Prominent turning points in this process being being Thatcher’s 1988 speech to the Royal Society (Margaret Thatcher Foundation 2014c) and the 1989 publication of the Pearce Report (Pearce et al. 1989), which framed environmental issues in economic terms that were ideologically appealing to that audience.

\(^{70}\) Detailed consideration of the justification for this amendment is beyond the scope of this work, however, a cursory review of the Hansard debates suggests two main motives: firstly, a desire on the part of Labour Lords to instill the emerging private energy suppliers with a sense of responsibility towards energy efficiency and environmental outcomes; secondly, that those more favourably disposed towards privatisation suggested that - if greater energy efficiency were important - the market were potentially well placed to implement such schemes efficiently.
...require each of the public electricity suppliers to make and produce evidence to the Director showing that he has made such arrangements as will promote the efficient use of electricity.

Hansard HL vol. 507 col 1044 (16th May 1989)

Passed in the Lords\textsuperscript{71}, this was substantially weakened in the Commons but made it into the final \textit{Electricity Act 1989} (s. 41(1)(a), ‘Promotion of the efficient use by consumers of electricity’), enabling the regulator to “determine such standards of performance in connection with the promotion of the efficient use of electricity by consumers as, in his opinion, ought to be achieved by such suppliers”\textsuperscript{72}. Whilst the legislation enacted leaves the role of electricity companies in promoting energy efficiency largely at the discretion of a then unenthusiastic Government, its inclusion paved the way for later activity. After several years of dormancy, in 1994 the EESoP programme was introduced, the first in a succession of interventions that have evolved and persisted through to the present day. Rosenow (2012) offers a comprehensive history of the development of supplier obligations in the UK, and identifies a number of drivers of change, some of which apply to the launch of initial activity. These include changing attitudes to climate change, regulatory personnel (particularly within the Office of Electricity Regulation (OFFER)) sympathetic to obligation introduction, and a growing interest in the Least Cost Planning model\textsuperscript{73}. Table 4.3 adapts and revises Rosenow’s (2012) comprehensive overview of historic supplier obligations towards domestic energy efficiency, incorporating the more recent CESP and ECO programmes that are beyond the scope of his investigation, and emphasising those elements relevant to this research.

\textsuperscript{71} Before this time a voluntary Code of Practice was in place that was designed to protect low income households from disconnection, see Berthoud (1983).

\textsuperscript{72} The Gas Act 1986 was amended in 2001 to incorporate similar functions.

\textsuperscript{73} Davison (1991) offers a contemporary assessment of the value of Least Cost Planning as used in this context.
Table 4.3: Development of Energy Supplier Obligations: 1994-2013

<table>
<thead>
<tr>
<th>Name of scheme</th>
<th>EESoP1</th>
<th>EESoP2</th>
<th>EESoP3</th>
<th>EEC 1</th>
<th>EEC 2</th>
<th>CERT</th>
<th>CESP</th>
<th>ECO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target (lifetime)</strong></td>
<td>6.1 TWh</td>
<td>2.7 TWh</td>
<td>4.9 TWh Electricity &amp; 6.1 Gas (lifetime)</td>
<td>62 TWh</td>
<td>130 TWh</td>
<td>293 MtCO₂ &amp; 494 TWh</td>
<td>19.25 MtCO₂</td>
<td>20.9 MtCO₂ (CERO), 6.8 MtCO₂ (CSCO) &amp; £4.2bn notional savings (HHCRO)</td>
</tr>
<tr>
<td><strong>Target Group</strong></td>
<td>Public Electricity Suppliers (PESs)</td>
<td>Public Electricity Suppliers (PESs)</td>
<td>All licensed gas and electricity suppliers with at least 50,000 domestic customers</td>
<td>All licensed gas and electricity suppliers with at least 15,000 domestic customers</td>
<td>All suppliers with over 50,000 gas and/or electricity domestic customers</td>
<td>All suppliers with over 250,000 gas and/or electricity domestic customers</td>
<td>All licensed gas and electricity suppliers that have at least 50,000 domestic customers and all licensed electricity generators that have generated on average 10 TWh/yr or more in a specified three-year</td>
<td>All suppliers with over 250,000 gas and/or electricity domestic customers, and who supply more than 400 gigawatt hours of electricity or 2,000 gigawatt hours of gas</td>
</tr>
<tr>
<td>Coverage</td>
<td>Domestic and small business electricity customers</td>
<td>Domestic and small business electricity customers</td>
<td>Domestic and small business electricity and gas customers</td>
<td>Domestic electricity and gas customers</td>
<td>Domestic electricity and gas customers</td>
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<tr>
<td><strong>Supplier cost of the programme</strong></td>
<td>£101.7 million (indicative)</td>
<td>£48.1 million (indicative)</td>
<td>£110 million (indicative)</td>
<td>£500 million (indicative)</td>
<td>£1.2 billion (indicative)</td>
<td>£5.5 billion (indicative)</td>
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<tr>
<td><strong>Expenditure allowance</strong></td>
<td>£1 per franchise customer per year allowed through the supply price control</td>
<td>£1 per franchise customer per year allowed through the supply price restraint</td>
<td>£1.20 per customer per fuel per annum, indicative in target setting model</td>
<td>£3.60 per customer per fuel per annum, indicative in target setting model</td>
<td>£9 per customer per fuel per annum, indicative in target setting model</td>
<td>£51 per customer per annum, indicative in target setting model</td>
<td></td>
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</tr>
<tr>
<td><strong>Percent of savings in</strong></td>
<td>30% (expected, not)</td>
<td>65% of expenditure</td>
<td>67% of expenditure</td>
<td>50%</td>
<td>50%</td>
<td>40% (15% in Super Priority)</td>
<td></td>
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<td></td>
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<td></td>
<td>Only delivered in low-ranked IMD areas.</td>
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<td></td>
<td>25% of ECO savings are under</td>
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<tr>
<td><strong>Priority Group</strong></td>
<td>compulsory</td>
<td>(expected, not compulsory)</td>
<td>(expected, not compulsory)</td>
<td>Group</td>
<td>the Affordable Warmth elements of the scheme.</td>
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<tr>
<td><strong>Mix of Measures</strong></td>
<td>Requirement to use variety of measures</td>
<td>Requirement to use variety of measures</td>
<td>Requirement to use variety of measures</td>
<td>Not prescribed</td>
<td>Not prescribed</td>
<td>Minimum levels for some measures (68% from insulation)</td>
<td>Whole-house approach encouraged.</td>
<td>Mix of measures, though restrictions under CERO.</td>
</tr>
<tr>
<td><strong>Administering Body</strong></td>
<td>OFFER</td>
<td>OFFER</td>
<td>OFGEM</td>
<td>OFGEM</td>
<td>OFGEM</td>
<td>OFGEM</td>
<td>OFGEM</td>
<td>OFGEM</td>
</tr>
<tr>
<td><strong>Target Setting Body</strong></td>
<td>OFFER</td>
<td>OFFER</td>
<td>OFGEM</td>
<td>DEFRA</td>
<td>DEFRA</td>
<td>DEFRA and then DECC (since October 2008)</td>
<td>DECC</td>
<td>DECC</td>
</tr>
</tbody>
</table>

Not included in this table is WHDS, as an economic measure, notable not only as the first that suppliers were obligated to deliver, but the first economic measure overseen by DECC, not DWP. Previously suppliers had delivered economic provision on a voluntary basis (see Ofgem 2007a, Ofgem 2010); WHDS was intended to replace this activity (DECC 2011h). Crucially, since CESP, obligations have tended away from being construed as a percentage of delivery within a larger scheme (e.g., priority groups), but as distinctly focused programmes.

### 4.3.3 Contribution of Schemes

The use of supplier obligations as a means of delivering energy efficiency interventions might immediately appear counterintuitive; it is hard to think of any other private industry that is legally required to reduce the need for its own product via participation in an entirely different activity (the process of installing efficiency measures having little overlap with the supply of the energy itself). That said, energy is an unusual product, an essential good provided direct to households via an oligopoly market. Rosenow (2012) discusses drivers of the increased size of supplier obligations since their inception, and includes the introduction of fuel poverty as a policy goal as a contributory factor, albeit one with an inherent conflict. This analysis has approached similar concerns from an alternate perspective, considering the change in the delivery balance of programmes directed at fuel poverty. That shift, though clear at the broader level, is difficult to clarify in part because there is no overarching plan as to how individual programmes are meant to contribute to fuel poverty mitigation.

The nearest substitute is the original UKFPS, which lists a range of ongoing schemes that are expected to contribute to the then-newly established policy goal (see DTI 2001: 30-49). Whilst recognising the contribution of a range of interventions (including CWPs and WFPs), Warm Front is identified here as “the Government’s main programme for private sector households” (DTI 2001: 42). This characterisation persists in the first progress report (DEFRA/DTI 2003: 10), and reoccurs in the fourth (DEFRA/DTI 2006: 11), but otherwise any assessment of extent of the role the policy is expected to play is dropped or the description softened to Warm Front as a “key tool” (e.g., DEFRA/BERR 2007: 14). With respect to supplier
obligations, whilst the UKFPS estimates that 65% of prior obligation spending had been directed at low income households (DTI 2001: 150), the declared objectives are based only upon activity under Warm Front and Decent Homes (see DTI 2001: 3). Subsequent strategy documents consistently emphasise that although supplier obligations do target a priority group, this is low income, not fuel poor (see DEFRA/DTI 2006: 14-15)\textsuperscript{74}, and that the possible contribution of supplier obligations cannot be quantified (though the fifth report offers an estimate that "energy supplier activity from 2002-2011 has the potential to remove over 100,000 households form fuel poverty in GB (DEFRA/BERR 2007: 19)). The final report, issued in 2009 affirmed that the “CERT’s primary aim is reduction of carbon emission in the domestic sector” but that the priority group of low income and vulnerable customers was expected to contribute (DECC 2009: 13). However, there is no quantified assignation of responsibilities in these strategies, nor is any rationale given for choices made; the documents themselves for the most part simply describe what activity is taking place then, and what is planned for the near future. So, though these broad and recurring themes are likely to be indicative of the Government’s understanding of scheme contribution, it is difficult to interpret the fuel poverty strategy progress reports as meaningful instruments of policy rather than simply the fulfilment of a mandated task, and in this context any very minor changes in emphasis across those documents policy cannot be taken as indicative of policy rationale.

Rosenow (2012: 379-380) echoes earlier work by Powells (2009) in finding that policy documents relating to the earlier supplier obligations clearly prioritise carbon emission reduction as the goal of policy, even post-\textit{WHECA}. It could further be posited that this prioritisation worked both ways; that obligations were expected to be conducive to fuel poverty reduction, but were not expected to be a major contributor. Analysis undertaken for this work supports Rosenow’s finding that documents relating to the earlier obligations downplay or conspicuously fail to mention fuel poverty, treating the issue more as an incidental outcome of the promotion of equity in delivery (see DEFRA 2006: 29, Ofgem 2008c, DECC 2011l: 3). Thus at an early stage the two policy goals were treated as related, but distinctly separate. However, further analysis of documentation for later schemes not included by Rosenow indicate

\textsuperscript{74}This aligns with the earlier findings of Powells, who quotes a civil servant as reinforcing that the EEC was not intended to tackle fuel poverty, calling it a “common misunderstanding” (2008: 2344).
a clear shift towards recognising fuel poverty as a goal of obligations. For example, the initial CERT consultation repeatedly reiterates that the policy “does not have a specific fuel poverty objective” (DEFRA 2006: 5). However, the 2012 CERT extension in the run up to the Green Deal introduced a new ‘Super Priority Group’ of “lower income vulnerable households at most risk [of] fuel poverty” (DECC 2010d: 2) and specifically consults on the ability of the policy to reach those groups, without prevarication (DECC 2010d: 44). CESP policy documents go further still, declaring “twin objectives of significantly reducing the fuel bills of low income households across Great Britain; and improving the energy efficiency of the existing housing stock in order to reduce the UK’s carbon dioxide (CO₂) emissions” (CAG Consultants, Ipsos MORI & Building Research Establishment 2011: 4). This is consistent with the fact that CESP, unlike previous obligations, was not a broader requirement with a defined priority group, but that English delivery was entirely limited to geographical areas ranked in the lowest 10 per cent according to the Indices of Multiple Deprivation (Ofgem 2009b: 2). However, it should be emphasised that the wording of the CESP objective talks about bill reduction for low income households rather than fuel poverty reduction. ECO a further shift, with policy documents explicitly recognising fuel poverty mitigation as a goal of the initiative (see DECC 2011i: 11). This is conceivably tied to another shift, the end of state delivery of energy efficiency provision; to have no active energy efficiency scheme treat fuel poverty mitigation as a goal would seem a gap conspicuous even in the context of disjointed English fuel poverty policy. Furthermore, where Rosenow (2012: 375) had previously observed the shift from obligation targets being expressed in terms of energy savings to expression in terms of carbon reduction, for the first time a supplier obligation target, that for the HHCRO, is conveyed as a cash value of lifetime notional energy savings (see DECC 2012h: 4-5), further emphasising the policy focus on affordability. WHDS, also, identifies “tackling fuel poverty” as its central focus (DECC 2011h: 7). Though this is perhaps less surprising given that an economic policy cannot be expected to contribute to carbon reduction, the introduction of a supplier-led economic scheme is a development in itself, representing a further movement.
4.3.4 Rationale for Shift

Policy documents issued after the identified transference of primary responsibility for fuel poverty mitigation offer little in the way of rationale for the shift to supplier-led delivery. The closest to a rationalisation found in any of the WHDS policy documents considered was in response to Question 1 of the consultation. An unspecified number of respondents had suggested that energy suppliers were unsuited to provision of such economic support to fuel poor households, suggesting that state would be better placed instead (DECC 2011h: 8). The response offered was as follows:

*Government believes that energy suppliers do have a role to play in protecting the most vulnerable households at risk of fuel poverty. Their recognition of this important role was demonstrate [sic] in their Voluntary Agreement between 2008 and 2011 to spend a combined sum of £375 million in providing assistance to vulnerable consumers.*

DECC (2011h: 9)

This justification is not particularly compelling, effectively stating that suppliers are well suited to deliver support because they have voluntarily done so previously. However no further rationale appears to have been given. The ECO impact assessment addresses the possibility of a state-led scheme being considered as an alternate policy:

*In comparison to delivering these measures through a tax-funded programme, the competitive pressures in the energy supply market provide an incentive to drive down the costs of installation. These pressures should allow for more low income and vulnerable households to benefit from measures for a given level of spend.*

DECC (2012h: 27)

The impact assessment states that such options were considered “prior to the introduction of the primary legislation which created the parent powers for the
secondary legislation” (DECC 2012h: 26). Whilst there is some discussion of competitiveness in the Energy Act 2010 impact assessment (see DECC 2011d: 110) there is no extensive consideration of the relative merits of supplier and state-led schemes. It might be assumed that such a consideration took place at the “options” stage of the consultation process, which there is no requirement to publish (see BIS 2013). However, given the lack of any explicit valuation (and the general uncertainty around the costs of ECO, as will be discussed in section 6.1.4) it is reasonable to conclude that the estimated level of benefit has not been quantified (or, if it has, the government do not consider it helpful to publish the findings). None of the policy development documents consider a state-driven model as an alternative policy option in any detail. Indeed, the decision to phase out Warm Front in favour of a supplier obligation was declared in the Spending Review 2010 only five months after the coalition government was formed (HM Treasury 2010b: 62).

Although not representing the views of government, the annual reports of FPAG do offer a valuable perspective on this strategy shift, particularly given their continuity (issued annually since 2002) and clear focus on fuel poverty. Initially, FPAG – recognising that the funds allocated for Warm Front were likely to be insufficient to meet targets – encouraged the use of supplier obligations to tackle fuel poverty (see, for example, FPAG 2004: 10). However, from 2007, the reports begin to express particular concern that the manner in which supplier obligations are funded and targeted are likely to be regressive (see FPAG 2007: 14). The final report to be included in this analysis, from 2011/12, explicitly states that, “FPAG is of the view fuel poverty schemes should be funded by the exchequer and not from a levy on customers’ bills.” (FPAG 2012: 17).

It is apparent from document review that many of the issues considered in this thesis have long been evident: the regressive nature of the manner in which supplier obligations are funded is discussed in the UKFPS (DTI 2001: 18); problems with targeting measures are raised in the second annual FPAG report (FPAG 2004: 11-12). However, government have tended to treat these issues as side-concerns. For example, while the ECO impact assessment recognises that the policy is likely to be regressive (see DECC 2012h: 68) the possibility of an alternative (e.g., a state-led policy) is not considered. Tensions with fuel poverty are, instead, treated as features
to be managed. For example, the ECO consultation, for example, asked respondents about the possible need for a “distributional safeguard” rather than considering a less regressive general approach (DECC 2011i: 39). Even with fuel poverty as a stated goal of policy, it is treated as subsidiary priority and there is a distinct lack of appreciation for fuel poverty as more than an incidental consideration of energy efficiency policy.

Ultimately, the reasons for the shift to supplier obligations as a means of tackling fuel poverty are likely to be hard to access. There are some clear synergies with those identified by Rosenow (2012) as driving supplier obligations as a means of tackling climate change, e.g., that obligations are generally seen to have been successful in meeting targets, and that there is an active market for measures in existence. The key reason given in the ECO documentation is that competitive pressures should reduce delivery costs (presumably as compared to government buying services directly). It is also in line with the broader ideological trends discussed in section 2.2.1; for a government looking to find a market-led alternative to Warm Front, supplier obligations are an obvious, pre-existing, option. Whatever the case, given the lack of consideration for state-led options in the ECO policy documents, it seems fair to assume the decision was made by politicians behind closed doors before the impact assessment process began.

4.4 Emergent Themes

Allocation of delivery responsibility has undoubtedly shaped the policies under consideration in this work, and as such the findings of this chapter have implications for subsequent analysis. This section draws together and discusses the relevance of themes that have arisen here for the chapters that follow. The first half discusses the failure of fuel poverty policy to date, and anatomises that breakdown with reference to the policy process theory of Hogwood and Gunn (1984). The second half considers the impact of the constraints and drivers discussed here upon the roles played by energy companies and the government.
4.4.1 Causes of Policy Failure

Applying the government’s own monitoring criteria, it is hard to interpret the first thirteen years of mandated fuel poverty activity as anything other than a policy failure. The number of 10pct fuel poor households rose by 162% between 2003 and 2011, and even using the LIHC definition which largely strips out the impacts of price rises, fuel poverty decreased by only 1.7% (DECC 2013c: 10). The analysis undertaken in this chapter has identified a number of weaknesses in existing delivery that have likely contributed to this failure. Hogwood and Gunn offer a nine-stage conceptualisation of the policy process (1984: 4), and Table 4.4 applies this as an illustrative tool, showing the stages, how they have occurred within fuel poverty policy, and the problems that have been identified by this analysis.

Table 4.4: Fuel poverty policy process interpreted via Hogwood and Gunn’s (1984) framework

<table>
<thead>
<tr>
<th>Stage</th>
<th>Within fuel poverty context</th>
<th>Problematic features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deciding to decide</td>
<td>Gradual acceptance of fuel poverty as a social problem worthy of state intervention.</td>
<td></td>
</tr>
<tr>
<td>(issue search or agenda setting)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deciding how to decide</td>
<td>Various Bills proposed to tackle fuel poverty, consideration of issue by political parties. Eventual success of Warm Homes and Energy Conservation Act 2000.</td>
<td>Despite growing political interest, it was left to a Private Member’s Bill to get fuel poverty on the legislature; resource limitations may have resulted in weaknesses in final legislation.</td>
</tr>
<tr>
<td>(or issue filtration)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Issue definition</td>
<td>Fuel poverty defined in <em>The UK Fuel Poverty Strategy</em> (DTI 2001)</td>
<td>Definition subject to flaws, many of which were not apparent at that time (see Section 2.1.2).</td>
</tr>
<tr>
<td>Forecasting</td>
<td><em>UKFPS</em> consideration of how factors related to fuel poverty might develop, e.g., fuel prices, incomes, excess winter deaths.</td>
<td>The possibility of fuel price rises was completely disregarded in the passage of WHECA. Some consideration was given to the possibility in the <em>UKFPS</em> (DTI 2001: 17-19), but potential for problems not fully recognised</td>
</tr>
</tbody>
</table>

129
<table>
<thead>
<tr>
<th>Setting objectives and priorities</th>
<th>Target, interim target, and objectives set in UKFPS (DEFRA/DTI 2005) and 1st Annual Progress report (DEFRA/DTI 2003).</th>
<th>No clear plan as to how target should be achieved, objectives not linked to overall target.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options analysis</td>
<td>UKFPS consideration of existing schemes.</td>
<td>Only current operation of existing schemes considered, no real contemplation of alternative approaches.</td>
</tr>
<tr>
<td>Policy implementation, monitoring and control</td>
<td>Annual fuel poverty statistics reports issued.</td>
<td>Do not consider progress with regard to targets and objectives.</td>
</tr>
<tr>
<td>Evaluation and review</td>
<td>Government issue annual progress report, FPAG issue annual independent evaluation</td>
<td>Again, government reports tend not to consider progress with regard to targets or objectives, do not reassess definition as problems emerge. Review of documents indicates that government often disregard FPAG recommendations.</td>
</tr>
<tr>
<td>Policy maintenance, succession, or termination</td>
<td>Re-evaluation of approach by coalition government.</td>
<td></td>
</tr>
</tbody>
</table>

Own analysis structured using Hogwood and Gunn’s (1984) framework.

It is clear both from the content of WHECA debates and from the results of votes on the Bill that lawmakers saw fuel poverty eradication as a desirable goal. Politicians were keen to set quantifiable targets, and had stringent expectations about strategy review and delivery. However, it is equally clear that those debating the Bill saw it only as confirmation of a pre-existing intention to support vulnerable groups in meeting their fuel cost needs, and believed that significant additional spending would not be necessary to achieve the goals of the Bill. This perception of a Bill that would “enshrine existing commitments”75 is at odds with an interpretation of the new legal obligation to eradicate fuel poverty as a call to action frequently used by campaign groups (see, for example, Timms 2011). Effectively, the government was happy to

75 Christopher Mullin MP (Lab., Sunderland South), Hansard HC vol. 345 col 1351 (10th March 2000)
commit to such a legal obligation, so long as the financial expense was not significantly above previous levels. This misunderstanding was compounded because the use of the word ‘practicable’ in the legislation left a seemingly inadvertent loophole that would enable the government to later play down its commitment\(^{76}\).

Regardless of problems with the form and formation of the legislation, the more fundamental problems have emerged from the subsequent activity. The demands and goals of \textit{WHECA} could have been more effectively reconciled if there had been better policy management, the element of the process for which government are unequivocally responsible. Even given unanticipated costs and fuel price rises, \textit{WHECA} was designed to be flexible. For example, the definition of fuel poverty could be have been adapted to neutralise impacts of price rises – as the LIHC definition did – but this only happened after a decade, despite David Amess stating an intention that it should be reviewed (see section 4.2.2). Equally, despite fuel poverty, as a partially technical concept, being amenable to quantification, policy monitoring has not been the reactive process described in \textit{WHECA} (s. 2(6)), but a much more descriptive endeavour. Even though the flexibility of the legislation has the potential to serve as a useful policy tool, it relies upon ambition on the part of those implementing activity. The problems faced are not simply about the level of resource available, but the handling of the problem. The government cannot be said to have done nothing\(^{77}\), but they have clearly failed to strategise for the eradication of fuel poverty. This has not gone unnoticed; FPAG has repeatedly urged government to produce a stronger strategy and costings, making recommendations to this effect year-on-year that apparently fell upon deaf ears (responses described by Brenda Boardman as “mild and dismissive” (2010: 8)). By way of example, the 7\textsuperscript{th} Annual Report recommended that:

\(^{76}\) It is worth noting that \textit{WHECA} was a Private Member’s Bill, and so those promoting it were unable to access the full resources of government in planning the legislation (only £200 in expenses may be claimed, see House of Commons Information Office 2010). Whilst the initiative of those promoting \textit{WHECA} is commendable, it is possible that limited resources for drafting were responsible for weaknesses in final legislation. Furthermore, Private Member’s Bills have a low success rate in Parliament (see Department of Information Services 2013) and, as referenced previously, politicians keen to finally get a fuel poverty bill passed, even if that meant compromising somewhat on content.

\(^{77}\) The Warm Front delivery objective of UKFPS (DTI 2001: 3), for example, was met (see Watson, Bolton 2013: 4).
As a matter of urgency the Department of Energy & Climate Change (DECC) should prepare a ‘Road Map’ with milestones and ownership of the key tasks required to have eradicated fuel poverty by 2016.

(FPAG 2009: 5)

The subsequent response given by DECC completely fails to address the strategic requirement, simply listing the work undertaken (DECC 2009: 32-33). Policy evaluation has been carried out only in the most cursory manner. Ultimately, if the government wished to take action on fuel poverty, it was within their capacity to do so. Instead, policymakers have taken advantage of the opportunity presented by the inadvertent ‘practicability’ loophole and opted only to follow the letter – not the spirit – of the law.

4.4.2 Policy Constraints

At this stage three main policy constraints can be identified as impacting the policy process.

- Legal

Both the state and suppliers are subject to legal constraints; the state is required to eradicate fuel poverty under WHECA, and suppliers are required to deliver obligations under powers originally enacted under the Electricity Act 1989, since expanded. However, the legal requirements faced by the different players are different in nature. As already discussed in section 4.3.1, the judicial review of WHECA compromised the potency of that law. Furthermore, whilst parliamentary approval would be required, government are empowered to remove or amend the law, and so could remove or further weaken the legislation (this fundamental circularity will be returned to in Chapter Eight). On the other hand, although suppliers can lobby lawmakers, they
themselves are not empowered to change legislation, and so have to either comply with obligations, face significant financial penalties\textsuperscript{78}, or leave the market.

- Political

A theme emerging strongly from the analysis undertaken is the lack of political willingness to commit resources in order to achieve fuel poverty eradication. A comprehensive interrogation of political motives is beyond the scope of this work, but the lack of political ambition is evident in the failure and mismanagement of fuel poverty policy by government. This has not gone unnoticed; FPAG observed in 2007 (report published 2008) that:

\begin{quote}
...from the outside it appeared as if the Government had given up rather than looking hard at the position and re-assessing its policies in a radical way when the fuel poverty target started to look very difficult.
\end{quote}

FPAG (2008)

Furthermore, analysis by Jansz and Guertler (2012) has demonstrated that fuel poverty budgets declined by 26\% between 2009 and 2013, against average cuts to departmental budgets of 19\% following the Spending Review 2010 (HM Treasury 2010b: 5). This diminishing ambition is perhaps not surprising given the previously acknowledged combination of the high economic costs of fuel poverty mitigation and the lack of legal impetus from government. If those legal boundaries are reassessed, it seems likely that new legislation will mirror the current cautious attitude of government, rather than the comparatively unbounded optimism of 2000.

The likely role of political ideology should also be recognised at this stage. As already discussed, the coalition government have pursued an agenda of increasing private sector involvement in the delivery of services, many more prominent than fuel

\textsuperscript{78} The legal constraints on suppliers are in some respects economic, as the penalty is a fine. However, enormity of the potential penalty makes it hard to conceive that suppliers make any sort of cost benefit analysis (i.e., simply choosing to take some level of fine is not a viable option).
poverty eradication. The Spending Review 2010 framed the decision to phase out Warm Front as one that would enable savings to public expenditure. This is in line with more the ideological stance, already discussed in section 2.2.1, of David Cameron’s Conservatives, who favour cuts to taxes, deficit reduction and an increased role for the market. As such the increased role of the private sector in delivering energy efficiency must be viewed in context, as part of that larger philosophy of delivery.

A final emerging influence that might be classed as political is that of path dependency. As early as 1983, Bradshaw noted the problematic influence of ‘incrementalism’ in energy policy as it pertained to those on low incomes, i.e., that policies were more the result of smaller ‘tweaks’ than of a considered, high-level plan (see Bradshaw 1983: 107-108). Such an effect is similarly evident in the move towards supplier obligations as a means of tackling fuel poverty, as established in section 4.3.3; in place of a coherent strategy or road map for fuel poverty alleviation, there has been a steady shift towards incorporating fuel poverty within existing supplier obligations. The concept of path dependency, as developed by Paul Pierson (2000) is in some respects a more theoretically advanced understanding of incrementalism. Pierson applies the economic concept of increasing returns to scale to policy; any step along a particular path that produces some positive consequences that are self-reinforcing, makes that path more appealing in the future by comparison to other options. The result is ‘inertia’, that, “once an increasing returns process is established, positive feedback may lead to a single equilibrium. This equilibrium will in turn be resistant to change” (Pierson 2000: 263). So, for example, as supplier obligations are already in use as a means of delivering energy efficiency measures - and have been relatively successful - the shift to a new state-led equivalent would require significant resource and so be less appealing, even if it were expected to offer better outcomes. Thus political institutions display a “status quo bias” (Pierson 2000: 262). However, certain kinds of exogenous shocks can cause a ‘critical juncture’ whereby more radical change is incentivised. This might be, for example, an economic crisis or a change in government (see Myles and Pierson (2001) for an application of this theory to the case of pension reform).
• Economic

Although the ultimate economic benefits of fuel poverty mitigation may be significant, the immediate financial costs of improving the housing stock are undoubtedly substantial, as will be discussed in section 6.1. It is clear from analysis of the WHECA debates that the actual cost far outstrips the expectations of the lawmakers who passed the legislation. Thus state delivery of fuel poverty mitigation would require public expenditure far beyond anticipated levels. When suppliers deliver the Treasury are spared this expense, because the costs are ultimately transferred to the public via energy bills, rather than taxes; again, the implications of this choice are the focus of Chapter Six.

Conclusions

This chapter reported research that set out to establish how and why responsibilities towards fuel poverty mitigation have been assigned in previous policy. Analysis of Hansard transcripts of WHECA debates found that division of responsibilities was given little consideration at that stage, primarily because it was assumed eradication would not require activity beyond what was already in place. Further analysis of policy documents found that, whilst a shift away from the government delivery of strategy towards supplier obligation as the means to tackle fuel poverty was apparent, this did not extend to a thorough discussion of the justification of that decision in terms of meeting the fuel poverty targets. While it is accepted that understanding of the motives of fuel poverty policymakers may be beyond the grasp of researchers, a number of legal, political and economic constraints were identified as likely impacting upon this choice. Evidence of poor policy management on the part of government was also presented, and it was further argued that this has likely to have contributed to fuel poverty policy failure.

Fuel poverty mitigation and carbon reduction share many synergies, so both can be tackled with the same policies. However, there are tensions and therefore trying to achieve both goals within same framework requires careful management. As has already been referenced (and will be considered in detail throughout this thesis), energy savings, even taken as cost savings, do not necessarily translate to fuel poverty
savings; they need to go to the right households, and be funded appropriately. Whilst
government have acknowledged tensions, the documents examined in this chapter
paid little attention to the comparative impact of the decision to move from a state-led
model to a supplier led model upon achievement of fuel poverty eradication; it is this
gap that the remainder of this work seeks to address.
When designing policy it is necessary to decide whether interventions should be offered universally or targeted towards specific groups. The fuel poverty policies under consideration here are focused so that particular households are prioritised for support. In the case of technical measures, the motives for targeting are straightforward; whilst a universally efficient housing stock may be the ultimate goal, achievement of this will undoubtedly take many years and it is in the interests of equity – and fuel poverty eradication – to ensure that low income households are appropriately prioritised throughout that process. Economic measures also require some level of targeting given limits on available funds and, ideally, to support a coherent link between monetary interventions and energy affordability as a goal of policy. Effective targeting is important in enabling the efficient disbursement of limited budgets upon often expensive interventions, ensuring that measures go to those households who will benefit the most, and who are in greatest need. To do otherwise would be to risk policy failure; moreover, under the relative LIHC definition of fuel poverty, significant misdirection of support has the potential to increase the numbers of individuals in fuel poverty. As will be demonstrated in this chapter, the task of effectively identifying fuel poor households is problematic due to the type and quantity of data required. As energy suppliers have taken an increased role in delivering fuel poverty policy, they have also taken more responsibility for the targeting of resources. This has primarily involved identifying qualifying households to fulfil priority group obligations, though more recently, under WHDS, companies have also taken a role in forming eligibility criteria. This chapter reports the findings of comparative analysis of the roles and capacity of the state and suppliers to successfully target and identify fuel poor households. The first section gives an overview of targeting strategies employed to date, incorporating an assessment of the efficiency of eligibility criteria via analysis of 2011 EHS datasets. This section includes an account of the analysis framework and terminology applied in this work, which builds upon that offered by Dubois (2012). The second section is focused on the targeting element of the process, comparing the capability of
state and energy suppliers to effectively identify fuel poor households. The third section applies a similar approach in considering the identification of households that meet defined eligibility criteria, and subsequent implementation. The final section summarises the issues identified with current delivery mechanisms, and suggests a number of adjustments to policy that could address the problems. However, all proposed modifications would require increased state involvement and it is argued that, despite the current technical, legal and organisational barriers to effective targeting, it is likely that political will and economic limitations pose the greatest impediments to improvement.

**Methodological Overview**

The analysis presented in this chapter is based on three main methodologies; review of policy literature, quantitative analysis, and professional engagement. Policy literature has been reviewed according to the process described in section 3.4.2 in order to develop a detailed account of the strategies applied in current targeting and, where stated, government perceptions of the purpose and efficacy of targeting.

Quantitative analysis of EHS 2011 datasets is a particular feature of this chapter. This is primarily based upon the use of descriptive statistics as a means of assessing the efficiency of eligibility criteria. Based upon the data provided in EHS 2011, dummy variables have been developed that serve as ‘flags’ of programme eligibility. The development of these is described in the Methodological Appendix, within section A1.4. By crosstabulating the eligibility flags with fuel poverty flags (see section 3.4.3), it is possible to see how many fuel poor households are and are not eligible for policies, and so assess the efficiency with which policies are reaching that group. For ECO CSCO, the data within EHS 2011 was not sufficient to create eligibility criteria flags for individual households, as this is based upon ward-level location. As such, an alternative means was developed, as will be described further in section 5.1.2. Meta-analysis of published statistics relating to previous programmes has also been incorporated. In establishing where alternate data sources might support better targeting, systematic searches of government websites were undertaken to established data availability. This element of the process owes a further debt to informal conversations with members of the policy community, who were often able to suggest
potential avenues for exploration. In particular, civil servants were contacted to gain further information on data held by government.

In order to gain an insight into supplier targeting practices, the process involved engagement with stakeholders, including a limited number of key informant interviews with individuals responsible for overseeing delivery, participation in internal meetings and limited access to relevant internal documents. Information on the interview approach is provided within section A1.7 of the Methodological Appendix, with process documents (including a sample informed consent form) supplied in sections A1.4, A1.5 and A1.6. Details of events attended are included as Appendix Two. In determining how suppliers target households, E.ON UK has effectively been treated as a case study within this analysis. Whilst the limitations to generalisability of drawing on a single case are acknowledged, the selection of E.ON UK can be justified on pragmatic and academic grounds. Pragmatically, data from E.ON UK enables the investigation of an otherwise inaccessible subject area; whilst other suppliers were contacted, there was an understandable reluctance to share detailed information around commercial activity with a project sponsored by a direct competitor. Academically, E.ON UK has been successful in meeting priority group supplier obligations to date (see Ofgem 2013d: 20-22), and so it is suggested that they represent a stronger indicator of supplier targeting potential than a company that had not met those requirements. Additionally, and to help address the inevitable impact on generalisability, findings have where possible been triangulated with what limited information already exists in the grey literature, including that published during the research process (e.g., ERA 2011, Platt, Rosenow & Flanagan 2012).

5.1 Current Policy Approach

In early 2010, Labour MP David Kidney – then Parliamentary Under-Secretary of State at DECC – highlighted the difficulties in targeting fuel poor households.

*To be completely effective at hitting the targets... I would need real-time information about household make-up, their income and the consumption of energy and the condition of the property, and I do not have any of those details... In the meantime where should we start? We should start with the*
properties that are weakest in their condition and have got people with the lowest incomes.

(see Q123: House of Commons 2010)

Fuel poverty as conceptualised by UK government is a constructed, formalised, latent variable derived from manifest characteristics\textsuperscript{79}. So, whilst fuel poverty itself cannot be directly observed, the fuel poverty definition offers an equation that relates a series of measurable inputs (e.g., income, energy requirements), and defines the outputs that would result in households then being classified as fuel poor. It is therefore possible to gather precise information on those inputs and then accurately establish whether any given household qualifies as fuel poor. David Kidney was partially correct with regards to the data required to do this; a full building survey and detailed information about household income should be sufficient. However, this level of data goes beyond what it is generally possible to establish for the purposes of real-world policy delivery. In practice, policies have tended to be targeted via ‘proxies’, more readily accessible characteristics that are expected to be associated with either the manifest elements of fuel poverty measurement (e.g., using Reduced Data SAP (rdSAP, see DECC 2013\textsuperscript{o}) as a proxy for energy requirements rather than undertaking a full building survey) or, in some instances, as direct approximations of the final target. One example of this latter usage is the most common proxy used in fuel poverty targeting to date, the receipt of particular means-tested benefits (also termed ‘passport benefits’), which function as a proxy for household income, but are often used alone to direct programmes.

This section provides an overview of the way in which schemes have been targeted to date. In the first instance, the different approaches to both the formulation of eligibility criteria and identification of qualifying households are summarised, with some initial observations made with regard to the different positions of the state and suppliers in this respect. Then, quantitative data are used to examine the targeting efficacy of eligibility criteria under both the 10pct and LIHC definitions of fuel poverty. The section concludes with an overview of the perception of the targeting

\textsuperscript{79}See Bollen (2002) for a typology of latent variables.
process adopted in this chapter (which builds upon previous work by Dubois (2012)), and an explanation of how this informs the subsequently reported work.

5.1.1 Previous Targeting Strategies

Table 5.1 summarises the targeting strategies employed in fuel poverty policies since WHECA was passed in 2000, compiled from a review of the policy literature. This incorporates details of both the eligibility criteria employed and the process by which identification of qualifying individuals or households was undertaken. Where the relevant aspect of the policy is the sub-targeting of a ‘Priority Group’ (PG) (or, in the case of CERT, a ‘Super Priority Group’ (SPG)) of vulnerable customers within a broader programme, this is indicated. The Decent Homes Programme and the social tariffs that offered by suppliers under the Voluntary Agreement are included as a point of comparison.
## Table 5.1: Targeting strategies employed within fuel poverty policies, 2000-2013

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Duration</th>
<th>Basis for Eligibility Criteria</th>
<th>Means of Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical Interventions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Decent Homes Programme</strong></td>
<td>2000-2013</td>
<td>All social housing that does not meet the Decent Homes Standard is eligible.</td>
<td>Local Authorities responsible for identifying housing that does not meet the Decent Homes Standard.</td>
</tr>
<tr>
<td><strong>EESoP 3</strong></td>
<td>2000-2002</td>
<td>Priority Group (PG): Receipt of income related benefits or tax credits (expected, not a compulsory target).</td>
<td>Suppliers seek out eligible customers to meet obligations</td>
</tr>
<tr>
<td><strong>EEC 1</strong></td>
<td>2002-2005</td>
<td>PG: Receipt of income related benefits or tax credits</td>
<td>Suppliers seek out eligible customers to meet obligations</td>
</tr>
<tr>
<td><strong>EEC 2</strong></td>
<td>2005-2008</td>
<td>PG: Receipt of income related benefits or tax credits</td>
<td>Suppliers seek out eligible customers to meet obligations</td>
</tr>
<tr>
<td><strong>CERT</strong></td>
<td>2008-2012</td>
<td>PG: Eligibility criteria based on receipt of means tested benefits and household composition (targeted at households containing older people, people with disabilities, and children). Super Priority Group (SPG): A subset of the above group, with tighter qualification criteria (though based on similar criteria types).</td>
<td>Suppliers seek eligible customers to meet obligations</td>
</tr>
<tr>
<td><strong>CESP</strong></td>
<td>2009-2012</td>
<td>All measures to be carried out in the lowest 10% of areas ranked according to IMD.</td>
<td>Suppliers seek out eligible customers to meet obligations</td>
</tr>
<tr>
<td><strong>Warm Front</strong></td>
<td>2000-2013</td>
<td>Eligibility criteria based on receipt of means tested benefits and household composition (targeted at households containing older people, people with disabilities, and children under five). Eligible households then have dwelling assessed; must be below SAP 55 (63 from 2012).</td>
<td>Eligible households apply to scheme for SAP assessment and possible grant.</td>
</tr>
<tr>
<td>Scheme</td>
<td>Duration</td>
<td>Basis for Eligibility Criteria</td>
<td>Means of Identification</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>ECO</strong></td>
<td>2013 – present</td>
<td>Carbon Saving Community Obligation: All measures to be carried out in the lowest 15% of areas ranked according to IMD; 15% of that obligation must be carried out in rural areas.</td>
<td>Suppliers seek eligible customers to meet obligations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Home Heating Cost Reduction Obligation: Eligibility criteria based on receipt of means tested benefits and household composition (targeted at households containing older people, people with disabilities, and dependent children). This element sometimes referred to as the “Affordable Warmth” group.</td>
<td></td>
</tr>
<tr>
<td><strong>Economic Interventions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Winter Fuel Payments</strong></td>
<td>1997 – present</td>
<td>Age-based eligibility criteria (targeted at older people, transferred via the state pension system).</td>
<td>Primarily automatic identification via benefits system.</td>
</tr>
<tr>
<td><strong>Social Tariffs</strong></td>
<td>2008 - 2011</td>
<td>Eligibility criteria selected by individual suppliers, based upon factors including age, receipt of benefits, and income.</td>
<td>Voluntary scheme, customer required to apply (though suppliers agreed to achieve a certain level of expenditure).</td>
</tr>
<tr>
<td><strong>Warm Home Discount</strong></td>
<td>2011 – present</td>
<td>Core Group eligibility restricted to older people in receipt of income related pension supplements.</td>
<td>Most within Core Group have rebates automatically applied by suppliers, supported by DWP data sharing.</td>
</tr>
<tr>
<td>Scheme</td>
<td>Duration</td>
<td>Basis for Eligibility Criteria</td>
<td>Means of Identification</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
<td>--------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Broader Group eligibility defined by individual suppliers (subject to Ofgem approval). These tend to relate to benefit receipt.</td>
<td></td>
<td>Those within Broader Group must apply to their supplier (though suppliers are obligated to achieve a certain level of expenditure).</td>
<td></td>
</tr>
</tbody>
</table>

Note: Light grey shading indicates state-led schemes.

Two aspects of delivery emerge as worthy of mention at this stage. First, that the state that has tended to hold ultimate responsibility for establishing eligibility criteria for programmes (and by extension, potential means of identifying households). The one, recent, departure from this approach is WHDS, for which suppliers are able to exhibit some level of control over eligibility criteria for the Broader Group element. However, the selected criteria must be either chosen from a pre-approved list, or approved by Ofgem (see Ofgem 2013k: 22-24). Table 5.2 gives an example of the types of criteria employed, demonstrating that they remain primarily based upon receipt of passport benefits or tax credits.

Table 5.2: Eligibility criteria for Warm Home Discount Scheme as employed by E.ON, 2013

<table>
<thead>
<tr>
<th>Recipients must be an E.ON account holder and in receipt of one of the following benefit combinations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pensioners</strong></td>
<td>Guaranteed AND Savings Element of the Pension Credit and under the age of 75 on 20/07/2013, not in receipt of the guaranteed element of Pension Credit (you can receive the savings element), over the age of 65 and in receipt of Housing Benefit or Council Tax Reduction</td>
</tr>
<tr>
<td><strong>Families</strong></td>
<td>Child Tax Credit with a relevant income of £16,190 or less.</td>
</tr>
<tr>
<td><strong>Disabilities</strong></td>
<td>Income Based Job Seekers Allowance and Disability Living Allowance (DLA) or Personal Independence Payment (PIP) (all components)</td>
</tr>
<tr>
<td></td>
<td>Income Related Employment and Support Allowance and Disability Living Allowance (DLA) or Personal Independence Payment (PIP) (all components)</td>
</tr>
<tr>
<td></td>
<td>Income Support and Disability Living Allowance (DLA) or Personal Independence Payment (PIP) (all components)</td>
</tr>
<tr>
<td></td>
<td>Working Tax Credit with a relevant income of £16,190 or less and Disability Living Allowance (DLA) or Personal Independence Payment (PIP) (all components)</td>
</tr>
<tr>
<td><strong>Pregnant or Medical Condition</strong></td>
<td>Income Based Job Seekers Allowance and Maternity Exception Certificate (MATEX) or medical exemption certificate (MEDEX)</td>
</tr>
<tr>
<td></td>
<td>Income Related Employment and Support Allowance and MATEX or MEDEX Medical Exemption Certificate</td>
</tr>
<tr>
<td></td>
<td>Income Support and MATEX or MEDEX exemption certificate</td>
</tr>
<tr>
<td></td>
<td>Working Tax Credit with a relevant income of £16,190 or less and MATEX or MEDEX exemption certificate</td>
</tr>
</tbody>
</table>

Source: Adapted from E.ON UK (2014b)
Second, a division can be recognised between the identification approaches employed by the state, and those required of suppliers. State-led schemes have tended to opt for either recipient self-selection (as for Warm Front) or apply economic measures automatically via the benefits system (as for WFP and CWP). Suppliers, on the other hand, have generally\(^{80}\) been required to actively seek out households in order to meet their obligations. For the purposes of this work, targeting where the burden is shifted away from the delivery agent (e.g., automatic identification or self-referral) has been classified as ‘passive’, while that requiring delivery agents to seek out households is termed ‘active’.

5.1.2 Targeting Efficiency of Previous Criteria

Sections 4.3 and 4.4 discussed the disjointed nature of fuel poverty policy, including the lack of a clear, quantified strategy to guide the achievement of targets. It is perhaps unsurprising, then, that government has tended not to appraise the efficacy of proposed activity in targeting fuel poor households. A review of policy literature found only a small number of documents relating to older schemes had made an attempt to estimate targeting efficiency, and these tended to be post hoc appraisals. NAO evaluations of Warm Front estimated that only 30-40\% of eligible households were fuel poor (Bourn 2003: 14) and only 35\% of fuel poor households were eligible (Burr 2009b: 13). The DECC impact assessment on adjusting the eligibility criteria for Warm Front, estimated that 53\% of eligible households were fuel poor or vulnerable, improving to 77\% after criteria were adjusted in April 2011 (DECC 2011g: 25)\(^{81}\). The official evaluation of CESP using data from 2009 EHS estimated that 22.4\% of households eligible for the scheme were fuel poor (CAG Consultants, Ipsos MORI & Building Research Establishment 2011: 20) . The WHDS impact assessment includes consideration of the likely difference in the impact on fuel poverty of different eligibility options (see DECC 2011f: 54) which implies that targeting efficacy was modelled, though the figures for this are not published. The

\(^{80}\) WHDS represents the exception to this, as the identification of Core Group households has been supported by data sharing between DWP and energy suppliers. Whilst companies are obligated to achieve certain levels of expenditure, the lesser burden of WHDS obligations enables suppliers to take a more passive approach to identification; this will be examined in depth in section 5.3.

\(^{81}\) It seems fair to assume that the inclusion of vulnerable households (under a fairly generous definition, see section 5.1.3) in the DECC evaluation accounts for the significant uplift over the NAO estimates.
WHDS consultation considers targeting efficiency (both in terms of coverage and leakage), but does not link this to final eligibility criteria in any concrete way (DECC 2010a: 9-13). The ECO impact assessment\(^{82}\) indicates that the Affordable Warmth group is expected to be around 53% fuel poor households (DECC 2012h: 199). The consideration of targeting efficacy of eligibility criteria in policy literature is sparse and inconsistent. It should also be noted that all figures cited here refer to 10pct fuel poverty as all literature predates the LIHC definition.

The analysis presented here primarily uses EHS 2011 data to assess the targeting efficacy of eligibility criteria for fuel poverty programmes. The EHS contains sufficient data to establish whether surveyed households are in fuel poverty, and whether they would theoretically qualify for a range of schemes. Thus by crosstabulating these two factors, it is possible to establish how effective programmes might be in reaching fuel poor households. In the earlier releases of this dataset used for preliminary analysis (DCLG 2011a, 2012b), dummy variables were constructed to approximate eligibility criteria for programmes. However, the latest release includes ready-made variables for several programmes, and these have been used where possible. For some programmes, however, it was still necessary to construct variables; details of the formation of these are included in section A1.3. Estimation of efficiency for ECO CSCO was conducted in a slightly different manner, as it was not possible to use EHS 2011 data\(^{83}\). Instead, DECC estimations of fuel poverty incidence at the LSOA level (based on secure versions of the EHS 2011 datasets) released as Excel spreadsheets (DECC 2013a, DECC 2013b) were merged with lists of low-income LSOAs eligible for CSCO and analysed in SPSS (DECC 2012f) (note that this does not include consideration of the rural sub-target). This makes it possible to aggregate results, and so assess how many fuel poor households are in each CSCO-qualifying LSOA, and how many fuel poor households are not. The extremely diverse criteria chosen by suppliers for the WHDS Broader Group are beyond the scope of what can be modelled with the available data, however, it is possible to evaluate all other schemes going back as far as CERT. WFP has been removed from income considered

\(^{82}\) The Green Deal and ECO consultation stage Impact Assessment also cites some assessment of the proportion of households eligible for other schemes that are likely to be fuel poor; 66% for Cold Weather Payment and 61% for CERT Super Priority Group (DECC 2011a: 112).

\(^{83}\) The EHS provides data on the IMD ranking of households only by decile. Thus it is possible to ascertain which households might be CESP eligible (in the lowest 10% of areas) but not ECO CSCO eligible (the lowest 15%).
in assessing targeting efficacy, so that results consider fuel poverty status of households assuming they are not receiving that help\textsuperscript{84}.

Even though this work applies the new LIHC definition of fuel poverty, where appropriate results for the 10pct definition have also been included\textsuperscript{85}. The change in definition has the effect of altering the officially fuel poor population (as illustrated in Figure 5.1; refer also to Figure 2.5 for demographic changes), and as such, it is of interest to consider the impact of this shift upon targeting efficacy.

Note: Percentages may not sum due to rounding, graphical depiction of sets is not to scale. Includes income from WFPs.
Source: Own analysis of DCLG (2013c).

\textbf{Figure 5.1: Shift in composition of fuel poor population under two different indicators, 2011}

\textsuperscript{84} As discussed in Chapter Three, it has not been possible to remove the WHDS payments imputed by DECC statisticians, however, these were comparatively low in 2011. The ECO CSCO targeting estimate applies DECC estimations of fuel poverty incidence, which do not remove WFP from consideration.

\textsuperscript{85} Note that this is the ‘full income’ 10pct definition, based upon income before housing costs are accounted for, in line with the main official measure used by government.
The primary measure of efficiency used in this analysis is that employed by Sefton (2002) (after Weisbrod (1970)) for examining the criteria used on the HEES programme (precursor to Warm Front). This consists of two elements:

- **Horizontal efficiency**, or ‘coverage’ – the proportion of the target group (here assumed to be the fuel poor) that are eligible for the programme. This is equivalent to the statistical concept of Positive Predictive Value (see Westover, Westover & Bianchi 2011).

- **Vertical efficiency**, or ‘leakage’ – the proportion of eligible households who are not fuel poor. This is equivalent to the statistical concept of False Discovery Rate (see Westover, Westover & Bianchi 2011).

Thus a perfectly targeted scheme would have 100% coverage and 0% leakage. The policy literature reviewed earlier in this section tends to focus upon coverage; however, leakage is arguably no less important, particularly given that the misdirection of funds has the potential to increase inequality and thus relative LIHC fuel poverty. Table 5.3 illustrates the coverage and leakage of criteria for past and current programmes with regard to 10pct and LIHC fuel poverty, respectively.

Though supplier obligation technical schemes have not required that eligible households be below a certain SAP threshold (as Warm Front did), there is an in-built limit in the sense that houses that have already achieved a high level of efficiency would presumably not receive measures. Therefore a separate rating of efficiency has been included for all supplier obligation technical schemes that accounts for the viability of an efficiency upgrade (based upon an EHS 2011 variable that flags measure viability, so CSCO is not included) as an implicit requirement of eligibility. Viable measures could be identified for 76% of occupied dwellings in the EHS sample. Raw efficiencies are also included on the grounds that in the first instance delivery agents would need to identify which households are in need of said measures. The difficulty of establishing this is likely to vary on a case-by-case basis as the necessity of upgrade will be more apparent for some dwellings than for others. The Decent Homes Programme is included as a comparator, but note that as that scheme applies to a limited base (social housing) and is fairly well advanced, the criteria appear weaker than they likely would have done when the programme began.

---

86 The benefits data provided in the EHS are modeled, and so relate to theoretical eligibility. The potential impacts of sub-optimal uptake will be discussed in section 5.3
Table 5.3: Coverage and leakage of programmes in targeting 10pct and LIHC fuel poverty

<table>
<thead>
<tr>
<th>Programme</th>
<th>Coverage (100% optimum)</th>
<th>Leakage (0% optimum)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>10pct Fuel Poverty</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Interventions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CERT Priority Group</td>
<td>75%</td>
<td>74%</td>
</tr>
<tr>
<td>CERT Super Priority Group</td>
<td>41%</td>
<td>72%</td>
</tr>
<tr>
<td>CESP</td>
<td>23%</td>
<td>79%</td>
</tr>
<tr>
<td>Warm Front (criteria post September 2012)</td>
<td>30%</td>
<td>49%</td>
</tr>
<tr>
<td>ECO HHCRO</td>
<td>35%</td>
<td>61%</td>
</tr>
<tr>
<td>ECO CSCO</td>
<td>17%</td>
<td>83%</td>
</tr>
<tr>
<td>Economic Interventions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold Weather Payments</td>
<td>37%</td>
<td>69%</td>
</tr>
<tr>
<td>Winter Fuel Payments</td>
<td>48%</td>
<td>79%</td>
</tr>
<tr>
<td>WHDS Core Group</td>
<td>18%</td>
<td>67%</td>
</tr>
<tr>
<td><strong>LIHC Fuel Poverty</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Interventions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decent Homes Programme</td>
<td>9%</td>
<td>91%</td>
</tr>
<tr>
<td>CERT Priority Group</td>
<td>70%</td>
<td>85%</td>
</tr>
<tr>
<td>CERT Super Priority Group</td>
<td>43%</td>
<td>82%</td>
</tr>
<tr>
<td>CESP</td>
<td>30%</td>
<td>83%</td>
</tr>
<tr>
<td>Warm Front (criteria post September 2012)</td>
<td>31%</td>
<td>68%</td>
</tr>
<tr>
<td>ECO HHCRO</td>
<td>36%</td>
<td>75%</td>
</tr>
<tr>
<td>ECO CSCO</td>
<td>15%</td>
<td>88%</td>
</tr>
<tr>
<td>Technical Interventions (Eligibility restricted to inefficient dwellings)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decent Homes Programme</td>
<td>11%</td>
<td>93%</td>
</tr>
</tbody>
</table>
### Cert Priority Group

<table>
<thead>
<tr>
<th></th>
<th>61%</th>
<th>83%</th>
</tr>
</thead>
</table>

### Cert Super Priority Group

<table>
<thead>
<tr>
<th></th>
<th>36%</th>
<th>79%</th>
</tr>
</thead>
</table>

### CESP

<table>
<thead>
<tr>
<th></th>
<th>25%</th>
<th>80%</th>
</tr>
</thead>
</table>

### ECO HHCRO

<table>
<thead>
<tr>
<th></th>
<th>30%</th>
<th>73%</th>
</tr>
</thead>
</table>

### Economic Interventions

<table>
<thead>
<tr>
<th></th>
<th>32%</th>
<th>84%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>26%</th>
<th>93%</th>
</tr>
</thead>
</table>

### WHDS Core Group

<table>
<thead>
<tr>
<th></th>
<th>10%</th>
<th>88%</th>
</tr>
</thead>
</table>

### All Schemes

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<th></th>
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</thead>
</table>


In all, 59% of LIHC fuel poor households are eligible for at least one of the currently operational schemes analysed via EHS data (ECO HHCRO, CWP, WFP or WHDS Core Group), down from 69% under the 10pct measure. There is an 88% leakage rate, up from 77% under the 10pct measure.

These numbers become more meaningful in policy terms when linked to expenditure on the respective programmes. Figure 5.2 takes data on individual scheme expenditure, drawn from policy literature, and applies the efficiencies from the latter half of Table 5.3 to illustrate the proportion of expenditure that is expected to go to fuel poor households, and the proportion of ‘leakage’ Note that this is intended only to act as a broad attempt to indicate the potential impact of any misdirection; it is assumed for the purposes of illustration that expenditure on households is uniform, which will not always be the case in practice, particularly for technical measures. Expenditure is for the entire scheme (i.e., GB-wide as applicable) as anticipated for 2013/14 if currently running, or for the final year of operation if not (exceptions noted in accompanying text), whereas the EHS data analysed relates to 2011 household eligibility. Eligibility for supplier obligated technical interventions considers all dwellings as qualified.
Note: For CERT and CESP only estimates of total lifetime expenditure for schemes are available; these have been allocated pro rata (the same applies to CERT PG and SPG allocations). The number of Cold Weather Payments made varies based upon winter temperatures, making the actual total expenditure difficult to predict. For illustrative purposes, the figure given here represents the average of the past five winters, i.e., all winters since the current £25/week rate has been in place. All costs are in real terms. Warm Front criteria considered are post-September 2012.


Figure 5.2: Direction of programme annual expenditure towards fuel poor households
As Figure 5.3 shows, the majority of expenditure is not expected to go to fuel poor households. Overall, of current programmes modelled, it is estimated that £320m of £3108m annual expenditure (10%) is likely to go to LIHC fuel poor households, down from £752m (24%) under the 10pct measure. WFP is the largest contributor to this inefficiency, because it accounts for 70% of expenditure and 93% of recipients do not meet the LIHC definition of fuel poverty. One source of weakness in achieving coverage is that the current criteria are extremely reliant on benefits as a proxy (see Table 5.1). Analysis of the EHS 2011 finds that 53% of LIHC fuel poor households (61% under the 10pct measure) were not in receipt of the various means-tested benefits or tax credits aimed at those on low incomes.

From a policy perspective, it is also important to consider the potential numbers and proportions of households eligible for different programmes, and the number actually expected to be supported; these are given in Table 5.4. Such volumes have implications for administrative feasibility, for example, the criteria for ECO HHCRO are ‘tighter’ than those for CERT, and so, whilst leakage is lower, the eligible group is much smaller and so may be harder for suppliers to locate, an issue to be discussed further in section 5.3.3. It is also worth recognising that a larger target group provides an inherent boost to coverage, even where criteria are weak. There are also implications for the distributional impacts of policies, as will be discussed in section 6.3.1. Numbers given as supported are those expected in the most recent year in which that scheme was operational, through 2013/14. Assumptions apply as for Figure 5.2.
Table 5.4: Number of households eligible and in annual receipt of fuel poverty programmes

<table>
<thead>
<tr>
<th>Programme</th>
<th>Number of households eligible (as % of total English population)</th>
<th>Number of households in annual receipt</th>
<th>Proportion eligible group receiving support annually</th>
<th>Proportion annual recipients expected 10pct fuel poor</th>
<th>Proportion annual recipients expected LIHC fuel poor</th>
<th>Expected number 10pct fuel poor households receiving support annually</th>
<th>Expected number LIHC fuel poor households receiving support annually</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Interventions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CERT Priority Group</td>
<td>9,525,849 (44.5%)</td>
<td></td>
<td>26%</td>
<td>15%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CERT Super Priority Group</td>
<td>4,799,229 (21.9%)</td>
<td></td>
<td>28%</td>
<td>18%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CESP</td>
<td>3,572,328 (16.3%)</td>
<td>47,497</td>
<td>1.3%</td>
<td>21%</td>
<td>17%</td>
<td>9,752</td>
<td>7,895</td>
</tr>
<tr>
<td>Warm Front (criteria post September 2012)</td>
<td>1,925,652 (8.8%)</td>
<td>35,000</td>
<td>1.8%</td>
<td>51%</td>
<td>32%</td>
<td>17,677</td>
<td>11,092</td>
</tr>
<tr>
<td>ECO HHCRO</td>
<td>2,898,167 (13.2%)</td>
<td>202,348</td>
<td>7%</td>
<td>39%</td>
<td>25%</td>
<td>79,120</td>
<td>50,718</td>
</tr>
<tr>
<td>ECO CSCO</td>
<td>3,255,816 (14.9%)</td>
<td>87,609</td>
<td>2.7%</td>
<td>17%</td>
<td>12%</td>
<td>14,944</td>
<td>10,549</td>
</tr>
<tr>
<td>Economic Interventions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold Weather Payments</td>
<td>3,938,041 (18%)</td>
<td></td>
<td>74.7%</td>
<td>31%</td>
<td>16%</td>
<td>911,932</td>
<td>470,675</td>
</tr>
<tr>
<td>Winter Fuel</td>
<td>7,409,478 (33.8%)</td>
<td></td>
<td>100%*</td>
<td>21%</td>
<td>7%</td>
<td>1,555,990</td>
<td>518,663</td>
</tr>
<tr>
<td>Payments</td>
<td>WHDS Core Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,758,864 (8%)</td>
<td>1,157,879</td>
<td>65.8%</td>
<td>33%</td>
<td>12%</td>
<td>381,920</td>
<td>138,880</td>
</tr>
</tbody>
</table>

*Theoretically, all eligible households should receive WFP. However, in practice it is likely that a small number of households who are ineligible for – or not otherwise claiming – state pension do not receive WFP.

Note: Some figures drawn from external sources may have been subject to rounding. No figures have been published giving the number of households in receipt of CERT or WFP. There is some difficulty here with regards to geography as efficiency of targeting is based on English sample, but numbers of recipients (and therefore outputs) are based on entire schemes. The proportion of eligible group receiving support annually may therefore be expected to be lower in reality than indicated here, as eligible households outside England are not included (approximately 86% of GB households are in England, see ONS 2013a).

With ECO HHCRO and CSCO as the only energy efficiency programmes targeted at fuel poor households\(^87\) it might be expected to take 45 years to reach all of the 2.4m English households currently LIHC fuel poor at the present rate of progress\(^88\). Note also that there is significant overlap in receipt of economic schemes as, for example, Pension Credit Guarantee Credit recipients are eligible for support from all three economic schemes and ECO HHCRO.

The outputs reported in Tables 5.3 and 5.4 will be referenced extensively throughout the following chapters, e.g., as a basis for the meta-analysis of the costs of tackling fuel poverty reported in section 6.1.3. It should be recognised that efficiency is not the be all and end all of policy; given that there is ‘churn’ as households move in and out of fuel poverty (i.e., when incomes change, when moving property), there is still value to supporting those on the thresholds. However, targeting efficiency remains a valid measure of broad success in reaching fuel poor households.

### 5.1.3 Framework for Approach

Dubois (2012) suggests that the identification of fuel poor households has three stages; targeting, identification and implementation. This thesis uses the same terminology, and shares an emphasis on the role of political and economic factors in guiding choices made with respect to targeting. However, Dubois’ understanding is drawn primarily from the French treatment of fuel poverty, or précarité énergétique, a newer policy development. Whereas English fuel poverty targeting is the latest formation of a decades-long evolution, French policy approaches are only just beginning, and so consider the process from first principles. As a result, there are disparities between Dubois’ account and English policy in practice. Understanding these differences is helpful in clarifying some of the issues with current English targeting strategy.

---

\(^87\) Assuming activity is distributed across the devolved nations in proportion to the number of households, i.e., 86% of households helped are in England.

\(^88\) Note that this is not the same as eradicating fuel poverty under a relative measure, as the target will move.
• Targeting

When designing interventions, policymakers must decide whether support should be made available to everyone (universalism) or just to those in the greatest need (targeted support). It is also possible to use mixed mechanisms such as New Labour’s ‘progressive universalism’, under which support was universal, but those most in need received more (see Hirsch 2007). Fuel poverty programmes have historically been targeted at specific individuals and households (see Table 5.1), most likely because energy efficiency measures are expensive and – in the case of technical interventions – some level of targeting is necessary as not all households are able to receive support (e.g., those living in dwellings for which no energy efficiency upgrades are viable).

Dubois defines targeting within the fuel poverty context as the selection of the segment of the population that should benefit from policies, emphasising that this is in part a political choice, and one that includes consideration of economic costs (2012: 108-109). In the French case, there is a definition of fuel poverty (established in 2010), but this is looser than the English definition, and there is no eradication target. Accordingly, there is a greater degree of flexibility in the French fuel poverty scheme, Habiter Meux, which allows local delivery agents autonomy in deciding whether households are fuel poor for the purposes of the programme (see Dubois 2012: 112).

Fuel poverty in the UK, as already established, is more rigidly defined and monitored. However, this has not been met with comparable order and efficiency in targeting. There is no unifying strategy relating to the targeting of different fuel poverty policies to ensure effective interaction. While fuel poverty as a concept is tightly defined by government, and policies are in place that are ostensibly intended to support fuel poor households, as already discussed in this section, there is little consideration given in the policy literature to the targeting efficiency of policies towards the fuel poor. One possible reason for this is that, as shown, targeting efficiency is low, and so from a political perspective there is no motivation to declare this lack of success (particularly if there is no pressing incentive to improve performance).

One possible justification for the low targeting efficiency is that these policies are not intended solely to target the fuel poor, but also other vulnerable groups (e.g., older people and children), with all currently active policies considering vulnerability
factors along with income in some respect. While this is sensible in terms of mitigating the impacts of inefficient homes, the definition of vulnerability for fuel poverty purposes given in the UKFPS (DTI 2001: 10) and used within the EHS dataset counts as vulnerable any household with; a member aged over 60, under 16, or where a member is disabled or has a long-term illness. This accounts for 73% of English households (based on own analysis of DCLG 2013c). No prioritisation is included in the definition, although policies have tended to focus on older people. The Energy Act 2010 enabled the Secretary of State to define a “fuel poverty risk group” with a rather broad definition:

...a category of person whom... the proportion who are (or, but for a support scheme, would be) living in fuel poverty is higher than the proportion of people in Great Britain who are living in fuel poverty.

Energy Act 2010 (s.15(5))

As a result the WHDS policy documentation confusingly conflates the issues by defining the “fuel poverty risk group as a group that is both vulnerable and low income” (DECC 2011e: 5), an approach does not seem to add a great deal to the process. Focusing the limited resources on groups that are vulnerable and identified as low income is one way of prioritising budgets89, but differs from the goal of fuel poverty mitigation. There is no strategy specifically directed at supporting vulnerable groups with fuel costs, and success in targeting these groups is not monitored. Supporting vulnerable households, whilst a commendable goal, does not nullify the responsibility of the government towards the fuel poor.

Thus while UK fuel poverty policy sets a higher, more rigid bar for policy success than that in France, there is little evidence that targeting activity has striven to meet those standards. The problems encountered echo those discussed in the previous chapter; policies are poorly organised, with no overarching strategy or clearly articulated targeting rationale. The population that is intended to benefit from policies has been declared in the form of eligibility criteria for programmes, but rarely has any

89 Though is somewhat at odds with DECC’s decision to disregard Hills’ recommendation that Disability Living Allowance should be excluded from income calculations (2013j: 34).
effort been made to state the extent to which this is intended to comprise fuel poor households, or to evaluate success in this respect.

- Identification

Dubois defines identification as consisting of three tasks, “(a) choosing the process of identification of (fuel) poor households, (b) selecting criteria of identification and (c) actually identifying the fuel poor households” (2012: 109). This conceptualisation is, again, more closely suited to the broader French policy perspective, in which fuel poor households – according to a looser definition – are the direct targets of the Habiter Meux. In the UK, there is a distinct divide between the ultimate target group – the fuel poor, who can theoretically be perfectly identified – and households that are eligible for support. In practice, policy delivery involves identification of the latter group (it being assumed that the targeting element of the process should have ensured some level of coherence between the two). Dubois (building upon Jehu-Appiah et al. 2010), identifies three main possible identification strategies for fuel poor households; the use of information held in databases, geographical proxies, and “decentralised identification”, whereby local actors apply their own criteria (2012: 110). In the UK, eligibility criteria have tended to be closely linked to the benefits system, effectively a database, as already illustrated in Table 5.1. For information, Table 5.5 offers more details on types of proxies used in UK schemes.
Table 5.5: Proxies used in targeting UK fuel poverty policies

<table>
<thead>
<tr>
<th>Proxy type</th>
<th>Examples of use in schemes</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benefits and tax credits</strong></td>
<td>All schemes</td>
<td>Government have direct access, suppliers have limited data matching powers for identification purposes.</td>
</tr>
<tr>
<td><strong>Disability or long term illness</strong></td>
<td>CERT, Warm Front, ECO HHCRO</td>
<td>Often established via benefit receipt.</td>
</tr>
<tr>
<td><strong>Geographical</strong></td>
<td>CESP, ECO CSCO</td>
<td>Restricted to technical schemes, offers added benefits in potential economies of scale in delivery.</td>
</tr>
<tr>
<td><strong>Age-related</strong></td>
<td>WFP, CERT, Warm Front, ECO HHCRO</td>
<td>Often established via benefit receipt.</td>
</tr>
<tr>
<td><strong>Energy efficiency</strong></td>
<td>Warm Front</td>
<td>Only Warm Front has explicitly limited eligibility to households under a certain level of energy efficiency, though there is an implicit limit on technical schemes insofar as it is not possible to apply a measure where one is already in place.</td>
</tr>
<tr>
<td><strong>Other proxies</strong></td>
<td>WHDS</td>
<td>Use of supplier-selected criteria for WHDS has resulted in expanded range of proxy types, e.g. E.ON UK offer WHDS to certain holders of maternity and medical exemption certificates (see E.ON UK 2014b)</td>
</tr>
</tbody>
</table>

The identification of eligible households, as already noted, has taken two main forms, defined in this work as passive and active.

- Implementation

Dubois’ framework is focused on energy efficiency measures, and takes a fairly broad view of the implementation element of the process that encompasses everything following identification (Dubois 2012: 110-111). The focus in this chapter is
narrower, and as such the relevant elements of the implementation process will be combined with discussion of identification, with which it is closely linked. Where identification is passive, implementation tends to be straightforward; e.g., CWP and WFP are automatically applied via the benefits system. However, active identification tends comes with a greater implementation burden, for example, where recipients may need to be convinced of the benefits of participation in schemes, particularly technical schemes, and where proof of eligible status needs to be manually obtained for regulatory reporting.

This section has given an overview of the current state of fuel poverty targeting. The next two sections will discuss the issues identified here in more detail, with particular reference to the capabilities of the energy supplier and the state in effectively meeting requirements. Section 5.2 will discuss the relative capacity of the state and suppliers to target fuel poor households, and section 5.3 will consider the ability to identify households eligible for schemes, and to implement measures. These represent the two main points at which fuel poor households might be ‘lost’ from the process, as illustrated in Figure 5.3.

![Figure 5.3: Fuel poverty targeting process](image-url)
5.2 Targeting

As established, UK fuel poverty schemes tend to rely on proxies to target policies, and delivery requires the identification of qualifying households, as opposed to fuel poor households. However, there is still a value in considering the relative potential of the state and suppliers in targeting fuel poor households, as this offers the possibility to inform improved strategy: this is the focus of this section. In the first instance, the types of data that are likely to support this element of the process are discussed. Next, the capacity of the state to identify fuel poor households is examined; this includes consideration of both the types of data currently used to this end, as well as of data that is held but not currently used in the implementation of fuel poverty policy. This is then followed by a discussion of the current ability of energy suppliers to successfully identify the fuel poor amongst their own customers. The section concludes with a review of alternate external data sources identified as offering the potential to improve identification of fuel poor households.

5.2.1 Data Requirements

Given the structure of the LIHC fuel poverty definition, the most prominent types of data that offer the potential to support identification are those that accurately predict household incomes and energy requirements\(^{90}\). Whilst it is possible that other factors might prove strong indicators, the use of the EHS 2011 dataset limits consideration to these elements. Ideally policies should be targeted to those households with low incomes and high energy costs\(^{91}\). However, as identified in the previous section, current policy has tended to focus on benefits receipt alone, a proxy for low income.

The Hills Fuel Poverty Review final report (2012: 70-94) included a consideration of the factors likely to prove effective in identifying fuel poor households, as did the

\(^{90}\) Actual energy use could be considered a substitute for energy requirements, however, as will be considered shortly, this presents problems given the tendency for fuel poor households to underuse energy.

\(^{91}\) Note that perfect identification would also require information on household composition in order that both factors could be equivalised.
subsequent consultation on a new framework\textsuperscript{92} (DECC 2013k: 11-33). Table 5.6 offers further assessment of risk factors for a range of variables included in the EHS 2011. These relative risk ratios represent the probability of a household being LIHC fuel poor given the presence of certain circumstances (e.g., whether the dwelling is owner occupied) compared with their absence, and so indicates what sort of groups could be targeted. A relative risk of 2 signifies that the group is twice as likely to be fuel poor than the wider population, whilst a risk of 1 signifies no difference in the risk. Confidence intervals crossing 1 indicate that risks are not significantly different, whilst confidence intervals that do not contain 1 indicate a significantly lower or higher risk. For a more detailed explanation or relative risk ratios, see Gordon (2012).

Table 5.6: Relative risk ratios for fuel poverty by demographic and housing stock factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Proportion of households</th>
<th>Relative Risk Ratios</th>
<th>95% CI Upper</th>
<th>95% CI Lower</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Relative Risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>95% CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Upper</td>
<td>Lower</td>
<td></td>
</tr>
<tr>
<td>Tenure type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owner occupied</td>
<td>65.6%</td>
<td>0.52</td>
<td>0.519</td>
<td>0.521</td>
<td>*</td>
</tr>
<tr>
<td>Private rented</td>
<td>17%</td>
<td>2.603</td>
<td>2.596</td>
<td>2.610</td>
<td>*</td>
</tr>
<tr>
<td>Social housing</td>
<td>17.5%</td>
<td>0.869</td>
<td>0.866</td>
<td>0.873</td>
<td>*</td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North East</td>
<td>5.2%</td>
<td>1.114</td>
<td>1.108</td>
<td>1.12</td>
<td>*</td>
</tr>
<tr>
<td>Yorkshire and the Humber</td>
<td>10.3%</td>
<td>1.007</td>
<td>1.003</td>
<td>1.011</td>
<td>*</td>
</tr>
<tr>
<td>North West</td>
<td>13.6%</td>
<td>1.17</td>
<td>1.165</td>
<td>1.174</td>
<td>*</td>
</tr>
<tr>
<td>East Midlands</td>
<td>8.7%</td>
<td>1.237</td>
<td>1.232</td>
<td>1.242</td>
<td>*</td>
</tr>
<tr>
<td>West Midlands</td>
<td>10.4%</td>
<td>1.307</td>
<td>1.302</td>
<td>1.312</td>
<td>*</td>
</tr>
<tr>
<td>South West</td>
<td>10.3%</td>
<td>0.796</td>
<td>0.792</td>
<td>0.799</td>
<td>*</td>
</tr>
<tr>
<td>Eastern England</td>
<td>11.1%</td>
<td>0.917</td>
<td>0.913</td>
<td>0.921</td>
<td>*</td>
</tr>
<tr>
<td>South East</td>
<td>16.1%</td>
<td>0.699</td>
<td>0.697</td>
<td>0.702</td>
<td>*</td>
</tr>
<tr>
<td>London</td>
<td>14.2%</td>
<td>0.985</td>
<td>0.981</td>
<td>0.989</td>
<td>*</td>
</tr>
<tr>
<td>Household type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lone parent with dependent children</td>
<td>7.6%</td>
<td>1.841</td>
<td>1.834</td>
<td>1.848</td>
<td>*</td>
</tr>
<tr>
<td>Couple with dependent children</td>
<td>22.5%</td>
<td>1.198</td>
<td>1.194</td>
<td>1.201</td>
<td>*</td>
</tr>
</tbody>
</table>

\textsuperscript{92} For examples of other studies employing regression techniques to predict fuel poverty risk, see Healy and Clinch (2004), Waddams Price et al. (2007, 2012), Baker (2008), and those referenced in the discussion of Geographical Information Systems towards the end of this section.
<table>
<thead>
<tr>
<th>Household Type</th>
<th>Percentage</th>
<th>Floor Area 1</th>
<th>Floor Area 2</th>
<th>Floor Area 3</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Couple, no dependent children</td>
<td>7.6%</td>
<td>0.585</td>
<td>0.583</td>
<td>0.587</td>
<td>*</td>
</tr>
<tr>
<td>Single person under 60</td>
<td>7.2%</td>
<td>1.463</td>
<td>1.458</td>
<td>1.468</td>
<td>*</td>
</tr>
<tr>
<td>Single person over 60</td>
<td>12.9%</td>
<td>0.583</td>
<td>0.580</td>
<td>0.586</td>
<td>*</td>
</tr>
<tr>
<td>Other multi-person household</td>
<td>14.3%</td>
<td>1.426</td>
<td>1.419</td>
<td>1.432</td>
<td>*</td>
</tr>
</tbody>
</table>

**Age**

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Percentage</th>
<th>Floor Area 1</th>
<th>Floor Area 2</th>
<th>Floor Area 3</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child under 5 in household</td>
<td>13.3%</td>
<td>1.349</td>
<td>1.344</td>
<td>1.353</td>
<td>*</td>
</tr>
<tr>
<td>Child under 16 in household</td>
<td>28.6%</td>
<td>1.479</td>
<td>1.475</td>
<td>1.483</td>
<td>*</td>
</tr>
<tr>
<td>Person over 60 in household</td>
<td>37.3%</td>
<td>0.701</td>
<td>0.699</td>
<td>0.704</td>
<td>*</td>
</tr>
<tr>
<td>Person over 75 in household</td>
<td>13.4%</td>
<td>0.72</td>
<td>0.717</td>
<td>0.723</td>
<td>*</td>
</tr>
<tr>
<td>Person over 85 in household</td>
<td>3.3%</td>
<td>0.782</td>
<td>0.776</td>
<td>0.789</td>
<td>*</td>
</tr>
</tbody>
</table>

**Employment Status**

<table>
<thead>
<tr>
<th>Employment Status</th>
<th>Percentage</th>
<th>Floor Area 1</th>
<th>Floor Area 2</th>
<th>Floor Area 3</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household with no one of working age employed</td>
<td>14.3%</td>
<td>3.15</td>
<td>3.142</td>
<td>3.159</td>
<td>*</td>
</tr>
</tbody>
</table>

**Illness or Disability**

<table>
<thead>
<tr>
<th>Illness or Disability</th>
<th>Percentage</th>
<th>Floor Area 1</th>
<th>Floor Area 2</th>
<th>Floor Area 3</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Someone in household with illness or disability</td>
<td>29.6%</td>
<td>1.244</td>
<td>1.241</td>
<td>1.248</td>
<td>*</td>
</tr>
</tbody>
</table>

**Dwelling type**

<table>
<thead>
<tr>
<th>Dwelling type</th>
<th>Percentage</th>
<th>Floor Area 1</th>
<th>Floor Area 2</th>
<th>Floor Area 3</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terrace</td>
<td>28.5%</td>
<td>1.317</td>
<td>1.313</td>
<td>1.32</td>
<td>*</td>
</tr>
<tr>
<td>Semi-detached</td>
<td>26.3%</td>
<td>1.269</td>
<td>1.265</td>
<td>1.272</td>
<td>*</td>
</tr>
<tr>
<td>Detached</td>
<td>17%</td>
<td>0.858</td>
<td>0.855</td>
<td>0.861</td>
<td>*</td>
</tr>
<tr>
<td>Bungalow</td>
<td>8.7%</td>
<td>0.894</td>
<td>0.89</td>
<td>0.899</td>
<td>*</td>
</tr>
<tr>
<td>Flat</td>
<td>19.5%</td>
<td>0.542</td>
<td>0.54</td>
<td>0.544</td>
<td>*</td>
</tr>
</tbody>
</table>

**Dwelling age**

<table>
<thead>
<tr>
<th>Dwelling Age</th>
<th>Percentage</th>
<th>Floor Area 1</th>
<th>Floor Area 2</th>
<th>Floor Area 3</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre 1919</td>
<td>20.5%</td>
<td>2.125</td>
<td>2.119</td>
<td>2.13</td>
<td>*</td>
</tr>
<tr>
<td>1919 to 1944</td>
<td>16.8%</td>
<td>1.307</td>
<td>1.302</td>
<td>1.311</td>
<td>*</td>
</tr>
<tr>
<td>1945 to 1964</td>
<td>19.9%</td>
<td>1.148</td>
<td>1.145</td>
<td>1.152</td>
<td>*</td>
</tr>
<tr>
<td>1965 to 1980</td>
<td>21%</td>
<td>0.56</td>
<td>0.558</td>
<td>0.562</td>
<td>*</td>
</tr>
<tr>
<td>1981-1990</td>
<td>8.4%</td>
<td>0.543</td>
<td>0.54</td>
<td>0.547</td>
<td>*</td>
</tr>
<tr>
<td>Post 1990</td>
<td>13.4%</td>
<td>0.255</td>
<td>0.253</td>
<td>0.257</td>
<td>*</td>
</tr>
</tbody>
</table>

**Usable floor area**

<table>
<thead>
<tr>
<th>Usable Floor Area</th>
<th>Percentage</th>
<th>Floor Area 1</th>
<th>Floor Area 2</th>
<th>Floor Area 3</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 50 m²</td>
<td>11.3%</td>
<td>0.472</td>
<td>0.47</td>
<td>0.475</td>
<td>*</td>
</tr>
<tr>
<td>50 to 69 m²</td>
<td>24%</td>
<td>0.628</td>
<td>0.626</td>
<td>0.631</td>
<td>*</td>
</tr>
<tr>
<td>70 to 89 m²</td>
<td>28.1%</td>
<td>1.174</td>
<td>1.17</td>
<td>1.177</td>
<td>*</td>
</tr>
<tr>
<td>90 to 109 m²</td>
<td>14.2%</td>
<td>1.475</td>
<td>1.471</td>
<td>1.48</td>
<td>*</td>
</tr>
<tr>
<td>110 m² or more</td>
<td>22.4%</td>
<td>1.262</td>
<td>1.259</td>
<td>1.266</td>
<td>*</td>
</tr>
</tbody>
</table>

**Construction factors**

<table>
<thead>
<tr>
<th>Construction Factor</th>
<th>Percentage</th>
<th>Floor Area 1</th>
<th>Floor Area 2</th>
<th>Floor Area 3</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cavity wall</td>
<td>64%</td>
<td>0.512</td>
<td>0.511</td>
<td>0.514</td>
<td>*</td>
</tr>
<tr>
<td>Solid wall</td>
<td>26.9%</td>
<td>2.31</td>
<td>2.304</td>
<td>2.316</td>
<td>*</td>
</tr>
<tr>
<td>Less than 80% double glazed</td>
<td>16.1%</td>
<td>1.582</td>
<td>1.578</td>
<td>1.587</td>
<td>*</td>
</tr>
<tr>
<td>Feature</td>
<td>Value 1</td>
<td>Value 2</td>
<td>Value 3</td>
<td>Value 4</td>
<td>Value 5</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>More than one floor</td>
<td>91.3%</td>
<td>1.12</td>
<td>1.115</td>
<td>1.126</td>
<td>*</td>
</tr>
<tr>
<td>More than two floors</td>
<td>20%</td>
<td>0.97</td>
<td>0.967</td>
<td>0.973</td>
<td>*</td>
</tr>
<tr>
<td>More than three floors</td>
<td>5.7%</td>
<td>0.596</td>
<td>0.592</td>
<td>0.601</td>
<td>*</td>
</tr>
<tr>
<td>Type of area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>20%</td>
<td>1.41</td>
<td>1.408</td>
<td>1.416</td>
<td>*</td>
</tr>
<tr>
<td>Suburban</td>
<td>62.9%</td>
<td>0.695</td>
<td>0.693</td>
<td>0.696</td>
<td>*</td>
</tr>
<tr>
<td>Rural</td>
<td>17.1%</td>
<td>1.199</td>
<td>1.195</td>
<td>1.203</td>
<td>*</td>
</tr>
<tr>
<td>Heating system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No central heating</td>
<td>9.2%</td>
<td>1.636</td>
<td>1.63</td>
<td>1.642</td>
<td>*</td>
</tr>
<tr>
<td>Mains gas main heating fuel</td>
<td>84.2%</td>
<td>0.605</td>
<td>0.603</td>
<td>0.607</td>
<td>*</td>
</tr>
<tr>
<td>Electricity main heating fuel</td>
<td>8.7%</td>
<td>1.599</td>
<td>1.593</td>
<td>1.605</td>
<td>*</td>
</tr>
<tr>
<td>SAP rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A or B</td>
<td>0.2%</td>
<td>No households fuel poor.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>14.4%</td>
<td>0.157</td>
<td>0.155</td>
<td>0.158</td>
<td>*</td>
</tr>
<tr>
<td>D</td>
<td>49.7%</td>
<td>0.476</td>
<td>0.475</td>
<td>0.478</td>
<td>*</td>
</tr>
<tr>
<td>E</td>
<td>28.4%</td>
<td>2.248</td>
<td>2.242</td>
<td>2.254</td>
<td>*</td>
</tr>
<tr>
<td>F or G</td>
<td>7.3%</td>
<td>2.826</td>
<td>2.817</td>
<td>2.835</td>
<td>*</td>
</tr>
<tr>
<td>Payment method</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pays for main heating fuel by direct debit.</td>
<td>57.2%</td>
<td>0.44</td>
<td>0.439</td>
<td>0.441</td>
<td>*</td>
</tr>
<tr>
<td>Pays for main heating fuel by pre-payment.</td>
<td>10.8%</td>
<td>1.961</td>
<td>1.954</td>
<td>1.967</td>
<td>*</td>
</tr>
<tr>
<td>Pays for main heating fuel by standard credit.</td>
<td>16.5%</td>
<td>1.319</td>
<td>1.315</td>
<td>1.323</td>
<td>*</td>
</tr>
<tr>
<td>Occupancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underoccupied</td>
<td>32.5%</td>
<td>0.952</td>
<td>0.949</td>
<td>0.955</td>
<td>*</td>
</tr>
<tr>
<td>Gas connection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Off gas network</td>
<td>13.2%</td>
<td>1.558</td>
<td>1.552</td>
<td>1.563</td>
<td>*</td>
</tr>
<tr>
<td>Benefits and Tax Credits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household eligible for Pension Credit (Guarantee Element)</td>
<td>8%</td>
<td>1.309</td>
<td>1.303</td>
<td>1.314</td>
<td>*</td>
</tr>
<tr>
<td>Household eligible for Pension Credit (Savings Element)</td>
<td>6.6%</td>
<td>0.915</td>
<td>0.91</td>
<td>0.92</td>
<td>*</td>
</tr>
<tr>
<td>Household eligible for Child Tax Credit</td>
<td>21.1%</td>
<td>2.383</td>
<td>2.377</td>
<td>2.389</td>
<td>*</td>
</tr>
<tr>
<td>Household eligible for Working Tax Credit</td>
<td>2.1%</td>
<td>2.986</td>
<td>2.971</td>
<td>3.001</td>
<td>*</td>
</tr>
<tr>
<td>Household eligible for Income Support</td>
<td>6.5%</td>
<td>2.714</td>
<td>2.705</td>
<td>2.723</td>
<td>*</td>
</tr>
<tr>
<td>Household eligible for income-based Jobseekers Allowance</td>
<td>4.1%</td>
<td>4.023</td>
<td>4.01</td>
<td>4.037</td>
<td>*</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>---</td>
</tr>
<tr>
<td>Household eligible for income-based Employment and Support Allowance</td>
<td>1.5%</td>
<td>2.66</td>
<td>2.644</td>
<td>2.677</td>
<td>*</td>
</tr>
</tbody>
</table>

**Fuel poverty policies**

<table>
<thead>
<tr>
<th>Household in CERT Priority Group</th>
<th>43.5%</th>
<th>3.034</th>
<th>3.025</th>
<th>3.042</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household in CERT Super Priority Group</td>
<td>21.9%</td>
<td>2.637</td>
<td>2.63</td>
<td>2.644</td>
<td>*</td>
</tr>
<tr>
<td>Household eligible for CESP</td>
<td>16.3%</td>
<td>2.213</td>
<td>2.207</td>
<td>2.219</td>
<td>*</td>
</tr>
<tr>
<td>Household eligible for Warm Front (criteria post Sept 2012)</td>
<td>8.8%</td>
<td>4.655</td>
<td>4.643</td>
<td>4.667</td>
<td>*</td>
</tr>
<tr>
<td>Household eligible for ECO HHCR</td>
<td>13.2%</td>
<td>3.613</td>
<td>3.603</td>
<td>3.622</td>
<td>*</td>
</tr>
<tr>
<td>Household eligible for Cold Weather Payment</td>
<td>18%</td>
<td>2.131</td>
<td>2.125</td>
<td>2.137</td>
<td>*</td>
</tr>
<tr>
<td>Household eligible for Winter Fuel Payment</td>
<td>33.8%</td>
<td>0.676</td>
<td>0.674</td>
<td>0.678</td>
<td>*</td>
</tr>
<tr>
<td>Household eligible for WHDS Core Group</td>
<td>8%</td>
<td>1.309</td>
<td>1.303</td>
<td>1.314</td>
<td>*</td>
</tr>
</tbody>
</table>

Note: * = significant at 5% level, ns = not significant at 5% level. Significant factors for which the risk of fuel poverty exceeds that of the wider population are shaded.

Source: Own analysis of DCLG (2013c).

Some of the stronger predictors highlighted in Table 5.6 are already accounted for in current policy, e.g., living in a solid wall is a risk factor, in line with one focus of ECO (see section 2.2.3). Most fuel poverty policy eligibility groups are more likely to be fuel poor than the general population, albeit by differing degrees. However, there are some striking discrepancies. Older people tend to be at a lower risk, with one element of Pension Credit being the only benefit that does not denote a higher risk of fuel poverty, despite being the only benefit that guarantees receipt of both WHDS and CWP. WFP recipients are at a lower risk of fuel poverty than the wider population. However, as discussed in section 5.1.3, these groups may be targeted not because they are fuel poor, but because they are otherwise vulnerable. That said, households containing a child under 16 are also at high risk, also classed as vulnerable within the UKFPS (DTI 2001: 10), but are not similarly targeted. As might be expected, living in
a property with a SAP rating of E or lower is a risk factor. More specifically, older properties, larger properties, properties without central heating or with electric space heating are also at risk. Private renters are more than twice as likely to be fuel poor as the rest of the population, whilst those with prepayment meters (or otherwise not using direct debit to pay for their main fuel) are also at a higher risk.

Whilst the use of the EHS as a ‘training set’ (Tan, Steinbach & Kumar 2013: 148-149) to uncover strong predictors of fuel poverty is undoubtedly useful, successful real-world targeting also relies on access to the relevant types of data. The remainder of this section considers the extent to which the state and energy suppliers have access to the types of relevant data of the sort identified in Table 5.6, and the practical value of information for identifying the fuel poor households. The section concludes with a review of external data sources identified during this research as being potentially valuable in targeting fuel poor households.

5.2.2 State Targeting Capacity

The state has primary responsibility for setting eligibility criteria for programmes and, by extension, for targeting policy towards fuel poor households. As established in Table 5.1, currently these are overwhelmingly been based upon receipt of benefits or tax credits. As reported in Table 5.3, the targeting efficiency of such proxies towards fuel poverty is poor. However, the many subsidiary agencies of the state between them hold a wealth of data with the potential to enable improved targeting.93

Table 5.7 reports the findings of a review of data held by state sources relating to housing stock quality, energy usage or incomes. This was conducted primarily via examination of publicly available information, though direction was provided by the literature review, interviews, and further conversations with members of the policy community, including members of the Government Statistical Service.

93 Ravetz (2008) discusses in more general terms the unemployed potential of UK housing stock data.
Table 5.7: Identified state-held sources of data on incomes and housing stock

<table>
<thead>
<tr>
<th>Source</th>
<th>Ownership</th>
<th>Types of Data Held</th>
<th>Coverage</th>
<th>Current Accessibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income Data</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DWP data on pensions and</td>
<td>DWP</td>
<td>Hold data on receipt of state benefits.</td>
<td>All recipients known.</td>
<td>Closed, limited legislative powers support data matching of Pension Credit recipients</td>
</tr>
<tr>
<td>benefits</td>
<td></td>
<td></td>
<td></td>
<td>with energy suppliers.</td>
</tr>
<tr>
<td><strong>Census Data</strong></td>
<td>Overseen by the Office for</td>
<td>The 2011 Census included questions about employment</td>
<td>95% household response rate for</td>
<td>Closed at individual level, secure data can be accessed subject to approval. Aggregate data</td>
</tr>
<tr>
<td></td>
<td>National Statistics (ONS), a</td>
<td>status and hours of work.</td>
<td>England.</td>
<td>publically available.</td>
</tr>
<tr>
<td></td>
<td>non-ministerial government</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>department.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HMRC</td>
<td>Non-ministerial government</td>
<td>Hold data on tax credits, child benefit and personal</td>
<td>All recipients known.</td>
<td>Closed.</td>
</tr>
<tr>
<td></td>
<td>department.</td>
<td>income tax.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Indices of Multiple Deprivation</strong></td>
<td>DCLG</td>
<td>Indices of Multiple Deprivation are compiled at the Lower Super Output Area level (LSOA; 400-1200 households) based on government data, taking into account seven weighted domains of deprivation, including income deprivation and employment deprivation. IMDs were last compiled in 2010 and are due to be reassessed.</td>
<td>Area-based measure with full UK coverage.</td>
<td>Open.</td>
</tr>
<tr>
<td>Survey Data</td>
<td>Various, generally overseen by the ONS.</td>
<td>Numerous government-sponsored surveys consider factors related to income, e.g., the Family Resources Survey (FRS), Households Below Average Income (HBAI; derived from the FRS), the Labour Force Survey (LFS), the Integrated Household Survey (IHS). The English Housing Survey (EHS) also includes income data.</td>
<td>Based upon representative samples of varying sizes.</td>
<td>Publically available versions generally available, in addition to secure data.</td>
</tr>
<tr>
<td>Housing Stock Data</td>
<td>Census</td>
<td>Overseen by the ONS.</td>
<td>The 2011 census included questions on house type, number of rooms, number of bedrooms, central heating type, tenure and landlord.</td>
<td>95% household response rate for England.</td>
</tr>
<tr>
<td></td>
<td>Local Authority Housing Statistics</td>
<td>DCLG</td>
<td>Local Authorities submit a range of housing stock statistics to DECC annually, including statistics relating to energy efficiency.</td>
<td>Aggregated at the LA level.</td>
</tr>
<tr>
<td><strong>English Housing Survey</strong></td>
<td>DCLG</td>
<td>Collects detailed data on dwelling quality and housing stock for sample. Primary source used by DECC to compile fuel poverty statistics.</td>
<td>Representative ample, EHS 2013 includes interview and physical data for 14386 occupied dwellings.</td>
<td>Open, additional secure access version.</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Energy consumption data</strong></td>
<td>DECC</td>
<td>Beginning in 2005, DECC have received annualised consumption estimates provided at meter point level by electricity industry and Xoserve (company responsible for aggregation of gas consumption).</td>
<td>Some limitations where meters cannot be linked to addresses. Around 18% of gas and 20% of electricity submitted readings are estimated, not actual, for each year.</td>
<td>Closed, publically available aggregated at the LSOA level.</td>
</tr>
<tr>
<td><strong>Energy Performance Certificate Register</strong></td>
<td>Currently operated by Landmark on behalf of DCLG.</td>
<td>Since 2007, Energy Performance Certificates (EPCs) have been required whenever a dwelling is bought, sold or rented. They include an estimation of energy costs and heat demand for the dwelling, current and potential RdSAP rating and band, some detail on dwelling characteristics, and suggested improvements.</td>
<td>As of March 2014, 11.3m domestic EPCs were lodged with the register for England and Wales, indicating that they are available for c.48% of dwellings.</td>
<td>Open (access expanded following consultation in 2010).</td>
</tr>
<tr>
<td><strong>Home Analytics</strong></td>
<td>EST, a social enterprise largely funded by government.</td>
<td>Modelled dataset based upon HEED, Experian, Census, Ordnance Survey, Royal Mail and EST internal data. Includes variables relating to housing stock (including wall type and insulation, lathing type, boiler type, property age, number of bedrooms, fuel type, property type and tenure and dwelling footprint), householders (limited to indication of ability to pay and willingness to undertake retrofit), estimated energy consumption, viable measures and potential savings.</td>
<td>Modelled data available for all dwellings.</td>
<td>Commercially available.</td>
</tr>
<tr>
<td><strong>Home Energy Efficiency Database</strong></td>
<td>EST.</td>
<td>Compiled from a range of data sources, primarily reported installations under energy efficiency schemes from 2002 onwards. Includes variables relating to property type, age, tenure, heating fuel, heating system, controls, boiler type, external wall type, loft insulation, window type, hot water heating system, hot water tank insulation, microrenewables, smart meters, advanced measures).</td>
<td>At least one data point available for 51% of UK homes, though collection method naturally skews sample towards houses that have already received measures.</td>
<td>Aggregated data is available, but access is restricted to particular classes of non-commercial users.</td>
</tr>
<tr>
<td><strong>Homes and Communities Agency</strong></td>
<td>Non-departmental public body</td>
<td>Data submitted by registered private providers of social housing. Aggregated at Local Authority level, includes data on average rent, housing benefit receipt, proportion of homes not meeting Decent Homes Standard.</td>
<td>2.6m English homes (12%), all social housing.</td>
<td>Closed, data aggregated at LA level.</td>
</tr>
<tr>
<td>Valuations Office Agency</td>
<td>Executive Agency of HMRC</td>
<td>Core data on council tax band, house type, age, floor area, number of rooms (including bedroom and bathroom counts), and number of floors. Additional data for some houses on presence of central heating, conservatory.</td>
<td>Core data fields complete for vast majority of dwellings (by way of example, examination of VOA data releases indicates that only 0.04% of properties do not have age data available).</td>
<td>Closed.</td>
</tr>
</tbody>
</table>

Note: Accessibility refers in the first instance to address-level data (where held). Closed data is that only available to owner; open data is available to general public. Secure data refers to that data which requires special permissions for full access (see, for example, UK Data Service 2014a). Where data sources hold clearly irrelevant data, these have not been listed.

Some of the data sources included in Table 5.7 have already been combined under the National Energy Efficiency Data Framework (NEED) (see DECC 2014d). DECC state that NEED has been applied in considering fuel poverty policy planning (DECC 2014d: 7) however, this has not yet extended to the application of this data in policy targeting. The National Heat Map, commissioned by DECC from CSE, also brings together some of the data discussed in Table 5.6 (see CSE 2014b). Local Authorities are also able to request address level data from that model to support delivery of their own projects. It was further suggested by one energy industry professional interviewed for this research that a successful Green Deal could create useful data on the national housing stock as it would potentially result in more building surveys being undertaken (as these constitute part of the assessment process, see DECC 2010c).

It is apparent from this review that a range of unexploited data exist with the potential to improve the targeting of fuel poor households. There are challenges in employing some of this information, for example, technical complexity, limited accessibility, or low coverage\(^94\). It might also be more difficult to formulate convenient eligibility criteria of the sort facilitated by benefits receipt from more advanced types of data. However, advanced usages offer the potential for data to be applied in the targeting of fuel poor households, i.e., via improved geographical targeting, the use of data mining, and through centralised databases; these possible means of effectively utilising the identified data sources will be discussed further in the final section.

5.2.3 Supplier Targeting Capacity

The targeting of fuel poor households is not required within energy supplier obligations, and the extent to which companies actively attempt to find such households is unknown (one Ofgem report briefly reviews some of the efforts made by the Big Six in this respect, see Ofgem 2010: 9-10). E.ON UK has reviewed its own ability to identify the fuel poor (using the 10pct definition) amongst its own customers as part of a programme of Corporate Social Responsibility activity that incorporated Challenge 100 (see E.ON UK 2010) and a subsequent programme of activity, the

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\(^{94}\) Though benefit uptake coverage is by no means optimal, as will be discussed in section 5.3.2.
Reset Review (see E.ON UK 2012) that sought to re-evaluate the company’s relationship with its customers. As already established, this work is in some respects a case study of E.ON UK, but it offers an insight into an otherwise inaccessible research area. Interviews helped establish the extent to which the data held by energy suppliers could enable targeting of fuel poor households, and it is argued that this will be indicative of the position of the other obligated suppliers. As noted previously, E.ON UK have been comparatively successful in delivering obligations, so there is no reason to expect that they should be significantly less able than their competitors in this respect.

The findings indicate that supplier ability to target fuel poor households is significantly limited by data access. One limitation is that the vast majority of data held – particularly recent data – relates only to current customers\(^{95}\). Beyond that which might potentially be useful for marketing, there is no incentive for suppliers to collect and store information on previous customers. Of the two core types of data useful in identifying fuel poor households, incomes and fuel requirements, the former is the element about which suppliers know least. This is to be expected; there is no reason why energy suppliers should have access to data on customer incomes as a matter of course. In the UK a range of companies specialise in the development of sophisticated consumer data models that are sold primarily to support product marketing. The most prominent are credit reference agencies Equifax (see Equifax 2014); Callcredit, producers of the Cameo classification mode (see Callcredit 2014); CACI, producers of the Acorn model (see CACI 2013); and Experian, producers of the Mosaic model (see Experian 2014b), whom E.ON UK partnered with on Challenge 100. These agency models include variables that can indicate household income, however, they differ in accuracy and tend to be updated infrequently, restricting their value in predicting fuel poverty risk. Models are available at both the household and postcode level, however, those specialists interviewed indicated that postcode level data was of limited value in considering fuel poverty risk; this is in line with the estimation of the efficiency of CESP targeting given in the previous section.

\(^{95}\) It is worth noting that all Big Six suppliers are participants in the midata government initiative, which seeks to improve transparency around the data that companies hold on consumers (see BIS 2014).
Suppliers also do not hold data on fuel requirements; data on housing type is available for purchase from the aforementioned commercial sources, but one interviewee – a specialist in energy industry customer data (hereafter referred to as CI) – stated that in their experience this tends to be limited to house type and whether the house was built within the last 18 years, and that they have been unsuccessful in finding any better sources. Suppliers do have access to data on customer fuel source and actual expenditure; however, this is also subject to limitations, as suppliers will only know about the fuels that they supply. So, where a customer is ‘dual fuel’, they should know expenditure, but where a customer receives only gas, their electricity expenditure will be unknown. Furthermore, when a customer receives only electricity, the supplier does not necessarily know whether they have a gas supply at all. In any of these scenarios, suppliers will not know whether customers use additional fuel sources such as propane, oil or solid fuel. Even where fuel type is known, there are further uncertainties in relation to reporting of expenditure. CI reported that it takes multiple readings across different seasons to gain an accurate profile of household energy use. In the best-case scenario, a household will self-report meter readings on a monthly basis; however, this is rare. Official readings are taken around every six months, though this varies by region. The best data comes from smart meters, which submit accurate monthly readings automatically. However, as of September 2013, only just under a million UK households (3.9%) had a smart or smart-type meter in place (DECC 2013n: 19), though the government target is to have a smart meter in every household by 2020 (DECC 2013n: 7). It is unknown as to what proportion of current smart meter owners are likely to be fuel poor. Despite these barriers, CI emphasised that it is in the interest of suppliers to accurately estimate consumer spend, both as a means to mitigate risk for themselves, and so that they can provide more accurate bills (the provision of inaccurate bills was cited as a common catalyst for customers switching). As such, sophisticated modelled profiles of energy use have been developed to support this, supported by purchased third-party consumer data. So, for example, where only electricity is supplied, consideration of house type and established energy profiles with relation to income bands can enable suppliers to predict whether the property is heated with electricity, or whether there is likely to be an additional gas supply.

96 DECC estimate that around 18% of gas and 20% of electricity readings submitted to them are estimated, and disregard these in constructing NEED (see DECC 2014b).
Suppliers potentially hold a range of other data on customers, reported in Table 5.8 along with commentary on data quality.

**Table 5.8: Energy supplier access to customer data**

<table>
<thead>
<tr>
<th>Data type</th>
<th>Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>Should be known for all customers.</td>
</tr>
<tr>
<td>Credit score</td>
<td>As 89% of UK households are supplied with energy in advance of payment (see Table 5.6), suppliers frequently undertake credit checks on new customers and so are likely to have some knowledge of credit history for current (and possibly previous) customers. However, practice is likely to vary between companies (see Consumer Focus reports on the use of customer credit reference data by energy companies, Vyas 2011, Accent Scotland 2012).</td>
</tr>
<tr>
<td>Fuel Direct status</td>
<td>Indicates benefits receipt. In 2011, c. 40,000 each of electricity and gas customers were on Fuel Direct (Ofgem 2012a: 40-43).</td>
</tr>
<tr>
<td>History of contacts with customer</td>
<td>Customer contacts can help establish status and energy requirements. However, data is scattered and may be undermined by lack of trust between customers and suppliers.</td>
</tr>
<tr>
<td>Join date</td>
<td>Should be known for all customers.</td>
</tr>
<tr>
<td>Name</td>
<td>Known for an estimated 85% of E.ON UK customers.</td>
</tr>
<tr>
<td>Participation in previous obligation activity</td>
<td>Interviewees report that this can be difficult to access, e.g., for work undertaken by different suppliers via HEED (EST 2014d). Equally customers who have had support are less likely to be fuel poor.</td>
</tr>
<tr>
<td>Payment methods used</td>
<td>Should be known for all customers.</td>
</tr>
<tr>
<td>Payment record</td>
<td>Should be known for all customers.</td>
</tr>
<tr>
<td>Priority Services Register status</td>
<td>Indicates vulnerability. In 2011, 1.82m English households (8.3%) were on the register (Ofgem 2012a: 31).</td>
</tr>
<tr>
<td>Warm Home Discount Scheme receipt</td>
<td>Suppliers will know whether they apply WHDS to their own customers; there were 1.2m Core Group and 0.4m Broader Group rebates in 2012/13 (Ofgem 2013j: 5). They should also be aware of any social tariffs or debt assistance offered under the Industry Initiatives and Legacy Spending elements of the programme.</td>
</tr>
</tbody>
</table>

Source: Stakeholder interviews unless indicated otherwise.

However, where suppliers do hold data, this is potentially undermined by ‘churn’ or ‘data decay’, i.e., where customers move home or switch suppliers. Analysis of EHS
data suggests that 9.2% of English households moved into their home in the last year (own analysis of DCLG 2013c), whilst Ofgem-commissioned research indicates that 15% of gas customers and 17% of electricity customers switched suppliers in 2010 (Ipsos MORI 2011: 8). Whilst a high rate of switching might be evidence of a healthy market, customer churn requires suppliers to either start afresh in estimating energy expenditure, or work from data relating to a previous occupant or property. One energy supplier employee also noted that, as suppliers are not required to target fuel poor households, much of the potentially useful data that is held is currently spread across multiple systems (though this will vary between companies dependent on IT infrastructure). As such, even where data exists, it may not be straightforward to aggregate.

Despite the range of barriers, all of the energy industry representatives interviewed believed they have had some success in predicting fuel poverty risk amongst their own customers with the data they already have, though without building survey data they have only been able to validate this with reference to the number of customers they would expect to be in fuel poverty. A noteworthy outcome of these modelling attempts is that in order to achieve viable numbers, it was necessary to artificially boost the energy expenditure of lower income households, i.e., many of those who might have been expected to be spending 10% or more of their income on fuel were not doing so, because of what appeared to modellers as suspiciously low expenditure. This supports evidence from literature previously cited in section 2.1 (e.g., Hirsch, Preston & White 2011) that low income households tend to ration their fuel use. It also supports the finding of Hutchinson et al. (2006) that the association between property characteristics and actual low internal temperatures is weak.

Some of the data held by suppliers is both not available to the state as a matter of course, and has the potential to support better targeting, e.g., credit score, payment history, and energy consumption; the targeting potential of such data could be a fruitful avenue for future research. However, at present, supplier capacity to identify fuel poor customers is limited. All energy industry representatives interviewed felt that the potential did exist to achieve better identification, but only with a level of investment in data and systems for which there is currently no incentive to undertake, as it is not obligated by government. The strongest primary data that suppliers
presently have at their disposal is that relating to energy use, but this is limited to what they themselves supply. Whilst actual expenditure is not the same as the required expenditure used to establish fuel poor status, it still offers the potential to prove a useful predictor. Targeting those with high bills might seem the obvious strategy, however, this is both undermined by evidence that low income households tend to ration energy, and because it would violate the ‘polluter pays’ principle of environmental policy. It would likely be more valuable to target those who are currently consuming less energy than is healthy; however this may present tensions with carbon reduction policy aims, as the intention would presumably be to encourage such households to use more energy. Suppliers have no incentive to share expenditure data amongst themselves as this would allow competitors to identify the most ‘valuable customers’ as a marketing opportunity. Another agent (e.g., the government) could serve as a central hub and consolidate the data (as they currently do within NEED); this possibility will be considered in more detail in section 5.4.2.

5.2.4 Alternate Sources of Information to Support Targeting

The research process identified a number of additional potential sources of data that might be used to identify fuel poor households. These are reviewed briefly here as they might contribute to better policy solutions, as discussed in section 5.4.2.

- Local Authority Data

The requirement for LAs to collect housing stock data is limited to HECA reports (see section 2.4.4) and annual statistics that must be submitted to DCLG (referenced in Table 5.6). As discussed in section 2.4.4, LA interest in energy efficiency and fuel poverty tends to be variable, but there are certainly instances where LA data has the potential to contribute to better targeting at the local level. The Housing Intelligence for the East Midlands (hi4em) project, funded via a consortium of East Midlands LAs, is an example of good practice, compiling a range of data sources to support the activity of councils in delivering programmes at the local level. This includes maps of fuel poverty incidence based on locally available data (see hi4em 2014). The Commission for Rural Communities (CRC) and Durham County Council have published a manual for LAs that demonstrates how a database can be created to
estimate SAP ratings for all individual properties, with detailed guidance on costs and practical requirements (see CRC/Durham County Council 2010). Although variance may make it difficult to incorporate LA data within national level requirements, data like that discussed here – as well as the inherently superior knowledge of localities held by LAs – has significant scope to augment targeting when delivering at the local level.

- Geographic Information Systems (GIS)

A number of recent projects, primarily run with some involvement from universities, have combined analysis of survey data with Geographical Information Systems (GIS) to produce sophisticated synthetic models that enable fuel poverty risk to be spatially mapped at the small area level. The broad approach taken is to employ regression techniques to develop a measure of fuel poverty risk based upon predictive characteristics that are known for a given locality, and then to map incidence within particular blocks of geography, i.e., by LSOA. Perhaps the most prominent example is CSE’s Fuel Poverty Indicator, which sourced initial indicators from EHCS data, and then synthesised the model with Census data and commercial data on dwelling age and valuation to produce a final model that predicted incidence of fuel poverty at the small area level for the whole of England (CSE 2012, initial methodology reported in Baker, Starling & Gordon 2003, updates to the model reported in Fahmy, Gordon & Patsios 2011). Since 2010, DECC have published their own estimates of fuel poverty incidence at the LSOA level, based upon a regression model (see DECC/BRE 2011). Morrison and Shortt (2008) adopted CSE’s technique within a Scottish context, working with a LA to enable mapping at the individual dwelling level. Similarly, Walker et al. (2012) mapped small area fuel poverty risk in Northern Ireland using an innovative model that incorporates consideration of heating costs, built environment factors (primarily floor space) and social vulnerabilities. These GIS models have all been used in practice, primarily to guide delivery of energy efficiency measures at a local level. As with LA data, use of the most innovative models tends to be limited by data availability to particular localities at present, but the potential for similar techniques to be used in national policy will be discussed in the final section.

97 Local-level NHS data (i.e., on incidence of EWM) might also prove worthy of further investigation.
• Commercial Data Sources

Commercial data sources have already been mentioned in section 5.2.3 as they are frequently integrated into risk models; for example, Experian household characteristics datasets are used in NEED (DECC 2014d: 7) and in EST Home Analytics (see EST 2012). Beyond the types of data referenced previously, which are mostly economic and socio-demographic, some of these companies have sought to model fuel poverty and allied factors more directly. Experian, for example, has previously developed a Fuel Poverty Propensity model (Ofgem 2010: 10), and worked with the Stockholm Environment Institute to develop the GreenAware model, which maps carbon emissions and household environmental attitudes at the individual level (see Experian 2014a). It should also be recognised that companies of the type discussed here have significant expertise in handling large quantities of sensitive data and may therefore have a commercial interest in taking an expanded role in policy targeting, as will be discussed in section 5.4.2.

• Advanced Technology

The potential of smart meters to offer more accurate consumption data has already been identified. A number of organisations have developed their own bespoke indicator tools for use in delivering programmes on the ground, e.g., handheld survey devices (see Pither, Moore 2006). A form of advanced technology that could provide additional insight into consumption is thermography, wherein a thermal imaging camera, either at street level or mounted on an aeroplane is used to visualise household heat leakage. However, Roberts and Starling’s (2004) case study of Birmingham City Council’s use of aerial thermography concluded that such the technology is expensive, and provides only a snapshot of usage that confirmed existing knowledge of the housing stock, and so was more appropriate as a tool to promote energy efficiency to higher income households.
5.3 Identification and Implementation

Once eligibility criteria for programmes have been established, the next stages are to identify qualifying households, and then to deliver support. This is often not a straightforward exercise for two main reasons. Firstly, because – depending on the nature of the criteria used – it may be more or less difficult to find households that are eligible. Secondly as, even where eligibility has been established, it may then be necessary to get households to agree to participate. This should be straightforward where the programme simply involves automatically applying additional benefits, but complexities can arise when the intervention offered is the potentially disruptive installation of energy efficiency measures. This section compares the efficacy of state-led and supplier-led programmes in identifying eligible households and facilitating the take-up of measures. Particular attention is paid to the differing dynamics inherent in the structure of policies, with government themselves automatically applying measures, whilst requiring suppliers to take an active role in identifying households, and potentially imposing enormous fines if they are not successful. The section begins with an overview of the requirements of this stage of the process. Next, the manner in which state-led schemes have identified eligible households and delivered measures is addressed. The section finishes with an examination of the ways in which suppliers have sought to identify households as required by their obligation, again, with a focus on E.ON UK.

5.3.1 Requirements for Success

The requirements for identifying eligible households vary depending on the criteria used. At one end of the scale, any individual with a list of qualifying areas could theoretically establish geographical eligibility (such as that used for CESP and ECO CSCO). The more complex criteria include those based upon benefits receipt, which often hinge upon particular combinations of circumstances (e.g., for CERT SPG and ECO HHCRO) and which – depending upon the delivery agent – may require extensive engagement with households in order to establish eligibility. In such cases the size of the eligible group (as highlighted in Table 5.4) also becomes relevant; a smaller group may well be more difficult to locate via conventional marketing.
methods (e.g., direct mail). Similarly, implementation could be as straightforward as automatically adding funds to an existing benefits payment, or as complex as convincing a household to agree to the lengthy and potentially chaotic installation of solid wall insulation. Furthermore, regulators may require that delivery agents collect detailed information on household circumstances as evidence of eligibility in order that delivery can be counted towards obligations.

This section examines the differing ability of suppliers and state to fulfil these tasks. This variance in capability is partially a function of the differing nature of the institutions, for example, with regards to access to particular types of data. However, part of the variation can be attributed to the different form of the programmes delivered by each agent, which is itself informed by the position of those institutions and the types of constraints outlined in section 4.4.2. As suppliers are required to deliver on obligations or risk being fined, the state is able to push the limits in terms of what is required of suppliers in programme delivery. The government, however, are subject to a fairly weak legal commitment which, it is argued here, is reflected in the comparatively undemanding nature of the policies it is responsible for delivering.

5.3.2 State-led Identification and Implementation

The discussion in the sections that follow naturally separates into that of economic measures, and of technical measures.

- Economic Measures

The design of the two state economic policies, CWPs and WFPs, makes identification and implementation a comparatively straightforward process. Both are overseen by DWP, not DECC, and delivered via the benefits system, automatically applied as supplements to those who qualify. Recipients are not required to apply for or agree to receive the measures (indeed, some high profile pensioners have attempted to return WFPs they feel they do not need, see Collins, Winnett 2010, Hodge 2010). There can be problems, however, where individuals are not claiming the benefits necessary to trigger payment. In the case of WFPs, everyone over the qualifying age is eligible, but may need to apply if they are not receiving a state pension (see UK Government
The benefits that form the basis of CWP eligibility are more often subject to sub-optimal take-up by eligible individuals. Table 5.9 gives the most recent estimates of take-up rates for benefits and tax credits linked to fuel poverty policy eligibility (those linked to WHDS Core Group and ECO HHCRO have also been included).

Table 5.9: Estimated take-up rates of benefits and tax credits in Great Britain

<table>
<thead>
<tr>
<th>Income-related Benefit</th>
<th>Estimated Take-Up Percentage Range (by Caseload)</th>
<th>Central Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Support &amp; Employment and Support Allowance</td>
<td>77 - 89</td>
<td>83%</td>
</tr>
<tr>
<td>Pension Credit</td>
<td>62 - 68</td>
<td>65%</td>
</tr>
<tr>
<td>Jobseeker’s Allowance</td>
<td>60 - 67</td>
<td>63%</td>
</tr>
<tr>
<td>Child Tax Credit</td>
<td>78 - 83</td>
<td>80%</td>
</tr>
<tr>
<td>Working Tax Credit</td>
<td>56 - 60</td>
<td>58%</td>
</tr>
</tbody>
</table>

Note: The cited research covers Great Britain, not England alone; however, the DWP report indicates that take-up rates for benefits do not differ significantly by country.

The HMRC report gives no indication of expected variance.

Source: Data on benefits take-up relates to 2009/10 and is sourced from DWP (2012a). Data on tax credit take-up relates to 2008/09 and is sourced from HMRC (2011a).

Access to Benefits Entitlement Advice could improve coverage, a potential that will be considered in sections 5.4.2 and 7.2.3. However, it should be noted that the failure to take up benefits is a problem that negatively impacts those low income households who miss out more than it does the government, which ultimately saves money (an estimated £7.5-12.3bn in 2009-10, see DWP 2012a).

- Technical Measures

Warm Front is no longer active, however the manner in which eligible homes were identified provides a noteworthy counterpoint to the supplier obligation process that is to be discussed shortly. As Warm Front was not an obligation, it operated using a different mechanism. The programme was contracted out, and delivery agents did not
have prescribed annual targets, but rather sought to support as many households as possible within the budget available (Burr 2009b: 5), subject to an expenditure cap on the support available to each household (£3500 at the time the scheme closed, £6000 where certain advanced technologies were required, see Watson and Bolton (2013: 3)). The scale of the scheme was smaller than that of supplier obligations, with Warm Front supporting 2.3m households over its twelve years in operation (Watson, Bolton 2013: 4). By comparison, CERT delivered approximately that number of professional loft insulation installations (the most prevalent measure) alone to PG households in four years (Ofgem 2013d: 34) (see also the lower level of expenditure under Warm Front, as illustrated in Figure 5.2).

Warm Front operated a passive identification and implementation process; households were required to apply, and to demonstrate proof of eligibility via benefits receipt (see application form, Carillion Energy Services Ltd. 2011). There were, then, no issues in getting occupants to agree to participate given that the burden of identification was transferred to the householders themselves. In general, this approach was successful in identifying eligible households, with the full budget being allocated every year until 2011/12, when £50.6m (35%) of the £145m budget was left unspent\(^98\). FPAG later attributed this primarily to a lack of marketing following a period in which the scheme had been closed for a time, and then the eligibility criteria adjusted (FPAG 2012: 16-17).

That Warm Front could apply a passive identification process and still successfully reach the requisite number of households is a function of the ambition and form of the scheme, which itself is likely driven by political and economic motives. A larger programme (or one with more stringent requirements) would have made identification of eligible households more difficult, and so potentially have required more active engagement (including convincing households to apply) in order to achieve adequate take-up, with a consequent increase in administrative costs and risk of programme failure. As the scheme was not an obligation, government were ultimately accountable for costs, providing an additional motive to ensure that outlay was low. A more limited programme for which households are required to put themselves forward.

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\(^{98}\) Established via a House of Commons written question (see HC Deb 23rd Apr 2012 c620W).
likely presents a politically low-risk, economically appealing policy option to government.

5.3.3 Supplier-led Identification and Implementation

• Economic

As shown in Table 5.1, the supplier-led economic measure, WHDS, consists of two elements; the Core Group includes those in receipt of particular elements of Pension Credit (see Ofgem 2013k: 11), whilst the Broader Group is partially defined by the individual obligated suppliers (see Table 5.2), with criteria needing to be approved by Ofgem (see Ofgem 2013k: 22-24). The issues affecting benefit take-up previously discussed with relation to the state-led policies also have implications for supplier-led policies, both the Core Group, and the Broader Group should suppliers choose benefits based criteria (as is usual; see Table 5.2 by way of example). Whilst total expenditure on WHDS is capped under the Levy Control Framework (see DECC 2011c), low uptake will impact upon the way in which expenditure is distributed across the elements of WHDS as all Core Group members are eligible for support, and the numbers obligated to receive Broader Group supported are planned based on the anticipated Core Group numbers (see DECC 2011h: 5). Furthermore, of course, WHDS represents a further benefit that eligible non-claimants are potentially missing.

As established in section 5.2.3, one crucial difference between the state and energy suppliers is that the government has full knowledge of benefits receipt (and indeed use this as the vehicle by which they provide support), whereas energy companies do not. The state can automatically apply CWPs and WFPs, while suppliers must seek out eligible customers. This is supported to some extent by provisions enacted under the Pensions Act 2008 (s.142), which enables DWP to share information of recipients of Pension Credit with energy suppliers for the purpose of providing assistance. This power was piloted via the 2010 Energy Rebate Scheme, which released data on Pension Credit recipients to energy suppliers so that they could find instances where the names and addresses matched those of their own customers and apply rebates, achieving a 53% match rate (DWP 2010a: 2). This has been substantially improved under delivery of WHDS, where data matching identified 85% of recipients in year
one, and 93% in year two (Ofgem 2013j: 9). However, it should also be noted that Pension Credit is a comparatively weak predictor of fuel poverty (see Table 5.6) and, as shown in Table 5.9, the take-up rate for Pension Credit is only around 62-68%.

By contrast, suppliers are obligated to identify Broader Group households themselves, with no data matching procedure in place for the types of passport benefits employed for this purpose. At present the burden of identification under WHDS is fairly low; in year one the minimum number of required payments across all suppliers was 26,034, increasing to 366,356 in year two (Ofgem 2012b, Ofgem 2013j). To put this into context, this would place E.ON’s second year obligation requirement at somewhere around 0.01% of their customer base of approximately 5m households. Given the low burden and the flexibility in the eligibility criteria, it is perhaps not surprising, then, that energy companies have tended to easily exceed the minimum requirement, with all suppliers choosing to exercise flexibility in programme design and reapportion spend from the Legacy Spending element of the programme towards the Broader Group, exceeding Broader Group minimum spend by 33.6% (Ofgem 2013j: 13). This evidence, and that given by interviewees, suggests that the scale and design of WHDS Broader Group enables a more passive approach to be adopted for identifying eligible households. Giving evidence to the House of Commons Energy and Climate Change Committee, Alistair Phillips-Davies, Chief Executive of SSE, stated that the company had managed to identify around fifteen times the obligated number of customers, and cited frontline staff as the primary source of referral (see House of Commons 2012).

Enabling supplier discretion as to the composition of the Broader Group was designed to reduce the administrative burdens of identification (DECC 2010a: 23). However, stakeholders have expressed concern over the lack of consistency this introduces, particularly the impact on vulnerable households. Whilst older people receive guaranteed support via the Core Group, people with disabilities, terminal illnesses and

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99 It was suggested by one interviewee that the Pension Credit recipients who are not matched are likely to be transient and thus potentially at greater risk of fuel poverty. However, exploratory analysis of EHS 2011 data found that those 16.4% of Pension Credit recipients who had been in residence for less than five years slightly less likely to be fuel poor than those who had not (Relative Risk Ratio = 0.92, significant at 5% level). This may be because they have moved into homes with lower costs (cursory analysis indicates that such households are less likely to be underoccupying, and to live in more efficient homes). Further research into types of households that are not matched for WHDS would be valuable in developing effective policy.
households with young children can only access WHDS if their supplier has opted to support them as part of their discretionary Broader Group criteria. Thus, for example, a cancer patient would only receive the rebate if their own supplier had chosen to support that group (as contested by Macmillan Cancer Support (2011). This policy design has been questioned by a number of interest groups (see DECC 2011h: 23, Hough, Bolton 2012b: 8-10, Save the Children 2011). Energy UK has also expressed dissatisfaction with the burden of selecting proxies being placed on suppliers (see Hough, Bolton 2012b: 8). Despite the best intentions of policymakers, it seems to be an inescapable consequence that if suppliers are to develop their own criteria, there will be an inherent element of discretion in support that has the potential to put vulnerable groups at a disadvantage.

Overall, identification and implementation has been relatively straightforward for supplier delivery of economic measures to date. However, this is in part due to the design of WHDS, which is heavily weighted towards Pension Credit recipients who are comparatively easy to identify because of the legal provisions that are in place, and the undemanding size of the Broader Group. A larger Broader Group would likely create greater difficulties for suppliers and give grounds for data sharing to be expanded, a possibility that will be discussed further in the final section.

- Technical

Suppliers face a considerably greater challenge in identifying households eligible for technical measures, particularly where qualification is linked to benefits receipt rather than geographical location. The criteria used for supplier obligation priority groups have been tightened over the history of their delivery. The first schemes, EESoP (1, 2 and 3) and EEC (1 and 2) applied a fairly loose set of criteria to identify a priority group obligation that initially – for the EESoP programmes – was not compulsory (Offer 1998: 7-8), but became so under EEC (Ofgem/EST 2003: 41). The original CERT Priority Group (PG) was similarly defined, but the CERT extension, introduced in March 2011, introduced the Super Priority Group (SPG), which
required 15% of savings be achieved within a much more tightly defined group\textsuperscript{100}. The ECO PG, those households eligible for HHCRO, is more closely defined still. Figure 5.4 illustrates the efficiency and size of eligible groups for different schemes. It is hard to identify a clear trend from the data shown, but there does appear to be a tendency towards tighter criteria in later schemes. Furthermore, there is a tendency that as leakage drops, so does the size of the eligible group, i.e., as criteria become tighter, this results in the eligible group being smaller, and so potentially harder to identify. This relationship can clearly be seen in CERT PG, CERT SPG, and ECO HHCRO; in later schemes there is less leakage, but also a smaller group.

\textsuperscript{100} Note that this coincides with the shift towards obligations treating fuel poverty as a distinct policy goal, as discussed in section 4.3.
Note: Assumes all dwellings as viable for improvement, Warm Front criteria used are post-September 2012. State-led schemes white, supplier-led grey. Bubble size corresponds to size of eligible group.


Figure 5.4: Targeting efficacys and eligible group size for fuel poverty policies
Early supplier obligations were generally perceived to be successful (see Rosenow 2012). Whilst EEC 1 fell 1% short of the target of achieving 50% of measures savings within priority group households (Ofgem 2005: 10), EEC 2 exceeded that target by 26% (Ofgem 2008c: 6). However, issues began to emerge under CERT, a much larger programme, particularly when the SPG was introduced. Suppliers experienced much greater difficulty in identifying households within that more tightly defined group, with one interviewee describing the eligibility criteria as “woefully complex” (see, for example, Ofgem 2011a: 65-66). More complicated criteria also resulted in a more complex compliance reporting procedure, creating a further administrative burden (see Ofgem 2011a: 54-68). A push to support compliance was undertaken in the very final stages via a DWP-supported exercise, which enabled suppliers to check addresses that had received measures against SPG criteria (Ofgem 2013d: 49). However, as not all suppliers were compliant, the overall PG and SPG targets were missed, as illustrated in Figure 5.5.

![Figure 5.5: Energy supplier performance against CERT Priority and Super Priority Group obligations](image)

Adapted from Ofgem (2013d: 14).

Though the complexity of targeting is likely not entirely responsible for compliance difficulties, it has certainly been registered as an aggravating factor. Ofgem recorded
some of these issues in their final report on CERT (Ofgem 2013d: 49), as did Energy UK, whose evaluation of CERT and CESP summed up their concerns as follows:

> With the introduction of specific customer groups to target under CERT, marketing to customers became even more complicated as certain offerings are available only to a small number of households and will be dependent on many elements out of the suppliers’ control, such as their property-ownership, suitability of the measure on the property and their willingness to have the measure installed. Moreover, finding and targeting those households requires meticulous and expensive searching

(ERA 2011: 18)

Despite recognition of the issues with the CERT PG and SPG, as Figure 5.5 shows, an even tighter set of criteria has been retained for ECO HHCRO and CSCO (Ofgem 2013b: 60-61). Reporting requirements remain complex (Ofgem 2013b: 61-64) and, as illustrated in Figure 5.5, whilst leakage is reduced, the eligible group is substantially smaller, resulting in reduced coverage. It is difficult to anticipate from available data how many eligible households suppliers might need to identify in order to achieve sufficient energy savings to meet their mandated obligations, as this is dependent on the number of measures delivered to each household. In the first twelve months of ECO delivery, a total of 202,348 households received support under HHCRO, and 87,609 under CSCO (DECC 2014c: 13). The pace of delivery may increase as it has under previous obligations; however, currently performance across all suppliers is slightly ahead of schedule. Assuming the current mix of measures is retained, it would be expected that suppliers would need to identify approximately 310,000 HHCRO eligible households across the whole period in order to meet their obligations.\(^{101}\) While the numbers of households helped under CERT has not been published, from the numbers of delivered measures published indicates that 2.3m Priority Group households alone received professional loft insulation, i.e., at least 484,000 a year pro rata. The indication, then, is that suppliers will only have to identify at most two-thirds of the households that they did under the previous scheme,

\(^{101}\) £2.7bn savings achieved in the first 12 months towards a target of £4.2bn in lifetime savings, allocated across the 30 months of ECO pro rata (figures extracted from DECC 2014a: 26).
simply because ECO is less ambitious (see section 2.2.3). That said, for the majority of its existence CERT used only the looser PG eligibility, and at that time there was a larger eligible population in need of measures. Also it might be assumed those likely to apply for support have already done so. So, whilst it is hard to assess the relative difficulty of ECO identification against that of CERT, it is fair to assume the task remains a challenging one.

The indication from interviews and policy literature, certainly, is that suppliers expend significant resource searching for eligible households. Additionally, a further form of ‘churn’ comes into consideration, as households move on and off benefits, or otherwise fluctuate in and out of eligibility; again, this introduces an inherent bias towards older people, who are more likely to remain eligible (e.g., for Pension Credit). Suppliers tend to opt for traditional marketing methods as a means of identifying eligible customers, i.e., door-to-door promotion, telemarketing, direct mail (facilitated by DWP on at least one occasion, see Ofgem 2013d: 49), and digital marketing. However, as one interviewee involved in energy industry marketing explained, there tends to be something of a trade-off between efficacy and cost, with the more expensive methods (such as door-to-door) being more effective in identifying eligibility, whilst the cheapest methods (such as e-mail marketing) are often dismissed by customers. One relatively expensive, though reliable, method is the purchasing of referrals. Suppliers may also offer cash incentives to encourage participants and word-of-mouth referral (Ofgem 2013d: 49). Another common strategy has been to form partnership with LAs. Targeting social housing, including LA properties was a common strategy under CERT SPG (Ofgem 2013d: 49). However, social housing has been excluded from eligibility under ECO HHCRO (though not CSCO, see DECC 2012j: 65-66), a further barrier to identification. A broader approach is for LAs to offer suppliers the opportunity to tender to partner with them in their area as a means of meeting their obligation (see, for example, Sheffield City Council's partnership with Scottish Power, EST 2009). However, a scheme of this type relies on LA proactivity102. Suppliers also have an incentive to engage in such schemes (and CSCO activity) in localities where they have a high

102 Supplier delays in establishing LA approval were a common cause of delay in delivering CESP (see DECC 2011f: 19), which could persist under ECO CSCO.
concentration of customers as a legacy of their pre-privatisation arrangement (E.ON UK, for example have ~40% customer penetration in the East Midlands as a legacy of their 1998 acquisition of East Midlands Electricity). More generally, suppliers have an incentive to support their own customers, not only because they are easier to identify, but also because it aids retention. As one interviewee expressed; “if you’ve got to spend that money, spend it where you’re going to get some benefit.”

The costs of identification are amplified by potential issues at the implementation stage. Households may need to be convinced of the value of measures, meaning that in practice, suppliers may need to identify many more eligible households than are required. Dodd and Dobson (2008) identified seven major barriers to the take-up of measures, including a lack of information about eligibility and the impact of measures. It was identified that lack of trust made households reticent to take measures offered, as they were suspicious of the idea of getting free support (an issue also encountered in delivering Challenge 100, see E.ON UK 2010: 43). Whilst the work by Dodds and Dobson is not focused upon supplier obligations, their findings echo the experience of interviewees (see also Armstrong, Winder & Wallis 2006, Tovar 2012, Consumer Focus 2012). Survey evidence suggests that energy suppliers, in particular, are not perceived as trustworthy organisations by the general public (see Ipsos MORI 2013a: 52-53) and as such suppliers may benefit from partnering with organisations who are more trusted. Dodds and Dobson suggest LAs as clear candidates here (2008: 29), and E.ON UK identified the participation of LAs and community groups as “essential to ensuring engagement” in delivering Challenge 100 (E.ON UK 2010: 43).

In targeting programmes, policymakers have to balance priorities; a larger eligible group, might be relatively easy to find but carry the risk of significant leakage, while a smaller group may be more efficient in targeting fuel poverty, but are also more difficult to find. The progression from early priority group formation through to ECO HHCRO demonstrates a clear trend towards seeking smaller groups (see Figure 5.5). It seems plausible that one reason for this decision is because of the increased use of supplier obligations as the core means of alleviating fuel poverty via energy efficiency measures. Choosing a smaller eligible group will increase the resource demands of identification, giving the government an added incentive to make use of
the stronger constraint upon supplier activity and have energy companies perform that task as part of their obligations. However, the costs of identification – including the costs of suppliers reporting compliance to the regulator – are transferred to customers via their energy bills in a manner that is highly likely to be regressive, as discussed in the next chapter. One barrier to research has been in establishing the costs of identification, even for the case study supplier, as these are highly commercially sensitive. It is frequently anecdotally suggested amongst the policy community that it can cost more to find a PG household than it does to provide measures. Former SSE Chief Executive Ian Marchant (2013) has claimed that identification costs can triple the costs of delivery, whilst Shuttleworth et al. (2012: 38-39), working on behalf of Energy UK, estimate search costs of £147m. A new development within ECO is that government now requires suppliers to report costs of technical obligation delivery, which they publish as aggregated figures to protect commercial confidentiality (see, for example, DECC 2014c: 27). It is recommended that they extend this power to seek further clarification of the costs of targeting, as a basis for assessing what improvements might be achieved.

A further issue identified here is that of the duplication of effort inherent in the current design of policy. As it stands, seven suppliers are all seeking the same small group of eligible customers and trying to persuade them to agree to measures. Thus inefficiency is built into the design of the programme, as there is no reason that one customer – particularly those households who are easier to identify – might not theoretically be actively targeted by every supplier. Indeed, it is hard to imagine any form of decentralised programme (i.e., any market-based model) that would not result in duplication of effort. Interviewees identified that regional working could prevent this as they would not expect a LA to have formal partnerships with multiple suppliers. However, this would not, for example, prevent a company targeting households with marketing in an area where there is a LA-supplier partnership already in place.

5.4 Evaluation of Options

This chapter has compared the ability of the state and energy suppliers to effectively find fuel poor households, primarily via the synthesis of findings from policy
literature review, quantitative analysis and from interviews and broader engagement with the policy community. Efficacy has been considered in two respects: firstly, targeting in the purest sense (closer to that perspective adopted by Dubois (2012)), i.e., the ability simply to identify households meeting the official definition of fuel poverty; secondly, from a more practical standpoint, the ability to identify households that meet eligibility criteria and subsequently provide support. This section begins by summarising the barriers to policy success identified by this research. Three main policy adaptations are then proposed as offering the potential to counteract these difficulties, and barriers to the implementation of those changes are considered. The chapter closes with a summary of policy constraints identified as impacting upon the process of finding fuel poor households, before the chapter concludes.

5.4.1 Identified Issues

A number of issues have been identified as impeding successful delivery of fuel poverty policy. This section first discusses some of the more general weaknesses that have been identified by this research, before moving on to discuss a number of more specific barriers that are in some way compounded as a function of the different capacity of state and suppliers to fulfil requirements.

- General Weaknesses

Analysis of EHS 2011 datasets indicate that current eligibility criteria tends to be inefficient in capturing fuel poverty under either the old or new official measures. Results of modelling indicate that only 59% of fuel poor households are theoretically eligible for currently active programmes, assuming they claim the relevant benefits to which they are entitled, and only a small proportion of these will receive support in any given year under those programmes that are not universal. Furthermore, it is estimated that 90% of expenditure on the programmes considered in this analysis does not go to LIHC fuel poor households. This discrepancy is due in part to the current system’s dependence on benefits as a basis for eligibility criteria, when in practice they are not a strong proxy for fuel poverty. They are a comparatively convenient record of low income status, particularly for the government, who have full access to benefits data. However, relying on benefits as a means of targeting effectively
supports only a particular sub-section of the income poor, with significant leakage. This results in 41% of households with low incomes and high fuel costs not being eligible for support under any of the current schemes. There is also the risk that by focusing support on benefits recipients, “cliff edges” are heightened, i.e., the marginal costs of not receiving benefits become greater, creating a poverty trap\textsuperscript{103}.

One aspect of the problem is the lack of clarity in the definition of the group that policies are intended to target. The ultimate aim of policies in tackling fuel poverty is to address the negative outcomes of fuel poverty. From this perspective, supporting those most vulnerable to risk of ill health and EWM is crucial\textsuperscript{104}. However, there is a need to balance this in ensuring funds are effectively employed. As discussed, the definition of ‘vulnerable’ used for fuel poverty is generous, covering 73% of English households without prioritisation (though not all of these are eligible for any current programmes). Currently older people (defined, effectively, as all those of pensionable age) – receive the vast majority of support, both explicitly via policy eligibility, and implicitly, as the benefit status of older people is more likely to remain consistent, making them easier to identify. However, simply removing WFP entirely from income has the effect of reducing the level of LIHC fuel poverty, from 2.3m to 2m (own analysis of DCLG 2013c); this is because doing so reduces income inequality. It is beyond the scope of this work to consider in detail stronger alternatives to the current set of eligibility criteria; however, it is worth briefly considering the political motivations underlying the form of current policies. To take by far the most prominent example, WFP has long drawn criticism\textsuperscript{105} for its failure to effectively target fuel poverty (FotE 2008, Lawton, Stanley 2009, Boardman 2010: 61-62, Consumer Focus 2010), with the House of Commons Energy and Climate Change Committee damingly describing it as a “most egregious example of a measure classified by the Government as being designed to combat fuel poverty, but which is

\textsuperscript{103} Hills (2012: 72) gives a complete explanation of this potential.
\textsuperscript{104} The base of evidence on wellbeing of children, in particular, is more limited. It should also be noted that 82% of EWMs occur in the over-75s (ONS 213b: 2), whilst the fuel poverty definition of vulnerability includes everybody over 60.
\textsuperscript{105} However, criticism has not been universal. IFS research found that older people, contrary to popular opinion, did spend WFP on fuel (see Beatty et al. 2011a, 2011b). Similarly, research by Stockton (2011) for NEA identified a “virtual hypothecation” of both CWP and WFP, with participants generally reporting using these payments for energy-related purposes.
not targeted on the fuel poor” (2010: 15). WFP began in 1997 as a benefit of £20-£50 in 1997 and has grown, with little in the way of review, to today’s level of £100-£300 (Kennedy 2013b). To withdraw or substantially cut WFP would reduce the incomes of all pensioners, a large and desirable voting constituency. This motivation is not restricted to Conservatives, who have tended to win the ‘grey vote’ in recent general elections (see Ipsos MORI 2010). Peter Hain, a prominent Labour Party politician, has publically argued that the universality of WFP is an important indicator that the welfare state is not only for the poor, and thus sustains social cohesion (see Hain 2013). Regardless of politics, from a policy management perspective a clear general limitation exists across the policies examined here, insofar as, firstly, the definition of vulnerability is exceptionally broad, and secondly, the manner in which the targeting of the vulnerable should be balanced with targeting of the fuel poor has not been clarified.

In practice, policy targeting will generally involve some level of trade-off between complexity of process and precision, and between coverage and leakage. Some level of ‘bluntness’ in targeting, as Hills (2012: 71) recognises, is not necessarily problematic given that households move in and out of fuel poverty, and all measures contribute to carbon reduction more generally. However, a significant level of misidentification will slow progress and, as will be discussed in the next chapter, increase regressive impacts. The potential for improving current targeting will be discussed in section 5.4.2. However, ability to recognise this issue where it arises is undermined by the lack of focus in policy, a prominent theme from the previous chapter, which extends also to targeting of programmes. It is not clear exactly who policies are intended to target and by extension, accuracy is not systematically measured. Instead, the tendency seems to have been towards expediency, opting for convenient, but inaccurate, proxies.

106 A number of these examples are drawn from a House of Commons Library Standard Note that offers an excellent overview of criticism of the WFP (Kennedy 2013b).
• Failure to Effectively Exploit Data

Fuel poverty concerns the link between low incomes and inefficient homes. At present, targeting is weakened by a focus only on incomes – specifically benefits receipt – with only implicit consideration of housing quality for technical schemes (i.e., not applying measures to dwellings that do not need them). Incorporating information on housing quality into the process would likely be resource-intensive and difficult, and there are challenges in translating more advanced targeting into effective policy design. However, it has the potential to improve efficiency of targeting and more effectively prioritise activity, which – given the level of misdirected expenditure – could create savings in the long run.

The review reported in section 5.2 identified a range of data sources relating to the housing stock, the majority of which are owned by, or to some extent under the auspices of, UK government. Beyond this, a number of further external sources of data have been identified, most notably the data held by Local Authorities (though this will likely be variable in quality and scope) and by commercial data sources. Interviews with E.ON UK employees indicated that energy suppliers hold some data on their own customers at known addresses that has the potential to support identification of fuel poor status, e.g., name (valuable for data matching), use of Fuel Direct, receipt of WHDS, or Priority Service Register status (if applicable), payment method (pre-payment being a strong indicator of fuel poverty). Suppliers also hold data on consumption, but only for the energy they supply themselves (though they can attempt to model usage of other fuels). The experiences of E.ON UK imply that suppliers can potentially identify fuel poverty risk amongst their own customers, but that this poses challenges, and – as it is not part of their current obligation – systems tend not to be geared to this type of activity. Furthermore, suppliers would only be able to do this for their own customers and would be disinclined to share relevant information (i.e., expenditure on supplied fuels) with other firms; thus the competitive nature of the market directly undermines supplier ability to find the fuel poor.
• Data Sharing

The state and energy suppliers are differently situated with regards to accessing the types of data that supports identification of currently eligible households. Whilst the state has full access to benefits data, currently legislation only enables data matching to be undertaken with regard to Pension Credit recipients. Even when restricted to those in receipt of the Guarantee Element of Pension Credit, this is a weaker predictor of fuel poverty than eligibility for the benefits-based criteria used for CWP and ECO HHCR (see Table 5.5.). Increased data sharing would help suppliers to identify those households more effectively, a possibility to be discussed shortly. Using CWP eligibility criteria as a basis for the WHDS Broader Group, for example, is recommended by Baker (2011) as a means of reducing 10pct fuel poverty, and would further reduce the incidence of inconsistency of support across suppliers recognised previously.

It is also worth noting that current limits to data matching can be interpreted as a manifestation of path dependency (see section 4.4.2) with regards to the format of WHDS. The WHDS consultation response made clear that the choice of Core Group was driven, at least in part, by the fact that it was comparatively easy to identify eligible households because of data matching legislation (DECC 2011h: 19-21). Thus one of the drivers for the form of the programme is the legacy of pre-existing powers. The same section of the consultation indicated a reticence to expand data matching powers, the rationale for which will be discussed in section 5.4.2.

• Difficulty of ‘Active’ Identification

This work has identified a tension between active and passive identification of eligible customers, with state-led schemes notably tending to favour the latter, whilst suppliers are usually required to engage in the former. This dynamic is probably informed by the different constraints they each face, as noted in the previous chapter. The state, which has a fairly weak impetus to tackle fuel poverty, takes a less ambitious, lower risk approach. However, they are able to require suppliers – who are subject to stronger financial constraints (i.e., fines) – to seek out households meeting
increasingly specific criteria. More than one energy supplier employee interviewed for this research expressed the view that government seemed inclined to ask more of suppliers than it did of itself, an observation supported by this analysis. There is certainly the appearance that in relying on passive identification for state-led policies, government has afforded itself the most inexpensive and lowest risk identification strategy.

Requiring suppliers to identify eligible households and market interventions in order to comply with obligations should provide a means of driving activity, with companies further incentivised to do so cost-effectively. However, this analysis has identified significant duplication of effort given that seven suppliers – who are not well situated to undertake the task in the first place – are all investing significant energy and money to locate the same small group of households. Companies have no incentive to share information or cooperate given that they are operating in a competitive market. Thus, rather than driving effectiveness, competition builds inefficiencies into the policy model. The same competitive aspect means the costs of targeting are unknown, however, it seems likely that they are higher than is necessary. Ultimately, the burden of this excess cost is shouldered by consumers, who pay the costs of the obligation through their bills, with (as will be explained in the next chapter) lower income and fuel poor bearing a greater proportion of that expense.

As the project of improving the English housing stock progresses, it is likely that there will need to be a greater emphasis on active identification. This is because the dwellings that remain in need of improvement are more likely to need the more expensive, less cost effective measures which are more time-consuming and disruptive to install (e.g., solid wall insulation, which also potentially alters the aesthetic appearance of the home), and where homeowners (and Local Authorities) are less likely to be the sort of ‘early adopters’ who have already taken advantage of programmes that are already available. Making active identification easier has the potential to support not only fuel poverty alleviation, but also carbon reduction goals more generally. As such, there is a strong argument for investing in improvements to this element of the process.
5.4.2 Proposed Policy Adaptations

This work has identified a disparity between the positions of government and energy suppliers, both in ability to find fuel poor households, and in the way policies have required the different agents to do this. Producing very specific recommendations as to how targeting might be improved (e.g., adjustments to eligibility criteria) is beyond the scope of this work, though some broader suggestions have already been noted, most particularly the need for government to clarify exactly who the policies are intended to reach. This section will offer some recommendations as to how the gap between state and supplier targeting capability might be resolved, taking into account the pros and cons of each, and likely barriers to implementation.

• Increased Data Matching Provisions

A crucial difference between state and supplier ability to identify eligible households is that the state have access to benefits data. This is particularly important given the current reliance on passport benefits as defining eligibility for programmes. One option to facilitate identification would be to expand data matching provisions beyond Pension Credit data to other benefits, such as those income-based benefits available to under-60s. There is a precedent for this, not only in the matching of Pension Credit data, but in DWP’s previous support of CERT SPG compliance via a data matching exercise (Ofgem 2013d: 49). Respondents to the WHDS consultation expressed support for expanded data matching (DECC 2011h: 17-21), as have Energy UK (ERA 2011: 17), Consumer Focus (Baker 2011: 6), and FPAG (2012: 8). Those interviewed for this work were also positive about such an expansion. Data sharing would certainly make it easier for suppliers to identify those households eligible based on receipt of passport benefits, and would also be likely to reduce the burden of reporting. It would also facilitate identification for both technical and economic measures; the other options discussed in this section generally apply only to the former. Broader data sharing would further enable policies to move beyond a focus on older people, if that were deemed appropriate.
There will always be limits to the scope of data matching. Current data matching is based on linking benefits receipt to bill payment at a given address, creating potential issues where individuals move home and both benefits and energy supplier systems take time to register such changes. This effect would potentially be more problematic for other benefits, given that younger people are increasingly expected to rent and have ‘chaotic’ housing pathways (see Clapham et al. 2012). Energy UK have suggested that, although they believe data matching is effective, there is a risk that an automatic process prevents recipients from engaging with measures (ERA 2011: 17), though this could be argued of any such identification based process, and consumers would still need to consent to the installation of technical interventions. There may also be public concerns around data protection, though these are more of an issue for some other recommendations (to follow shortly), and so this issue will be discussed later in this section. Expansion of data matching powers would require new primary legislation, and so relies on political commitment. In the WHDS consultation, DECC give two further arguments for not expanding the Core Group (see DECC 2011h: 19-21). The first is that the introduction of Universal Credit risks rendering any new data sharing legislation obsolete. However, given that changes to welfare tend to occur with some frequency – and the rollout of Universal Credit is forecast to continue through 2017 (see DWP 2010b: 37) – this would seem a fairly weak rationale. Secondly, and perhaps more credibly, DECC suggest that increasing the Core Group via expanded sharing (as recommended by Baker 2011) would require greater expenditure than is currently available under the Levy Control Framework. Thus it is expedient for the government to maintain the group to which automatic payments can be made at a size commensurate with their perception of economic constraints.

A related issue is that of the impact of low benefit take-up rates on the efficacy of data matching. Previous fuel poverty schemes have successfully incorporated Benefits Entitlement Advice (BEA), even if those schemes themselves used benefits receipt to define eligibility. All of those applying to Warm Front were offered BEA, which providers estimated resulted in an additional 5,500 applicants becoming eligible, and £35m in additional annual benefits paid out across scheme recipients (Burr 2009b: 13). BEA provided under Warm Zones secured £1.8m in extra annual income, around £1000 per successful claim (EST/CSE/NEA 2005: 81). Only 20 of 102 Challenge 100 participants were able or willing to take BEA, but of these 5 were found eligible for
additional benefits (see E.ON UK 2010: 30-31). One Northern Irish scheme saw the 56% of BEA applicants who were successful achieving an average increase to annual income of £2,448 in the first year (see Liddell, Morris & McCreadie 2012). While the impact of improved benefits take-up extends beyond access to fuel poverty interventions, it is no longer required within any obligated delivery\(^{108}\). However, prior examples demonstrate that delivery of technical measures can be used as an opening to make face-to-face contact with those in fuel poverty, and the fact that a household is already receiving a measure may promote trust. Bundling BEA with Energy Company Obligation (ECO) provision is worthy of further consideration, however, the Challenge 100 final report suggests that energy suppliers may not be trusted with information relating to household finances (E.ON UK 2010: 51). This should be considered in the formation of any subsequent policy; it may be that separately contracted provision would make for a more appropriate delivery model. Incorporating BEA may be unpopular with politicians, both because of the extra burden on the public purse, and because it might be interpreted as being at odds with the current government’s goal of reducing welfare dependency (see Conservative Party 2010: 15).

- Improved Geographical Targeting

As the factors underlying fuel poverty tend to be spatially concentrated, geographic location can be used as a means of targeting the fuel poor. This has the key benefit of being extremely easy to use; any individual can identify a house as eligible for ECO CSCO via simple look-up tables (e.g., DECC 2012f). A further benefit of targeting in this way is that it enables delivery to take advantage of economies of scale, though returns tend to be most worthwhile when delivering higher cost insulation measures, e.g., solid wall and hard-to-treat cavity wall, accordingly the primary focus of CESP (DECC/DCLG 2009: 27). To date, schemes have been geographically targeted using the income component of IMD, with a sub-focus on rural communities introduced in CSCO. However, as demonstrated in Table 5.2, targeting efficiency has tended to be very low.

\(^{108}\) BEA can optionally be provided by suppliers under the auspice of WHDS Industry Initiatives, however, only 1% of the £21.9m spent in 2012/13 was used to that end (see Ofgem 2013e: 6).
One option, then, would be to consider a means of improving the efficiency of geographical targeting. A number of more advanced GIS-based models were discussed in section 5.2. Platt et al. (2012) propose introducing a ‘Low-Income, Low-Efficiency Area’ (LILEA) approach, where areas are targeted which are known to have a high proportion of low income households living in energy inefficient dwellings, in line with the LIHC fuel poverty definition. Beyond those advantages already cited, improving targeting at the geographic level is likely to be cheaper than doing so at the individual level, and invoke fewer data protection concerns. This option would be politically low-risk, representing only a refinement of the broad methodology already employed within CESP and ECO CSCO. Geographical targeting, as already mentioned, can also provide a means of reducing duplication of effort within supplier obligations where LAs are involved, as they can provide a means of streamlining activity.

The main problem with geographical targeting is that it tends to be unavoidably weak; efficiency is naturally constrained by the actual geographical concentration of fuel poverty. DECC’s sub-regional regression model for 2011 estimates the highest concentration of LIHC fuel poverty in any LSOA as being 62.6% (in Stoke-on-Trent 016F, see DECC 2013a). Table 5.10 shows the limited expected efficiencies achieved by targeting areas with the highest concentrations of fuel poverty, based upon aggregating the outputs of DECC’s sub-regional regression modelling (for reference, CSCO areas are the lowest 15% ranked within IMD income domain)\(^\text{109}\).

\(^{109}\)CESP was particularly weak in targeting rural areas (see DECC 2011f: 23), an issue that the CSCO rural sub-target attempts to address (see DECC 2012c: 30).
Table 5.10: Expected efficiencies in targeting areas of high fuel poverty density

<table>
<thead>
<tr>
<th>Areas targeted</th>
<th>Number of Households Included (000s)</th>
<th>Coverage</th>
<th>Leakage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest 5% of LSOAs</td>
<td>1,057</td>
<td>11%</td>
<td>75%</td>
</tr>
<tr>
<td>Highest 10% of LSOAs</td>
<td>2,121</td>
<td>19%</td>
<td>78%</td>
</tr>
<tr>
<td>Highest 15% of LSOAs</td>
<td>3,179</td>
<td>26%</td>
<td>80%</td>
</tr>
<tr>
<td>Highest 20% of LSOAs</td>
<td>4,262</td>
<td>33%</td>
<td>81%</td>
</tr>
<tr>
<td>CSCO eligible areas</td>
<td>3,256</td>
<td>15%</td>
<td>88%</td>
</tr>
</tbody>
</table>

Source: Own analysis of DECC (2012f, 2013a).

One option to improve efficiency would be to reduce the size of the areas considered (e.g., to street level). However, this would introduce more risks (e.g., with regard to cost and data protection), resulting in something between LSOA-targeting and the individual-level targeting considered in the next section. Insufficient data is available to estimate the efficiency of street-level targeting. At this stage, given the recognised limits, it would seem inappropriate for geographic targeting at the LSOA-level to entirely replace household-level targeting as it has the potential to be less efficient, even, than current benefits-based targeting (cf. Table 5.1, Table 5.7). Additionally, targeting economic benefits at people in particular geographic locations may be politically contentious.

- Fuel Poverty Data Observatory (FPDO)

Ultimately, efficient targeting of fuel poverty will require effective household-level consideration of both incomes and dwelling quality. Policymakers have previously been reluctant to combine these elements, tending to rely only on benefits. However, analysis of EHS 2011 indicates that 44% of low income (LIHC quadrant) and 53% of LIHC fuel poor households are in receipt of mean-tested benefits or tax credits (based on own analysis of DCLG 2013c). Given the difficulty in creating effective proxies that are not impractically complex, one option would be to do away

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110 See, for example, the ECO consultation stage impact assessment, which considers both EPC data and passport benefits as means of targeting, but only separately (DECC 2011a: 110-111).
with the use of proxies for supplier obligations, and instead create a centralised targeting function – a Fuel Poverty Data Observatory (FPDO) – that would refer suppliers directly to households in need of support. This could bring together the types of data identified in section 5.2 and apply more advanced predictive techniques. Whilst the efficacy would vary according to technological ambition, it is extremely likely that better use of a wider range of data would achieve much greater efficiency than the current system. Table 5.11 gives a very broad indication of the efficiencies that might be achieved in combining data types.

Table 5.11: Targeting efficiency of combinations of income and housing stock data

<table>
<thead>
<tr>
<th>Housing Stock Data</th>
<th>Income-linked Data</th>
<th>Size of Eligible Group, 000s (as % of population)</th>
<th>Coverage</th>
<th>Leakage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-1919 Dwelling</td>
<td>Private rented</td>
<td>1327</td>
<td>18%</td>
<td>72%</td>
</tr>
<tr>
<td></td>
<td>Receives CTC or WTC</td>
<td>1017</td>
<td>15%</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>Receives IS, JSA or ESA</td>
<td>526</td>
<td>13%</td>
<td>51%</td>
</tr>
<tr>
<td></td>
<td>Receives JSA</td>
<td>208</td>
<td>6%</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td>CWP eligible</td>
<td>671</td>
<td>12%</td>
<td>65%</td>
</tr>
<tr>
<td></td>
<td>ECO HHCRO eligible</td>
<td>745</td>
<td>14%</td>
<td>62%</td>
</tr>
<tr>
<td>Solid wall construction</td>
<td>Private rented</td>
<td>1541</td>
<td>21%</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>Receives CTC or WTC</td>
<td>1401</td>
<td>22%</td>
<td>69%</td>
</tr>
<tr>
<td></td>
<td>Receives IS, JSA or ESA</td>
<td>697</td>
<td>17%</td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td>Receives JSA</td>
<td>288</td>
<td>8%</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>CWP eligible</td>
<td>881</td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td></td>
<td>ECO HHCRO eligible</td>
<td>921</td>
<td>18%</td>
<td>62%</td>
</tr>
<tr>
<td>SAP E, F or G rated</td>
<td>Private rented</td>
<td>1470</td>
<td>26%</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td>Receives CTC or WTC</td>
<td>1555</td>
<td>27%</td>
<td>65%</td>
</tr>
<tr>
<td></td>
<td>Receives IS, JSA or ESA</td>
<td>750</td>
<td>21%</td>
<td>43%</td>
</tr>
<tr>
<td></td>
<td>Receives JSA</td>
<td>319</td>
<td>10%</td>
<td>35%</td>
</tr>
<tr>
<td>CWP eligible</td>
<td>1200</td>
<td>21%</td>
<td>65%</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>------</td>
<td>-----</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>ECO HHCRO eligible</td>
<td>1138</td>
<td>24%</td>
<td>58%</td>
<td></td>
</tr>
</tbody>
</table>

Note: Potential sources of data are referenced in Table 5.6, not all have complete coverage.
Source: Own analysis of DCLG (2013c) and data sources referenced in Table 5.6.

Whilst the identified groups are smaller than those for current schemes, reducing coverage, they are commensurate with the numbers of households actually receiving funding (see Table 5.4). Furthermore, easier identification removes the necessity that groups be large in order that members might be more easily found, as well as concerns around ‘sharpness’ (Hills 2012: 71). Leakage is lower, even with these rather crude criteria, and much more might be expected of sophisticated, multi-faceted models that incorporate more complex prediction of income. A referral scheme would significantly reduce the incidence of duplication of effort, and the involvement of the state in targeting could improve take-up (e.g., if DECC branding was used in approaching identified households). Such an approach could also be adapted to reduce the incidence of suppliers ‘cherry-picking’ households who are more likely to contribute or are otherwise easier to help, and could include some element of prioritisation of those with the largest fuel poverty gaps. Ian Marchant, former Chief Executive of SSE advocated a very similar solution in June 2013, writing in *The Guardian* of problems delivering ECO:

Surely it would make more sense to create a trusted, government fuel poverty agency, specifically responsible for identifying those in need (using accurate social security data) and instructing the private sector to deliver measures to the identified homes.

(Marchant 2013)

The most apparent barrier to implementation of a FPDO is cost; depending on the scale of the initiative, it could be an extremely expensive endeavour. A precise

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111 Prioritisation has not been discussed in detail here, but would be a valuable addition to a more advanced targeting strategy. Depth of fuel poverty is an obvious candidate for prioritisation, as suggested by Hills (2012: 88-90) in recommending the measure. Selton (2002) suggests prioritising the most cost-effective properties and improvements. EPC certificates include both current and potential SAP ratings, opening up the potential that this data could be used to target those dwellings with the largest potential gains.
estimate of the outlay involved is beyond the scope of this work, and would depend on the ambition of the project, whether it could be incorporated into existing functions, and whether it was operated by government in-house, or subcontracted to an external provider (it is suggested that the types of commercial data sources discussed in section 5.2 are likely to be interested in bidding to deliver this type of service). However, given the level of misdirected spend within current delivery approach, investment in identification has clear potential to provide better value for money in the long term. More data on suppliers’ current identification costs could be used to undertake a Cost Benefit Analysis that would assess the potential savings achievable by a FPDO. The state may also be resistant to such a project given the recent history of failure of large scale government IT projects (e.g., the National Programme for IT in the NHS (Morse 2011) and C-NOMIS (Burr 2009a). Political short-termism also tends to represent a barrier to ambitious projects of this type (see Oxford Martin Commission 2013). Care would need to be taken to comply with the Data Protection Act 1998, particularly were processing sub-contracted\textsuperscript{112}. Schemes involving the use of public data often prove contentious, particularly where private industry is involved (see, for example, Kirby 2014). Ofgem-commissioned research undertaken by Ipsos MORI on the Priority Services Register found reactions to increased data sharing tended to be rather mixed, if leaning towards favourable (Ipsos MORI 2013d: 29-32, Ipsos MORI 2013c: 56-57). Only one household opted out of data matching under the Energy Rebate Scheme (DECC 2011h: 21). More research and an effective communication strategy would be needed to establish sentiment towards a FPDO. As with geographical targeting, a FPDO may be unsuitable to economic support, as it would be difficult to justify pinpointing certain households without an overarching rationale. Ensuring referrals are apportioned between suppliers equitably would also prove challenging, though not insurmountable.

\textsuperscript{112} Some of the privacy impacts of combining these types of data were considered in the privacy impact assessment for NEED (DECC 2014c). Note that Dubois (2012) disregards databases as a targeting tool, in part because none currently exist linking relevant types of data. This perspective is perhaps influenced by the comparative wariness of French government towards collection of credit data, even for ostensibly positive purposes (Trumbull 2008).
• Comparison of Options

Figure 5.6 summarises the options considered here in a Policy Analysis Matrix. Please note that the assessment made is subjective, and is intended only to offer a broad appraisal of options presented.

<table>
<thead>
<tr>
<th>Increased Data Matching Provisions</th>
<th>Improved Geographical Targeting</th>
<th>Fuel Poverty Data Observatory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial expense</strong></td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>Privacy concerns</strong></td>
<td>Low-Medium</td>
<td>Low-Medium</td>
</tr>
<tr>
<td><strong>Practical difficulty</strong></td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>Potential to improve targeting</strong></td>
<td>Medium</td>
<td>Low-Medium</td>
</tr>
<tr>
<td><strong>Anticipated long term cost-effectiveness</strong></td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

Figure 5.6 Policy Analysis Matrix of options for improving fuel poverty targeting

It should be noted, however, that all of the options discussed would require some level of further government action to implement; as one energy supplier employee summarised the situation, “we aren’t doing it as efficiently as we could do because we aren’t getting the help.” However, as already covered in the previous chapter, the government are currently weakly motivated to directly intervene on fuel poverty policy, rather than to simply leave the brunt of the economic burden (and risk of public failure) to energy suppliers.

A more ambitious alternative approach could be to require fuel poverty reduction as the direct target of supplier obligations (with a vulnerability sub-target), and free the market to achieve this as cheaply as possible. This would be a significant departure from current delivery, and exploration of the implications is beyond the scope of this work. Evaluating compliance, in particular, would represent an auditing challenge for regulators.
5.4.3 Policy Constraints

Policy constraints identified in the previous chapter continue to have an impact with regards to targeting and identification. Most notably, the stronger impetus on suppliers to act is manifested as a tendency for obligations to require active identification strategies. The state, on the other hand, responding to the weakened requirements of WHECA has opted for passive identification within the policies that they themselves are responsible for, e.g., automatic identification and self-referral. A number of other constraints have further been identified as more particular to this stage of the process.

- Technological Constraints

Fuel poverty, in general terms, the result of a technological constraint, i.e., an inefficient housing stock that is expensive to treat given current technical limitations. However, a specific constraint can be identified with regards to targeting insofar as the ability to find the fuel poor is limited by the availability and usability of data. David Kidney, quoted at the start of this chapter, was correct in stating that better information would be needed to target more efficiently. However, it has been argued in this chapter that current policy does not yet approach the limits of current data. In the trade-off between efficacy and administrative complexity, policy has tended to err on the side of ease, focusing on a small group of households that are easy to find, but with significant leakage. It is suggested, therefore, that the physical constraint on policy is not the primary factor shaping current approaches.

- Legal Constraints

The key legal constraint impacting upon identification relates to data access; currently, suppliers are only able to engage in data matching that uses Pension Credit data (under the Pensions Act 2008 (s.142)). Even though the state has the power to

\footnote{The Data Protection Act 2008 would also have implications for some the more adjustments to policy considered here.}
amend this, as already discussed, they appear unwilling because of the cost implications and political risk.

- **Organisational Constraints**

Organisational constraints have a significant impact upon this element of the process. The different positioning of suppliers and the state affects not only the type of identification employed (passive or active), but also the capacity of agents to target and identify. Supplier access to data is considerably more limited, and the competitive nature of the energy industry creates further inefficiencies in the targeting process.

- **Political Constraints**

Two main forms of political constraint emerge from this analysis. First, governments tend to be risk averse as a means of preserving political power (see Harris 2014). A more ambitious approach to fuel poverty targeting would, in all likelihood, require an expanded role for government, e.g., by taking a stronger coordinating role. This, by extension, introduces the potential for prominent policy failure and electoral risk for the incumbent government. Targeting those in receipt of existing benefits is a low risk strategy, as is keeping a distance between the state and programme activity by having suppliers deliver. The fact that the current approach may be inefficient, this is made less problematic by the absence of a long-term target; thus effectively making it impossible to fail through inaction, and incentivising shorter-termism. A more limited approach is also consistent with the more general desire of neoliberal government to limit the role of the state (as discussed in Chapter Two).

The second constraint also relates to the office-seeking inclination of politicians, and by extension the desire to appeal to particular political constituencies. The current definition of vulnerability in fuel poverty is very generous definition of vulnerability, and doesn’t clarify the extent to which policies are intended to balance targeting the fuel poor with targeting vulnerable groups in a wider sense (which again, makes policy failure on this front impossible). Current policy tends to favour older people; a household in receipt of the guarantee element of Pension Credit would be eligible for
all current policies. This is partly justifiable given that older people are at greater risk of EWM; however, there is little research on the impacts of cold homes upon, for example, children or people with disabilities (as discussed in Chapter Two). Furthermore, it is over-75s who are at greatest risk of EWM, but 52% of WFP recipient households contain only under-75s and are not low income (LIHC definition, before receiving WFP; own analysis of DCLG 2013b). Reed and Portes (2014) and Cribb et al. (2013) demonstrate the tendency of coalition policy to favour the wellbeing of older people over children (see also Clark 2011), and Boardman (2010: 215) classifies the choice to prioritise older people in fuel poverty policy as a predominantly political one. Older people are both a valuable voting bloc (see Ipsos MORI 2010, Brogan 2014) and tend to be perceived as the “deserving poor” (see Wynne-Jones 2014). In the face of public concern around perceived benefits dependency (see Doron, Harrop 2012) – a sensitivity agitated by political rhetoric (see Sparrow 2013) – shifting expenditure from older people towards workless households may be considered both ideologically unappealing and politically unwise.

- Economic Constraints

Economic constraints also pose a barrier to the improvement of targeting. The state has tended to leave the more expensive, active targeting activity to suppliers. This potentially exacerbates fuel poverty, as costs are reclaimed via energy bills. Future policy is likely to require a greater emphasis on active targeting in order to maintain equity in delivery as more of the ‘low hanging fruit’ has been ‘picked’. This work has identified a number of problems where suppliers engage in active identification, and suggested that greater involvement from the state could improve efficiency. However, with greater involvement comes financial expenditure, not only in establishing new processes, but also in introducing a larger identifiable group in need of support. Previous experience (such as in the development of WHDS) indicates that the current government, with their focus on austerity, is unwilling to increase expenditure significantly and so a FPDO, as suggested here, is probably beyond the limits of ambition. Improvements to geographical targeting would be less expensive, but with commensurate limitation on what can be achieved. Investment in targeting process could reduce costs in the long term; however, the rate of return would likely be slow to emerge. As long as the government remains inclined towards austerity - and the
current expense is concealed in energy bills – there is little economic motivation to pursue improved targeting.

Conclusions

This chapter has reported the findings of research that synthesised quantitative analysis, review of literature and policy and interview data to compare state and supplier capacity to find fuel poor households. It was argued that the current process used in policy is ineffective, both in the rather blunt benefits-based criteria used, and in the means of identifying qualifying households. A distinction was introduced between passive and active identification, and it was noted that the state tend to go for the former, cheaper option, leaving suppliers to undertaken active identification. However, as programmes progress, it will be increasingly necessary for active identification to be used. This is both more expensive, and does not appear particularly effective in finding fuel poor households. It is recommended here that government should, in the first instance, clarify the target of fuel poverty policies (particularly with regards to vulnerability), and investigate the true costs of supplier identification. A number of options have then been suggested with the potential to improve targeting, ranging in ambition from improved data matching to a dedicated central targeting function. While the process of finding the fuel poor is undeniably challenging, current processes are not yet at the technical limits of what is possible. However, any enhancement will rely upon state intervention, and it is argued that at present political and economic factors limit ambition in this regard.

Efficient, cost-effective targeting is important because of its implications for the distributive effects of policy. Firstly, because suppliers transfer the costs of delivery to energy bills, with a disproportionate burden upon fuel poor households; thus higher targeting costs have the potential to exacerbate fuel poverty. Secondly, these negative distributional effects can be mitigated by effectively delivering policies to fuel poor households; however, ineffective targeting will undermine efforts. The next chapter will consider the way in which state and supplier policies are funded, and the implications for fuel poverty mitigation.
6 | Financing Interventions

If we win the election 2015, the next Labour government will freeze gas and electricity prices until the start of 2017. Your bills will not rise... Now the companies aren’t going to like this because it will cost them more, but they have been overcharging people for too long in a market that doesn’t work. It’s time to reset the market.

Ed Miliband MP, Speech to the Labour Party Conference, 24th September 2013 (Miliband 2013)

The promise made by Leader of the Opposition Ed Miliband at the September 2013 Labour Party Annual Conference sparked intense debate, decried in some quarters as “posturing to no purpose” (Knight 2013) and hailed by others as a means to “fix the broken energy market” (Lloyd 2013). Some suppliers were quick to point out that levies to fund Government-imposed obligations – including those intended to mitigate fuel poverty – account for a significant proportion of domestic energy bills (see Gosden 2013, Phillips-Davies 2013b, RWE npower 2013).

As the LIHC definition of fuel poverty is relative, Miliband’s proposed price freeze would not necessarily have any impact on official fuel poverty levels. However, the appropriateness of funding measures aimed at reducing fuel poverty via levies on energy bills is questionable due to the regressive nature of the method; ceteris paribus, low income and fuel poor households would be expected to pay a higher proportion of their income were policies were funded via energy bills than if they were funded via income taxation. Such regressive effects might be mitigated by the effective use of funds in supporting households, however, as discussed in previous chapters, currently delivery progress is slow, there is no detailed strategy, and targeting is ineffective at reaching fuel poor households. In this chapter, it will be argued that retention of the current approach is likely ascribable to ideological, economic and political constraints that are more compelling than the motivation to ensure policy is effective in reducing fuel poverty.
This chapter considers, firstly, the likely implications of different levels of funding for policy upon LIHC fuel poverty, second, the impacts of the manner in which funds are raised, and third, the reasons for retaining a regressive funding mechanism. To begin with, the likely costs of mitigating fuel poverty are assessed based upon systematic review of the literature, and incorporating some further analysis of EHS 2011 datasets. This includes a comparison of likely costs with real-world budgets, based upon examination of policy documents. The second section evaluates options for raising the necessary funds, focusing on the clear differential between the means by which the state raise funds, through general taxation, and the way in which suppliers meet the costs of obligation compliance, from levies on energy bills. A third option considered is the use of hypothecation – a practice also known as ‘ring-fencing’ – whereby revenues from one particular source of taxation are earmarked for a given usage. The final section considers the broader consequences of the choice of delivery agent upon funding, firstly with regard to the impact on fuel poverty, then the wider distributional effects. The chapter closes with an overview of other decisive factors, including the political and economic constraints upon the choice made, before briefly concluding.

**Methodological Overview**

The mixed methodological approach applied in this chapter is primarily based around meta-analysis and synthesis of existing literature. One approach used only in this chapter is that of systematic literature review, a more structured form of review that is particularly suited to research subjects for which the question can be tightly defined, where the topic tends towards being quantitative in nature (thus easing comparison), and for which there is a large body of research united by a single theme from which to draw (see Petticrew, Roberts 2006: 1-23). Here, a systematic review has been undertaken of literature that considers the costs of upgrading the UK housing stock, with a view to establishing what different levels of funding for fuel poverty policies might be expected to achieve; the results are reported in section 6.1, and full methodological details are supplied in section A1.8.

A directed policy literature review has also been undertaken, as for previous chapters, here with a particular emphasis on meta-analysis and synthesis of official statistics.
from a range of sources. Establishing the costs of programmes can be challenging with regard to fuel poverty policies, as, until recently, suppliers were not required to report the costs of fulfilling obligations. Furthermore, statistics relating to different programmes often come in disparate formats (e.g., with regard to time periods, scales), making consolidation difficult (Chawla and Pollitt (2012) undertook a comparable exercise and record facing similar issues). Every effort has been made to transparently record sources and underlying assumptions. A more traditional literature review methodology was applied in considering the broader impacts of different approaches to funding. The initial scoping review undertaken uncovered a small but focused body of academic, policy and grey literature applying analytical techniques beyond the scope of this research in order to assess the distributional impacts of taxation for environmental policies (although not fuel poverty directly). This literature is synthesised here, and the implications of the findings for LIHC fuel poverty considered, as well as the political and practical perspectives on different financing options. This literature review has been supplemented with some further descriptive quantitative analysis of the EHS 2011 (DCLG 2013c), primarily as a means of evaluating the likely distributional impacts of different models. This includes further application of the assessment of targeting efficacy for different policies reported in the previous chapter.

6.1 The Cost of Tackling Fuel Poverty

The most immediate barrier to fuel poverty alleviation in England is, arguably, cost. As established in section 4.2.5, at the time WHECA was passed, politicians were operating under the belief that contemporary levels of expenditure would be sufficient to eradicate fuel poverty within twenty years. Subsequent research has established that this belief was ill founded with regards to the 10pct definition of fuel poverty (cf. Preston, Moore & Guertler 2008), but there is little existing work investigating what impacts the very recent changes to the fuel poverty definition and targets are likely to have upon the costs of tackling fuel poverty; this chapter begins to bridge this gap in the existing research base. Figure 6.1 illustrates the relationship applied in order to estimate total programme costs for a scheme designed to reach all fuel poor households. In summary, the average cost of measures multiplied by the number of households requiring support will given the total cost (minus administration) if
targeting is perfect. However, if leakage is 50%, then twice as many households will need to be supported to achieve coverage; this relationship is explored further in Table 6.4.

![Figure 6.1: Principles for estimation of fuel poverty policy costs](image)

The new relative definition of fuel poverty makes eradication a ‘moving target’. To counter this, assumptions have been made around programme ambition; these are reported as they arise. The section opens with a discussion of the few attempts made by government to assess the likely costs of fuel poverty mitigation policies. Whilst the costs of eradicating LIHC fuel poverty via economic measures can be taken to be simply the fuel poverty gap (assuming perfect targeting), it is considerably more difficult to estimate the costs of technical interventions. To this end, a systematic review of evidence on the costs of upgrading the UK housing stock has been undertaken and results reported here. This is followed by meta-analysis of evidence, which incorporates findings from an analysis of EHS 2011 datasets (including on targeting efficiency and number of households in need of support) to assess the likely cost and impact of different levels of activity. Finally, comparisons are drawn with likely real-world expenditure on fuel poverty programmes, established via policy literature review.

### 6.1.1 Government Assessment of Costs

Given the dwindling commitment to the 2016 eradication objective, it is perhaps not surprising that no official itemised budget has ever been produced detailing the expected costs of meeting that legal target. The *UKFPS* (DTI 2001) only listed
anticipated expenditure on programmes that were expected to reduce fuel poverty. A review of the policy literature found that in the years following the passage of WHECA, FPAG sought to establish the likely costs of tackling fuel poverty using a similar approach to that illustrated in Figure 6.1\textsuperscript{114}. In their first report, FPAG estimated that eradication of 10pct fuel poverty would cost approximately £2000 per household\textsuperscript{115}, around £4.5bn for the estimated 2.3m then fuel poor vulnerable households and £6.5bn for 3.2m non-vulnerable households, assuming perfect targeting and without administrative costs (including those of targeting which, even in 2003, FPAG anticipated to be high) (FPAG 2003: 14). The second FPAG report revised this estimate down to £2.5bn for vulnerable households, but identified that this was likely to be a low estimate (though still above then-current expenditure), and recommended that government produce a more detailed budget (FPAG 2004: 7). The third and fourth reports revise that same estimate to £2.75bn, then £3.9bn as fuel poverty (and fuel prices) increased (FPAG 2005: 6). The fifth report includes a final attempt at estimating these costs, this time with more detail. It is there suggested that £5.5bn would be required on measures alone to eradicate fuel poverty in vulnerable households, and that – including administrative costs and assuming 60\% of targeted households as fuel poor – the cost of eradicating fuel poverty would be £13.2bn (FPAG 2007: 29). For context, in the first year after WHECA, the anticipated rate of spending was £3bn over the next decade (FPAG 2003: 14) and, as reported in section 4.2.5, at least one participant in the WHECA Money Resolution debate felt that £2bn over twenty years was what might qualify as “reasonable”.

Subsequent FPAG reports did not include spending estimates, though they have continued to agitate for government to provide their own budget as part of the fuel poverty ‘road map’ (e.g., FPAG 2009: 8). Whilst the ECO and WHDS Impact Assessments include estimates of both costs and impact on 10pct fuel poverty, these cannot be taken as indications of expected costs of fuel poverty alleviation given the

\textsuperscript{114} Boardman (2010: 204-205) also reviews these attempts. Her own original estimate of the costs of upgrading fuel poor households such that warmth was affordable was an average of £2500 per dwelling (Boardman 1991: 207); however, this is based upon analysis of circumstances and costs that are now over twenty years old.

\textsuperscript{115} Note that early FPAG estimates are based on work undertaken with DTI and DEFRA, using estimates for the costs of measures that are low by today’s standards, even accounting for inflation. For example, a document produced by DTI for FPAG assumed that SWI would cost between £2,500 and £4000 per household (DTI: 2003). EST estimate current costs as between £9000 and £26,000 for external SWI (EST, 2014).
broad scope and drivers underlying those policies (as covered in Chapter Four). No official costings have yet been published relating to LIHC fuel poverty alleviation and there is the added difficulty in doing so with regard to a relative measure because as dwellings are improved, the fuel poor population will shift. As discussed in Chapter Two, DECC have indicated that any new target might relate to minimum or average efficiency standards for low income households (DECC 2013j: 13). The remainder of this section will offer estimates as to likely costs of different courses of action, beginning by assessing perhaps the most difficult element, the cost of technical measures.

6.1.2 Evidence on Technical Upgrade Costs

The economic costs of alleviating LIHC fuel poverty are comparatively easy to establish, as they should be equal to the fuel poverty gap measure (once targeting and administration is taken into account). The main problem is likely to be in establishing subsidy levels commensurate with need given the high variance in fuel poverty gaps (analysis of DCLG 2013c gives a mean gap of £47.76, with standard deviation £220.33). This may be an argument for alternative tariffs as a support mechanism, as will be discussed in section 7.2.3.

The costs of a more permanent solution, via technical interventions, are harder to establish. A preliminary scoping review undertaken for this work found enormous variance in costs reported in studies considering upgrades to the housing stock more broadly. Subsequently, a systematic review was undertaken as a means of drawing together the existing evidence on which to base estimates of tackling fuel poverty, the results of which are reported here. The methodological approach was based on Petticrew and Roberts’ (2006) guidance on systematic reviewing in the social sciences (the technique is most commonly found in medical research because results tend to be

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116 The vagueness of estimates provided for ECO makes it difficult to assign a cost for each household removed from fuel poverty. It is stated in the Impact Assessment that the Green Deal and ECO combined will lift 125,000 to 250,000 households out of fuel poverty. Assuming only ECO HHCRO and CSCO contributed, the cost would then be £7000 to £14000 per household, however, this is an extremely rough approximation (DECC, 2012). WHDS is an economic measure and so removes households from fuel poverty only temporarily. However, taking the 2011/12 figures as an example, the Impact Assessment anticipated that 88,000 households would be removed from fuel poverty following £250m of expenditure, or £2841 per household removed (DECC, 2011).
quantitative, and thus easier to collate). Details of the databases searched and search terms are included in section A1.8 of the Methodological Appendix; as a brief overview, the review incorporated academic, grey and policy literature, with studies included if they assessed the costs of delivering energy efficiency interventions to the English housing stock\textsuperscript{117}. Ideally, the literature would also include final impacts of interventions upon fuel poverty levels (under either definition) or upon SAP ratings. Literature based upon both modelling and evaluation of actual delivery was considered. Table 6.1 gives an overview of sourced literature.

\textsuperscript{117} A body of work exists focusing exclusively on dwellings in Ireland (Clinch, Healy, 2000, Healy, Clinch 2004, Ahern et al. 2012), and at least one Welsh study has also been undertaken (Jones et al. 2013). Whilst some parallels are likely to exist, this review was restricted to those studies that included England, i.e., whole UK or GB studies were included.
Table 6.1: Synthesis of studies considering costs and impacts of efficiency upgrades to English housing stock

<table>
<thead>
<tr>
<th>Study</th>
<th>Overview of scope, methodology</th>
<th>Headline figures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm Front: Helping to Combat Fuel Poverty (Bourn 2003)</td>
<td>NAO report on Warm Front scheme progress. Includes figures for 2001/2002.</td>
<td>In 2001/2002, expenditure of £197m supported 307,700 households (Watson, Bolton 2013: 4), which the NAO report indicates resulted in an average increase of 13 SAP points. A number of potential issues are recorded, including households being supported who already have a fairly high standard of efficiency, and significant expenditure on energy efficiency light bulbs, which do not impact on SAP.</td>
</tr>
<tr>
<td>Reducing carbon emissions from the UK housing stock (Shorrock, Henderson &amp; Utley 2005)</td>
<td>Evaluates potential for reduction of carbon emissions in the United Kingdom (UK) housing stock via modelling of a number of combined data sources.</td>
<td>Whilst this report does not consider impact of upgrades upon fuel poverty or SAP ratings, it does usefully evaluate the far potential of energy savings achievable (albeit with a focus on carbon reduction, rather than energy reduction). Taking into account an extremely broad range of measures, it is found that for the year 2010 potential (though not practically achievable) energy savings are around 910 PJ/year, with delivery costing between £123bn and £1020bn. However, if limited to only cost effective measures, savings are in the range of 400 – 810 PJ/year, costing between £2bn and £21bn.</td>
</tr>
<tr>
<td>Warm Zones External Evaluation: Final report (EST/CSE/NEA 2005)</td>
<td>Final report of delivery of the Warm Zones pilot programme, efforts to reduce 10% fuel poverty within five English pilot scheme areas. Also incorporated ‘soft’ measures, e.g.,</td>
<td>Total budget was £7m, with the pilot areas home to 109053 fuel poor households. The scheme resulted in a 10.1% reduction in the fuel poverty gap (defined here as the number</td>
</tr>
<tr>
<td>Source</td>
<td>Description</td>
<td>Details</td>
</tr>
<tr>
<td>--------</td>
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</tr>
<tr>
<td><strong>Home Truths: A low-carbon strategy to reduce UK housing emissions by 80% by 2050 (Boardman 2007)</strong></td>
<td>Policy model that suggests an approach to reduce UK housing emissions by 80% by 2050, whilst eradicating 10% fuel poverty by 2016.</td>
<td>Suggests target SAP 80 in order to fully insulate against fuel poverty. Estimates upgrade costs of £3.3bn annually from 2008 to 2016 (£29.7bn total), at an average cost of £7500 per house (with 440,000 dwellings requiring improvement). Numbers based on Energy Saving Trust cost estimates.</td>
</tr>
<tr>
<td><strong>How Much? The cost of alleviating fuel poverty (Preston, Moore &amp; Guertler 2008)</strong></td>
<td>Models English housing stock data to evaluate (a) costs of alleviating 10% fuel poverty by 2016 at minimum expense and (b) programs targeted at upgrading fuel poor households to SAP 65, SAP 80, and SAP 120. Model assumes perfect targeting and includes some advanced measures.</td>
<td>Study estimated that a programme aimed at eliminating 10% fuel poverty at minimum expense would cost an average of £1826 per household (£4.6bn total), lifting 71% of households out of 10% fuel poverty and achieving average SAP 64.1. A SAP 65 target programme would cost an average of £2412 per household (£6bn total) lifting 58% of households out of 10% fuel poverty and achieving average SAP 69.8. A SAP 80 target programme would cost £7.9bn and lift 67% of</td>
</tr>
</tbody>
</table>
households out of 10pct fuel poverty. A SAP 120 target programme would cost £10.6bn and lift 70% of households out of 10pct fuel poverty (i.e., similar to the proportion under the minimum expense model).

<table>
<thead>
<tr>
<th>How Low? Achieving optimum savings from the UK's existing housing stock (CSE, ACE &amp; Moore 2008)</th>
<th>Models four scenarios for carbon emissions reduction, each with increasingly ambitious parameters.</th>
<th>Whilst no precise modelling of impacts on fuel poverty or SAP are included in this report, it is estimated that a scenario in which £129.7bn is spent on energy improvements (including advanced measures) would raise 75-80% of households out of 10pct fuel poverty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadmap to 60%: Eco-refurbishment of 1960s flats (EST, Mears Group &amp; Travis Perkins 2008)</td>
<td>Study modelled refurbishment of English 1960s flats, considering low (c. £1000), medium (c. £5000) and high cost (c. £10000) interventions. Target was 60% decrease in carbon emissions.</td>
<td>Found extreme variation in the costs of refurbishing flats to achieve target carbon emissions. Cost per additional SAP point ranged from £200 to £1200. In 96% of cases, the medium cost intervention was sufficient to refurbish flats to a minimum of SAP 65 (suggested in this papers as the threshold at which 10pct fuel poverty risk was low).</td>
</tr>
<tr>
<td>Raising the SAP: Tackling fuel poverty by investing in energy efficiency (Guertler, Preston 2009)</td>
<td>Models English housing stock data to evaluate costs and impacts of proposed retrofit programmes seeking to bring properties up to either SAP 81 (stated as the preferential target) or SAP 69. Model assumes perfect targeting and includes some advanced measures.</td>
<td>Study estimates that a SAP 81 target programme targeted only at 10pct fuel poor households would cost an average of £8820 per household (£21.4bn total), raise 73% (from 0.5%) of properties to at least SAP 69 and remove 83% of households from 10pct fuel poverty. A SAP 81 target programme targeted at all households would cost an average of £6860 per household (£145.6bn total), and raise 87% (from 6.4%) of properties to at least SAP 69. A SAP 69 target programme</td>
</tr>
</tbody>
</table>
targeted only at 10pct fuel poor households would cost an average of £5290 per household (£12.9bn total, and raise 58% (from 0.5%) of properties to at least SAP 69 and remove 77% of households from 10pct fuel poverty.

<table>
<thead>
<tr>
<th>The Warm Front Scheme (Burr 2009b)</th>
<th>NAO 2008/9 report on scheme progress.</th>
<th>Includes a range of graphed data for the period June 2005-March 2008, though not in an easily format that is easy to synopsise. It is recorded that in 2007/8, when expenditure was £350m across 268,900 households (Watson, Bolton: 4), the average improvement was from SAP 42 to SAP 57.</th>
</tr>
</thead>
</table>
| Warm Front Annual Reports 2009-2013 (The Warm Front Team 2010, The Warm Front Team 2011, The Warm Front Team 2012, The Warm Front Team 2013) | Annual reports for the final four years of the Warm Front scheme are available online, and include performance statistics. | Headline statistics are as follows, cost data taken from (Watson, Bolton 2014: 4):
- In 2009/10, 212,963 households received support, at a cost of £369m. This resulted in a change in average SAP rating from 33 to 66, and modelled average annual savings of £653.62.
- In 2010/11, 127,930 households received support, at a cost of £366m. This resulted in a change in average SAP rating from 32 to 59, and modelled average annual savings of £610.56.
- In 2011/12, 33,058 households received support, at a cost of £109m.
- In 2012/13, 32,059 households received support, at a cost of £70m. This resulted in a change in average SAP rating from 24 to 63. |
<p>| Challenge 100: Tackling fuel poverty for | Data drawn from a scheme that sought to tackle fuel poverty | Scheme eradicated fuel poverty in 41% of households, costing |</p>
<table>
<thead>
<tr>
<th>Study/Project</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 families, in 100 homes, in 100 days (study conducted by E.ON and partner organisations in winter 2009-2010, currently unpublished costing information supplied by project team (Haines 2013))</td>
<td>in a sample of 102 English households, selected to be representative of the English housing stock. Included some income-based measures. An average of £6371 per household. Average percentage of income spent on fuel improved from 15.2% to 10.6%. Average SAP improved from 46 to 61 (£425 per additional SAP point gained). Average household fuel costs reduced by £531.</td>
</tr>
<tr>
<td>Whole life costing of domestic energy demand reduction technologies: householder perspectives (Pellegrini-masini et al. 2010)</td>
<td>Based upon the TARBASE model, modelling economic, social and technical impacts of upgrading the UK building stock. Paper evaluates impact of three levels of intervention (including some appliance-level measures) on two common generic dwelling types. Considers whole life costs of those interventions. Paper does not consider impacts upon fuel poverty or final SAP ratings. Package initial capital costs are in the range of £6188 to £18998, with net annual savings in the range £268 to £509.</td>
</tr>
<tr>
<td>Fixing Fuel Poverty: Challenges and Solutions (Boardman 2010: 203-207)</td>
<td>Revises earlier estimate of Boardman (2007) based on changes to assumptions. Estimates £15-20bn per year over nine years, i.e. £135-180bn total to aim to take all current 10pct fuel poor households to SAP 81. Assumes targeting efficiency of &lt;50% going to fuel poor.</td>
</tr>
<tr>
<td>Target 2050: Future-proofing homes in Stroud District and beyond (Wyatt et al. 2011)</td>
<td>Report from project delivered by Stroud District Council with Severn Wye Energy Agency, looking to gather evidence for the design of a programme that will achieve the Council’s 2050 environmental aims within the domestic sector. Incorporated survey of 248 local homes to establish potential savings, with a smaller group receiving measures under a Pay As You Save (PAYS) pilot. No details relating to impact on SAP or fuel poverty are given. The scheme included some more advanced measures, and tended towards consideration of extremely ‘deep’ retrofit (costing in the region of (£20k-30k). Within the ten provided case studies, interventions cost £16948 - £46900 and achieved energy savings in the range 22% - 70%.</td>
</tr>
</tbody>
</table>
| **Energy Bill Revolution Campaign Report**  
| (Washan 2012) | **Model of English housing stock investigating likely impacts of proposed retrofit programmes seeking to eliminate 10pct fuel poverty.** | **A modelled programme targeted only at 10pct fuel poor households would cost an average of £6500 per household (£59.6bn total), removing 87% of households from 10pct fuel poverty and raising the rest to new-build standards (at least SAP 69). An extra £34bn (£3700 per property, on average) would take 10pct fuel poor homes to SAP 81. For the non-fuel poor housing stock, expenditure of £10.4k per dwelling would bring dwellings to SAP 81. It is estimated that, whilst some of this could be funded via the Green Deal, £66bn would need to be provided in subsidies (an average of £4.6k per house).** |
| **Getting the measure of fuel poverty: the final report of the fuel poverty review (Hills 2012)** | **Models impact of expenditure of £0.5bn upon LIHC fuel poverty in English housing stock.** | **Finds that under the optimum model (Exchequer funded, narrowly targeted), expenditure of £0.5bn would reduce the number of fuel poor households by 30000 in the short term (1% of current total), effectively costing £16700 per house removed from fuel poverty. However, this would result in a short-term fuel poverty gap reduction of £70m, and a lifetime gap reduction of £2.5bn. Under the best long-term model (supplier funded, narrowly targeted), this expenditure results in a lifetime reduction of 1.2m household-years of fuel poverty.** |
| **The mass-retrofitting of an energy efficient-low carbon zone: baselining the urban regeneration strategy, vision, masterplan** | **Models mass retrofit of c. 1700 houses in a London borough. Takes into account possibilities for self-implementation of some measures. Area contains deprived populations, with** | **Total cost of retrofit (including social rented sector housing) was £27m, or around £11400 per dwelling, reducing area domestic energy consumption by 56%. Modelling included** |
and redevelopment scheme (Deakin, Campbell & Reid 2012)  

| and redevelopment scheme (Deakin, Campbell & Reid 2012) | 61% of dwellings built before 1959. | some advanced measures; if these were not included, cost could be closer to £5200 per dwelling. Considers comprehensive retrofit packages, but does not consider impact on fuel poverty levels or include data regarding efficiencies achieved. |

It is immediately apparent that there is an enormous amount of variation in estimations of the costs of upgrading the housing stock. By way of illustration, Figure 6.2 shows the stated cost (£) per extra SAP point achieved for studies including that data. Costs have been adjusted to 2011 prices using the Office of National Statistics (ONS) Composite Price Index (ONS 2013b).

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</thead>
<tbody>
<tr>
<td>Number in column indicates expenditure per SAP point gained (£)</td>
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</table>

Note: Black columns refer to projects based on modelled data; grey columns are outputs from real-world delivery.

Based upon compilation of sources. Several studies contained more than one set of costings; references indicate option included here: (EST/CSE/NEA 2005 (Across all schemes), Preston, Moore & Guertler 2008 (All England), EST, Mears Group & Travis Perkins 2008 (Medium-level intervention), Guertler, Preston 2009 (Fuel poor households, target SAP 81), Burr 2009b, The Warm Front Team 2010 (England), The Warm Front Team 2011 (England), The Warm Front Team 2013 (England), Haines 2013 (Across all locations)).

Figure 6.2: Cost (£) per additional SAP point achieved or estimated in studies evaluating housing stock upgrades
This variation can be attributed to the sheer number of assumptions required in modelling such an enormous project (see similar issues encountered by Jenkins 2009). Table 6.2 summarises the key types of assumption identified within the literature, with commentary on impact.

**Table 6.2: Assumptions underlying estimations of the cost of tackling fuel poverty in England**

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Commentary</th>
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<tbody>
<tr>
<td><strong>Administrative costs</strong></td>
<td>Management overheads (including the costs of promoting schemes) are likely to constitute a significant proportion of any final cost, and will vary based upon delivery method. Boardman estimates that these could add an extra 10-20% to the final cost (2010: 205). The Warm Zones External Evaluation reports that of the £67 spend required for each SAP point gained, £14 (21%) comprised administrative costs (EST/CSE/NEA: 131).</td>
</tr>
<tr>
<td><strong>Ambition of target (e.g., selected minimum SAP for fuel poor households)</strong></td>
<td>The ambition of the selected target will have an enormous impact on expenditure in the short term. However, a more ambitious short-term programme could prove more cost-effective in the long term (an approach advocated by Brenda Boardman (2010: 222). However, Fawcett (2013) finds that gradual upgrades can encourage take-up and enable households to spread out expenditure (though this paper does not consider the particular circumstances of fuel poor households).</td>
</tr>
<tr>
<td><strong>Combination of measures</strong></td>
<td>Where measures are delivered in combination, fixed costs can be shared. A notable example of this is that substantial cost reductions can be achieved where measures that require scaffolding are delivered simultaneously (e.g., external insulation and solar PV).</td>
</tr>
<tr>
<td><strong>Costs of measures</strong></td>
<td>Assumptions about the cost of measures will impact on the estimated cost of the programme.</td>
</tr>
<tr>
<td><strong>Definition of fuel poverty/choice of measure</strong></td>
<td>Where models consider impact on fuel poverty, it is clear that their choice of definition (most particularly whether they choose 10pct or LIHC) will influence all factors based upon that decision (e.g., choice of households targeted, final impact upon fuel poverty levels. There is also a divide between studies that use modelled energy usage, and those that consider actual savings.</td>
</tr>
<tr>
<td><strong>Delivery agent</strong></td>
<td>Most modelled work makes no assumptions about the likely differences in efficiency of delivery based upon choice of delivery agent (Hills 2012 being an exception to this rule). However, as costs of delivery under supplier obligations remain confidential – and there are few schemes available for comparison - it is difficult to assess the extent of possible efficiency gains; this will be discussed further in Chapter Seven.</td>
</tr>
</tbody>
</table>
**Energy model applied**  
The majority of projects use models to assess the likely impact of installed measures. The official fuel poverty methodology uses the Building Research Establishment Domestic Energy Model (BREDEM) (see DECC 2013i) but other projects may use variations such as SAP05, SAP09 or RdSAP, which will result in some differences in output (see DECC 2013o for more discussion).

**Goal of programme**  
Choice of approach will vary based upon whether the goal is carbon reduction or fuel poverty mitigation. For example, a programme focused on carbon reduction might place a higher premium on packages that involve moving to low-carbon heat sources than would be strictly necessary were cost reduction the only motive.

**Nature and size of housing stock sample**  
Some of the projects included in the review consider limited samples of the housing stock, with a few that are focused only on a restricted number of dwelling types (cf. EST, Mears Group & Travis Perkins 2008, Pellegrini-masini et al. 2010). This will obviously affect the applicability of results to the wider housing stock. Even those based upon datasets like the English Housing Survey, which are representative of the national housing stock, are likely to lose relevance with time. In particular, earlier schemes are likely to have picked off the ‘low hanging fruit’, i.e., those houses for which larger efficiency gains are achievable via comparatively low cost measures, e.g., cavity wall insulation. In particular, insulation of solid wall dwellings is likely to incur significant costs and fail to meet the Green Deal ‘golden rule’ (see Dowson et al. 2012); these issues will be discussed further in the next section.

**Participation**  
Some households may not wish to participate in schemes; where projects include assumptions would have to be made as to the likely opt-out levels.

**Scale of delivery**  
The number of households to which the target applies will hugely impact the total expenditure required, e.g., a programme aimed only at fuel poor households will cost less than a programme aimed at all inefficient dwellings. However, a larger scale programme may achieve economies of scale that reduce the per-dwelling cost of delivery.

**Targeting**  
As previously demonstrated in Table 5.2, assumptions about the efficiency of targeting need to be taken into consideration when considering the likely efficacy of any given level of expenditure. Given the problems with existing targeting methods discussed in section 5.1, this could have an enormous impact upon required expenditure.

**Time period**  
Under WHECA, 2016 was the target for eradication; any new target could be extended further. A programme conducted over a longer time period would cost less year-on-year, though would likely require additional expenditure on operating costs. A longer target would also reduce pressure...
upon the supply chain.

### Timing

As well as the time period, the exact time period on which estimations are based has an impact. Prices in Table 5.3 have been retained as reported, however, inflation levels should be considered when drawing comparisons. Models make assumptions about projected energy prices and fuel poverty levels that will impact upon final costs. However, it is worth noting that under the relative LIHC definition, fuel poverty levels are likely to remain relatively stable as compared to under the absolute 10pct definition.

Source: Own analysis.

The costs of mitigating fuel poverty or achieving a SAP-based target are extremely difficult to estimate without a firm basis for these assumptions. It is also beyond the scope of this thesis to conduct the detailed dynamic modelling required to more accurately ascertain the likely costs of achieving a new target within the LIHC fuel poverty paradigm. However, government should undertake this work once a new target and policy framework has been established, as a basis for effective policy monitoring.

### 6.1.3 Putting a Price on Efficient Homes

This section reports the process of estimating the impacts on different levels of spending on fuel poverty programmes, via the process illustrated in Figure 6.1. This is similar to the methods of extrapolation previously applied by FPAG (2007: 29-30) and Boardman (2010: 203-207) for 10pct fuel poverty. Given the comparative difficulty in eradicating LIHC fuel poverty, it is assumed for the purpose of this work that the intention of any programme is to achieve a minimum SAP rating for LIHC households, one of the options put forward by DECC in post-Hills policy documents (DECC 2013j: 13)\(^{118}\).

- **Average Cost of Measures**

As already demonstrated in Table 6.2, estimating the cost of measures is difficult due to the number of variables involved. For the purpose of this work, estimates of

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\(^{118}\) The other suggested form of target is an average, however, that is significantly more complex to estimate with the available data, and so a target based upon minimum SAP rating has been taken as commensurate with the scope of this work.
average cost have been taken from the Energy Bill Revolution Campaign Report\textsuperscript{119} (Washan 2012), which considers the cost of programmes that would upgrade the dwellings of English fuel poor households with the intention of eradicating 10pct fuel poverty by 2016. This report has been selected as the most appropriate basis for analysis, as a comparatively recent piece of research that considers specifically the English housing stock, and includes cost estimates for achieving given target SAP ratings. Two programmes are considered; the first results in all fuel poor households improved, as far as is possible, to remove them from 10pct fuel poverty, achieving an average Energy Performance Certificate (EPC) band C, or SAP 69. The second includes the additional expenditure required to take those same households to an average of EPC band B, or SAP 81. These minimum SAP targets are retained here, both for convenience, and because they represent fair examples of an ambitious programme (SAP 81 target), and a more moderate option (SAP 69 target)\textsuperscript{120}. The report is based on analysis of the 2009 English Housing Survey data projected to 2011 levels (DCLG 2011a), rather than the 2011 data that is primarily used in this thesis (DCLG 2013c). Additionally, the research report considers the costs of upgrading those houses that meet the 10pct definition of fuel poverty, rather than the LIHC definition used here. However, comparison of descriptive statistics for these two datasets indicates an acceptable degree of similarity in the profiles of the populations under consideration, as shown in Table 6.3.

\textsuperscript{119} Whilst an interest group, Energy Bill Revolution, commissioned this report the work itself is judged to be unbiased, adopting a robust methodology similar to that applied by CSE et al. (2008) and Guertler and Preston (2009).

\textsuperscript{120} For context, in 2011, 0.2\% of English households lived in dwellings rated at SAP 81 or above, and none of these are LIHC fuel poor (based on analysis of DCLG 2013b); this is the standard of energy efficiency advocated by Boardman (2010: 217). Further analysis of the 2011 EHS (DCLG 2013b) finds that 14.6\% of households lived in dwellings rated at or above SAP 69, of whom 1.8\% were LIHC fuel poor. Washan (2012: 32) found that the SAP 69 programme removed 87\% of households from 10pct fuel poverty and took the remainder up to new build standard (no similar figures are given for the SAP 81 programme).
Table 6.3: Comparison of descriptive statistics for 10pct fuel poor households in 2009, LIHC fuel poor households in 2011

<table>
<thead>
<tr>
<th></th>
<th>10pct fuel poor, 2009</th>
<th>LIHC fuel poor, 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of households (millions)</td>
<td>5.5</td>
<td>2.4</td>
</tr>
<tr>
<td>Median SAP</td>
<td>46.2</td>
<td>50.4</td>
</tr>
<tr>
<td>Standard Deviation of SAP</td>
<td>17.1</td>
<td>13.1</td>
</tr>
<tr>
<td>Range of SAP</td>
<td>82.5</td>
<td>76.6</td>
</tr>
</tbody>
</table>

Source: Own analysis of EHS data (DCLG 2011a, DCLG 2013c).

It is not stated explicitly, but it can be assumed that the report is based upon 2011 prices of measures, given that this is when the research was undertaken. As such, no inflationary adjustment has been made. The average assumed price of upgrades for fuel poor households are therefore taken to be £6500 (to reach target SAP 69) and £10200 (to reach target SAP 81) (based upon Washan 2012: 17-19).

- Number of Households Requiring Support

Washan’s aggregated estimates of cost are based upon measures being targeted towards all 9.1m households forecast to be 10pct fuel poor and living in dwellings below the target SAP ratings by 2016 (2012: 16). By contrast – in line with changes to the definition - it is assumed that the programmes modelled here are targeted only at LIHC fuel poor households. Projection is beyond the scope of this work (and, as discussed in section 2.1.2, the LIHC fuel poor population should remain comparatively stable). Currently, all 2.3m LIHC fuel poor households live in dwellings below SAP 81, and 98% of these are below SAP 69. However, no viable measures exist for the dwellings occupied by 14.1% of LIHC households (based on analysis of DCLG 2011a), and so these are excluded from costing considerations. Should any programme successfully begin to upgrade the housing stock, the threshold for ‘high costs’ would be lowered, pushing some of those households currently on the margin into fuel poverty (i.e., those currently with low incomes and low – but close to threshold – costs). To establish what these numbers are likely to be would require further dynamic modelling that is beyond the scope of this work. However, as an indication, Figure 6.3 shows, from analysis of DCLG (2013c) the number of LIHC
households below established SAP ratings that are within close range of the high cost threshold (assuming that the income threshold is likely to stay comparatively stable and that there is no influx of low-income households moving to dwellings previously occupied by high income high cost households).

Note: Threshold for high costs is calculated to be £1234.35. Column percentages indicate proportional increase to the otherwise eligible group.
Source: Own analysis of DCLG (2013c).

Figure 6.3: Estimated numbers of near-high cost threshold LIHC dwellings at or below candidate minimum SAP targets

It is likely that any programme would pick up many of these near-threshold dwellings via imprecise targeting though dynamic modelling of a definitive threshold would be required to establish likely coverage.

- Percentage of Recipients that are Fuel Poor

Washan’s (2012) costings are based upon perfect identification; however, as demonstrated in the previous chapter, current programmes are some distance from achieving this. Table 5.2 adapts a table provided by Boardman (2010: 205) that shows
the enormous impact that targeting efficacy can have on the cost of an effective programme. For illustrative purposes, it is assumed that LIHC fuel poor households in sub-SAP 69 dwellings are being targeted, and therefore upgrades will cost an average of £6500 per dwelling. Numbers of dwellings are based upon numbers of LIHC fuel poor households (taken from DCLG (2013c) multiplied by the relevant efficiency factor.

Table 6.4: Relationship between targeting and programme cost

<table>
<thead>
<tr>
<th>Proportion going to fuel poor household in sub-SAP 69 dwellings (i.e., leakage)</th>
<th>Cost per dwelling</th>
<th>Numbers treated (1000s)</th>
<th>Total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>£6500</td>
<td>2333</td>
<td>£15.2 billion</td>
</tr>
<tr>
<td>50</td>
<td>£6500</td>
<td>4665</td>
<td>£30.3 billion</td>
</tr>
<tr>
<td>25</td>
<td>£6500</td>
<td>9331</td>
<td>£60.6 billion</td>
</tr>
</tbody>
</table>

Source: Own analysis of EHS data (DCLG 2013c), drawing upon Boardman (2010: 205).

Previous cost estimates that take account of targeting efficacy have tended to focus only on the proportion of households in receipt of measures that are in the intended target group (see FPAG 2007: 29, Boardman 2010: 205). However, as demonstrated in section 5.1.2, Coverage also tends to be low, and so even if every eligible household received support, there would remain a significant proportion of target group who had not been helped. As discussed in section 5.3, it may be more difficult to effectively reach households who, for example, are not in receipt of state benefits. Thus the efficiency of programmes might be expected to diminish as programmes evolve unless significant advances are made in targeting accuracy (which themselves would likely require increased expenditure).

- Administrative Costs

A number of estimations are offered in the literature as to the costs of administering schemes. Boardman (2010: 205) suggests that administration will constitute an additional 10-20%, FPAG estimates assumed 20% (2007: 29), the Warm Zones scheme reported 21% (EST/CSE/NEA 2005: 131) and the DECC Impact Assessment estimates given for ECO HHCRO anticipated administrative costs as constituting
around 10% of programme delivery costs to suppliers, and slightly more again to government (DECC 2012h: 84-88).

Administration costs will be highly variable based on programme form, e.g., the economies of scale achievable, and whether they are split across multiple delivery agents. As discussed in the section 5.3.3, identification difficulties also have the potential to inflate the cost of administration. DECC observed in the Green Deal and ECO Impact Assessment that suppliers have tended to be reluctant to share details of administrative costs (DECC 2012h: 86). However, under ECO, DECC now require these to be supplied, and they are published in aggregated form every quarter. For the first year of ECO, these constituted an additional 5.3% on top of the costs of measures, substantially lower than experience might suggest, though they may increase as delivery progresses (DECC 2014c: 37). More information as to costs will prove valuable in future policy planning.

- Total Costs

Table 6.5 summarises the process discussed in this section. Two scenarios are included: one to achieve a target minimum SAP rating of 69, and the other the more ambitious SAP 81. The assumed targeting efficiency is that of ECO HHCRE\textsuperscript{121}, though as discussed this would in practice not achieve full coverage (the coverage of that criteria for LIHC fuel poor households is only 29%). Criteria with better coverage have thus far have tended to have significant leakage (see Table 5.1). Administrative costs have been assumed at 20%, in line with the majority of estimates cited here, though again these have the potential to vary significantly. For illustrative purposes, annual costs are included, assuming a programme length of six years (i.e., from 2011, the year of analysis, through 2016, the official target).

\textsuperscript{121} Analysis of DCLG (2013b) indicates that 14.1% of LIHC households (with regard to both SAP thresholds) had no viable measure identified. This has not been accounted for here given that exclusion of these could alter assumed average costs.
Table 6.5: Expenditure estimates for two sample energy efficiency programmes seeking to upgrade LIHC households to average SAP ratings, (A) 69 (B) 81

<table>
<thead>
<tr>
<th></th>
<th>Scenario A (Average SAP 69)</th>
<th>Scenario B (Average SAP 81)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average cost of intervention (2011 prices)</td>
<td>£6500</td>
<td>£10200</td>
</tr>
<tr>
<td>Number of viable LIHC households at or below SAP target</td>
<td>2.0m</td>
<td>2.1m</td>
</tr>
<tr>
<td>Number of households targeted (assuming 73% leakage)</td>
<td>7.4m</td>
<td>7.6m</td>
</tr>
<tr>
<td>Total scheme cost (measures only)</td>
<td>£48.2bn</td>
<td>£77.5bn</td>
</tr>
<tr>
<td>Total scheme cost (including 20% management overheads)</td>
<td>£57.9bn</td>
<td>£93.1bn</td>
</tr>
<tr>
<td>Annual cost (over six year programme)</td>
<td>£9.6bn</td>
<td>£15.5bn</td>
</tr>
</tbody>
</table>

Source: Own analysis, including quantitative analysis of DCLG (2013c). Figures are rounded.

It should be expected that delivery agent choice should result in some variation. The potential additional expense where suppliers are responsible for identification, for example, was discussed in the previous chapter. Similar effects could apply to administration, e.g., where there is duplication of effort across multiple delivery agents. However, it is also possible that the measures themselves will be cheaper when delivered in a competitive market, as will be considered further in section 7.1.2.

It should be emphasised again that these are only broad estimates of cost based on the available information; to support policy success, the government should produce a more advanced budget based upon dynamic modelling of LIHC fuel poverty.

6.1.4 Real World Fuel Poverty Mitigation Budgets

Having established the likely costs of achieving given levels of energy efficiency for LIHC households, it is helpful to compare these with actual expenditure. Real-world budgets can be difficult to establish, particularly as figures – if supplied at all – tend not to be in consistent formats. This is particularly true of expenditure on supplier schemes as, prior to ECO, energy companies were not required to share details of expenditure on obligations in order to promote commercial confidentiality. As such, the numbers provided in this section are based upon a comprehensive review encompassing all types of literature (details of sources given in notes). Numbers
broadly correspond with a similar exercise undertaken concurrently by Chawla and Pollitt (2012). Table 6.6 shows estimated spending on fuel poverty policies in the period 2003 to 2011. Figure 6.4 then graphs those figures against year-on-year LIHC fuel poverty levels and fuel poverty gap. Note that whilst spending on social tariffs has been included, spending on the Decent Homes Programme has not, as no figures were available beyond 2008/9 (Chawla, Pollitt 2012 do not appear to have sourced any costings either). However, the expenditure on that programme was substantial; £29.4bn in the period April 2001 to March 2009 (see Morse 2010: 25).

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122 These years were selected because they are the only ones for which usable statistics are available.
Table 6.6: Estimated expenditure (£m) on fuel poverty schemes, 2003/2004 to 2011/12

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<tbody>
<tr>
<td><strong>Technical Interventions</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EEC (1 and 2) PG</td>
<td>83.5</td>
<td>83.5</td>
<td>200</td>
<td>200</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CERT PG</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>463.2</td>
<td>463.2</td>
<td>463.2</td>
<td>463.2</td>
<td>463.2</td>
</tr>
<tr>
<td>CESP</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>57.6</td>
<td>115.2</td>
<td>115.2</td>
<td></td>
</tr>
<tr>
<td>Warm Front</td>
<td>152</td>
<td>165</td>
<td>190</td>
<td>315</td>
<td>350</td>
<td>395</td>
<td>369</td>
<td>366</td>
<td>109</td>
</tr>
<tr>
<td><strong>Economic Interventions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold Weather Payments</td>
<td>3.5</td>
<td>1.8</td>
<td>8.4</td>
<td>3.4</td>
<td>4.0</td>
<td>211</td>
<td>298</td>
<td>435</td>
<td>129</td>
</tr>
<tr>
<td>Social Tariffs</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>33.9</td>
<td>130.5</td>
<td>113</td>
<td>91.8</td>
<td>-</td>
</tr>
<tr>
<td>Warm Home Discount Scheme</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>230</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>2155</td>
<td>2212.3</td>
<td>2380.4</td>
<td>2533.4</td>
<td>2657.9</td>
<td>3900.7</td>
<td>4035.8</td>
<td>4231.2</td>
<td>3196.4</td>
</tr>
</tbody>
</table>

Note: Figures for supplier schemes allocated across years *pro rata*. In lieu of better information, it has been assumed that spending on PG households is as for non-PG households and expenditure has been allotted accordingly (i.e., it is assumed that 40% of CERT spending was on PG households). Supplier obligations operate across the entire United Kingdom; as it is not possible to disaggregate these, they have been included in full in order that the table should be comprehensive. The Industry Initiatives component of WHDS has been disregarded. Figures are in nominal terms as the level of detail available renders adjusting for inflation year-on-year impossible to achieve with any relevance. For context, the Retail Price Index increased by 33% in the period April 2003-March 2012.

Figure 6.4: Expenditure on schemes and LIHC fuel poverty, 2003 to 2011

As Figure 6.4 illustrates, the impact of expenditure in this period—a total of £26.6 billion—upon LIHC fuel poverty levels appears to have been minimal. However, over the same period, the average SAP rating of English dwellings rose from 51.4 to 57 (BRE/DEFRA/EST 2006, DCLG 2013d). The indication, then, is that funds have not been targeted at fuel poor households, or at the very least that low-income households were not improved any faster than higher income homes, as mitigation under the LIHC definition would require.

Turning to current expenditure, ECO is now the sole vehicle by which energy efficiency interventions for fuel poor households are subsidised. Targets for ECO are not based upon required expenditure, but upon metrics tied to either carbon or cost savings for each element of programme. These are given in Table 6.7, along with Government estimates of the total subsidy cost of meeting said targets.

Table 6.7: Energy Company Obligation target metrics for individual elements and official estimates of subsidy costs (through March 2015)

<table>
<thead>
<tr>
<th>Programme element</th>
<th>Reduction target</th>
<th>Estimated average subsidy cost /annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Saving Community Obligation</td>
<td>6.8 MtCO2</td>
<td>£190m</td>
</tr>
<tr>
<td>Home Heating Cost Reduction Obligation</td>
<td>£4.2bn reduction in lifetime notional space and water heating costs</td>
<td>£350m</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£540m</strong></td>
<td></td>
</tr>
</tbody>
</table>

Note: DECC anticipate that actual expenditure on ECO will vary year-on-year. However, as the level of variation is currently unknown, consistency has been assumed here. ECO CERO has not been included, as it does not qualify as a fuel poverty policy under the definition used in this work.

Source: (DECC 2012h: 84)

While budgets might appear fairly stable, inflationary impacts mean that the 2013/14 budgets for technical fuel poverty measures are reduced in real terms. For example, in 2013 prices, the 2009/10 technical interventions budget was £889.8m, or 65% higher than that for 2013/14 (see also section 2.2.3). Jansz and Guertler (2012) estimate that English fuel poverty budgets declined by 31% between 2009 and 2013.

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123 Though it should be noted that the Decent Homes Programme has resulted in significant improvements to social housing (see Morse 2010: 34).
Expenditure on ECO is based only upon government estimates as to what it will cost suppliers to comply with their obligations, the rationale being that they will seek to do so as cheaply as possible and thus create efficiencies. Working on behalf of Energy UK, Shuttleworth et al. (2012) replicated DECC’s analysis using alternate assumptions that they suggest to be more reliable and found that annual costs could be closer to £1.7bn if these are used (£624.8m disregarding ECO CSCO). Under a second model, it is found that if the willingness of customers to contribute to the financing of measures were to be 10% lower (under the reasonable assumption that respondents to DECC scoping surveys were affected by the ‘warm glow’ bias associated with environmental programmes, and did not consider the ‘hassle costs’ of having measures installed), the level of subsidy required would be around £2.35bn per annum (£770.2m disregarding ECO CSCO). However, Shuttleworth et al. (2012) are keen to point out that these values do not represent an upper bound for the costs of ECO subsidies, merely an indication of what the cost could be under alternate assumptions. In November 2012, UK news outlets reported confidential sources within energy companies as saying suppliers were preparing for subsidy costs to be as high as £3.1bn per annum through to September 2016 (Mason 2012). A number of commentators suggested an extension to the length of ECO, which would reduce annual costs and accordingly the impact on consumer bills, but would require changes to the relevant legislation (see Utility Week 2013, Gosden, Ahmed 2013). However, slowing down delivery would also delay the benefits of ECO. It should be noted, also, that suppliers have consistently voiced concerns about the ambition of targets, and then proceeded to meet them (see Rosenow 2012: 381). This perhaps explains why DECC were unmoved by the assertion of suppliers (and seemingly suppliers only) in the ECO consultation that the government estimates of costs were too low (DECC 2012j: 85-86). Energy suppliers certainly have a vested interest in less ambitious targets and lower cost obligations. The published costs for the first year of ECO show that both HHCRO and CSCO have been delivered at a cost 8% lower than estimated (DECC 2014c: 27)\(^{124}\), suggesting that – if anything – the targets were not ambitious enough. It is further worth considering that any state-funded programme – however it was delivered - might be expected to be subject to fixed or capped expenditure, given

\(^{124}\) Costs scaled-up to the annual level. Reported spend does not include administrative costs, which were £80m across the whole of ECO.
that the consequences of an inflated bill for programme delivery would then be more directly problematic to government; this would both reduce risk to the state and limit the inflationary potential for households.

It is also worth considering that suppliers may not pay the entire costs of ECO themselves, instead taking contributions from external parties. Under the ECO policy model, it is assumed that households in the Affordable Warmth group receive 100% subsidy, i.e., they do not contribute to the costs themselves either via cash payments or Green Deal loans¹²⁵ (see DECC 2012h: 144). This is a departure from Warm Front, whereby the level of subsidy was capped, and households (or other funding agents) frequently contributed the difference between the grant and the cost of required measures (see Burr 2009b: 5). The evaluation of CESP found that, while it was assumed energy suppliers would pay 82% of the costs of that scheme, in practice stakeholders believed that the actual proportion had been “far lower”, down to 10%, with LAs and housing association meeting the difference (see CAG Consultants, Ipsos MORI & Building Research Establishment 2011: 31). The published data for ECO incorporates costs paid both by suppliers and by delivery partners, with no breakdown offered (see DECC 2014g: 18). Although third sector organisations and LAs are under increasing financial pressures (see CIPFA 2013, Dayson, Wells 2013, Hastings et al. 2013), it may be that these organisations are still contributing a significant proportion of ECO costs; thus further breakdowns of expenditure would be helpful. Furthermore, CERO – which is intended to subsidise SWI for able-to-pay households – is financed via the combination of Green Deal loans and subsidies where the “Golden Rule” is not met (see DECC 2011i: 24-25). Any higher-than-expected CERO burden (e.g., because low interest requires that higher subsidies be offered to ensure obligation compliance) will go onto the bills of all households, resulting in a regressive impact. As such, low income households are effectively relying on more efficient CERO delivery (and the willingness of able-to-pay households to contribute) in order to avoid these larger payments.

¹²⁵ This is for HHCRO; no figure is given for CSCO, but as a measure similarly targeted at low income households, it is taken that the same assumption applies.
Assuming that 86% of ECO expenditure goes to English households\textsuperscript{126}, at current rates of annual expenditure it would take one hundred and twenty five years to achieve the level of expenditure previously estimated as bringing all currently LIHC fuel poor households to minimum SAP 69, and two hundred years to complete the SAP 81 target programme. Whilst adjustments could be made to improve this (e.g., improving targeting, increased efficiency), it seems apparent that current expenditure will make only a tiny dent in the wider problem.

\textbf{6.2 Policy Financing Options}

The shift in responsibility for fuel poverty policy brings a change in the way in which programmes are financed, as suppliers finance obligation activity via energy bills, while the state use Exchequer funds. The transition itself can be clearly registered with regard to technical interventions, as charted in Figure 6.5 (based upon compilation of cost data drawn from policy and grey literature)\textsuperscript{127}.

\textsuperscript{126} Assumption based on 86% of households in Great Britain being in England (ONS 2013). It is likely that both fuel poverty and ECO expenditure are distributed less evenly than this between the devolved nations; 86% merely constitutes a best attempt assumption at apportioning expenditure.

\textsuperscript{127} Technical interventions are the most useful means of charting this shift, as expenditure on economic interventions (and fuel poverty policy more broadly) are dwarfed by spending on WFP (see Table 6.7) which, as discussed in Chapter Five, largely goes to non-fuel poor households.
Note: For the purposes of this illustration, it is assumed that the delivery agent funds policies wholly. However, in practice other agents (e.g., Local Authorities and the households themselves) may contribute (see, for example, Burr 2009b: 17, DECC 2011: 30).

Figure 6.5: Estimated levels of Exchequer and energy supplier expenditure on technical interventions, 2003-2011

For reference, Table 6.8 gives an overview of funding sources for fuel poverty policies active in 2013.

Table 6.8: Sources of funding for fuel poverty alleviation programmes, 2013

<table>
<thead>
<tr>
<th>Programme</th>
<th>Expected annual expenditure</th>
<th>Source of funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Company Obligation</td>
<td>Carbon Saving Community Obligation</td>
<td>£190m</td>
</tr>
</tbody>
</table>
Ultimately, the financing for fuel poverty policies is drawn from the national economic product. However – as this section will explain – the manner in which funds are collected influences the overall impact. For example, a flat-rate charge on all bills will impose more of a cost burden on households at the lower end of the income scale than those with higher incomes (i.e., it will be more regressive). Under the LIHC definition of fuel poverty, regressive policies would therefore potentially increase the fuel poverty levels unless mitigated elsewhere (Hills 2012: 36).

This section synthesises existing literature to give an account of funding options for fuel poverty policies. First, the current dominant means of financing, the use of levies on energy bills by energy suppliers, is examined. Next, the state-led alternative is considered, the funding of policies via general taxation. The section closes with a discussion of some alternative propositions for funding policies focusing upon recent proposals for the use of hypothecated (or ‘ring-fenced’) taxation.

### 6.2.1 Supplier-led Funding Mechanisms

Levy-funded supplier obligations have been in place since before *WHECA* was passed in 2000 (see section 2.2.2), and analysis of early documents suggests that regressive impacts were not expected to be problematic in those initial stages (commensurate with the fact that suppliers were not expected to play a significant role in tackling fuel poverty, as established in section 4.3). In the *UKFPS* it was stated that the

<table>
<thead>
<tr>
<th>Home Heating Cost Reduction Obligation</th>
<th>£350m</th>
<th>Energy supplier, via levy on energy bills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm Homes Discount Scheme</td>
<td>£300m</td>
<td>Energy supplier, via levy on energy bills (subject to Levy Control Framework, see DECC 2011c)</td>
</tr>
<tr>
<td>Winter Fuel Payment</td>
<td>£2165m</td>
<td>Exchequer</td>
</tr>
<tr>
<td>Cold Weather Payment</td>
<td>£244m(^a)</td>
<td>Exchequer</td>
</tr>
<tr>
<td>Total</td>
<td>£3249m</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) The number of Cold Weather Payments made varies based upon winter temperatures, making the actual total expenditure difficult to predict. For illustrative purposes, the figure given here represents the average of the past five winters, i.e., all winters since the current £25/week rate has been in place. Based upon compilation of sources: (DECC 2012h, DECC 2011h, DECC 2011c, Kennedy 2013b, Kennedy 2013a)
government expected that any increase in energy bills as a result of the EEC – anticipated at around 1-2% – would be “more than offset” by the reductions achieved via energy efficiency improvements (DTI 2001: 18). FPAG, too, were initially keen for supplier obligations to be used in this way (see, for example, FPAG 2004: 6). However, issues began to emerge around 2007 with changes to CERT that resulted in a larger (and thus less tightly focused) PG that received 20% less of the overall expenditure than had been the case previously, a development that FPAG deemed “highly regressive” (FPAG 2008: 16). As will be discussed here, this trend has continued.

In early 2013, the Warm Front scheme was officially closed, with the remaining unallocated funds funnelled into a Local Authority Fuel Poverty Competition (see Watson, Bolton 2013). From this point onwards, energy suppliers have held primary responsibility for funding energy efficiency measures for fuel poor households via ECO, as well as for the delivery of WHDS. The financing for these programmes is primarily drawn from levies on customer bills, segregating funds gathered in that manner to create what is, to all intents and purposes, an additional sales tax on energy that funds programmes related to energy and climate change. This is very different from the more opaque way in which, for example, education is funded via the Exchequer amidst a plethora of other priorities. Whilst consumers may not know what proportion of their monthly energy costs is spent on programmes related to fuel poverty and climate change, the direct impact of increased expenditure on such initiatives is transmitted via bills. Many suppliers provide a breakdown of bill composition on their websites (cf. British Gas 2011, SSE 2013), as does Ofgem. Figure 6.6 illustrates Ofgem’s breakdown of typical household bills for electricity and gas, averaged across suppliers and payment methods.

128 This is in addition to the 5% Value Added Tax (VAT) that is already levied on energy by government (see HMRC 2014).
Note: This data is averaged across Great Britain, not England alone. However, there is no reason to believe that any significant differences in bill make-up exist between the devolved administrations. Based on average annual consumption figures of 3,300 kWh for electricity and 16,500 kWh for gas, averaged across suppliers. Numbers for electricity do not sum to 100% due to rounding.

Source: (Ofgem 2013i)

**Figure 6.6: Composition of typical Great Britain household bills for electricity and gas, December 2012**

Though the Ofgem literature cited does not make it explicit, comparison with supplier breakdowns confirms that the proportion demarcated as “environmental charges” includes expenditure on fuel poverty mitigation programmes, i.e., £49 (6%) of the typical household gas bill and £58 (11%) of the typical household electricity bill (Ofgem (2013i) suggests that such charges represent £82 on the typical annual energy bill, with ECO accounting for one-third of that amount). WHDS is subject to the Levy Control Framework, which caps levy-funded spending on that scheme at £300m (DECC 2011c: 4), the level of expenditure that government prescribed when planning the policy (DECC 2011h: 15). ECO spending is not subject to any such cap, and – as discussed in section 6.1.4 – the expenditure required to meet obligations is more subject to potential variation than that on economic measures. Although this enables flexibility to changing circumstances, it also leaves households vulnerable to increasing costs (for example, those discussed with relation to targeting in the section 5.3.3).

In purely theoretical terms, an energy levy is incontrovertibly regressive, as energy *requirements* are income inelastic (see Newbery 2005, Meier, Jamasb & Orea 2013).
Under the conception of required energy use used in fuel poverty calculations (see DECC 2013i) the relationship between energy costs and income is positive and significant, but weak, as graphed in Figure 6.7 (from EHS 2011 variables). A change in income will not alter the amount of energy required by a household (unless they move home), and so any increase in the unit price of energy will result in low-income households paying a greater proportion of their income in fuel costs.

Note: Cases are not weighted in this analysis to enable effective graphing. Correlation is significant at the 0.01 level (2-tailed), n= 14386.  
Source: Own analysis of EHS data (DCLG 2013c).

**Figure 6.7: Relationship between annual disposable income (£) and modelled required annual energy expenditure (£)**

In practice, households may (and often do, as established in section 2.1.3) cut down on fuel when their income falls, and so in practice, actual energy use correlates more closely with income. Figure 6.8 graphs outputs from CSE’s Distributional Impacts Model for Policy and Strategic Analysis (DIMPSA), which estimated actual domestic consumption based upon Expenditure and Food Survey (EFS) data, and exhibits stronger correlation that Figure 6.7.
The discrepancy between required and actual usage is likely down to the desires of higher income households to spend disposable income on achieving greater thermal comfort, and of lower income households to save money (as discussed in section 2.1.3). However, neither circumstance is desirable, the former creating excess carbon emissions, and the latter potentially posing a health risk to occupants. So, whilst in practice the impacts of per-unit charges on fuel might be somewhat less regressive than if all households consumed exactly the required amount of energy, the costs are felt elsewhere.

The manner in which supplier obligations are apportioned is generally assumed to have a further impact upon the manner in which those costs are then passed through to customers (see DECC 2012h: 155-156). There are two broad options available; allocating by number of customers, or by units of energy supplied. If the former is chosen, it is assumed that suppliers will pass through the cost to consumers at a flat rate upon each energy bill, effectively as an increase to any standing charge. CERT and CESP obligations were apportioned in this way (Ofgem 2013d: 13, Ofgem 2009b:

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\[ r = 0.986 \]

Note: Correlation is significant at the 0.01 level (2-tailed), n = 24207.
Adapted from White et al. (2010: 6).

**Figure 6.8: Relationship between income decile and median modelled actual energy consumption (kWh)**

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129 The implications of this assumption being incorrect will be discussed later in this section.
8), as are WHDS obligations (Ofgem 2013k: 11-14). However, as will be demonstrated shortly, this manner of allocation is more regressive than the alternative, apportioning by units of energy supplied. Under that latter model it is assumed that suppliers pass through the cost as a function of consumption, i.e., as a percentage increase on the bill. ECO obligation levels are allocated in this way, being based upon energy sales to the domestic sector, i.e., number of kilowatt-hours (kWhs) sold (Ofgem 2013b). This method was selected on the recommendation of the majority of respondents to the government consultation on ECO (DECC 2012b: 86), and in view of equity research undertaken by ACE (2011a) and CSE (Preston, White & Guertler 2010). Figure 6.9 uses EHS 2011 datasets to demonstrate the distributive differences between these two options. Taking an effectively arbitrary sum of £11.2bn by way of example, the median household contributions required to raise the required sums are given as percentage of disposable equivalised income by decile for both per-customer and per-unit collection methods.

Note: Zero incomes have been disregarded. Amounts raised vary slight due to rounding into whole pence, with the per-unit charge raising £10m less.
Source: Own analysis of DCLG (2013c).

Figure 6.9: Household contribution as a percentage of equivalised disposable income (deciles), two alternative levy funding methods

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130 The annual cost of the SAP 69 scheme featured in section 6.1.3, if all LIHC households were included (e.g., regardless of the viability of measures).
Whilst both methods are clearly regressive, per-unit charges are slightly less so, though the gap closes at higher income levels. Furthermore, per-unit charges comply with the ‘polluter pays’ principle by placing a cost on excessive consumption. Any increase to the funds being raised will intensify regressive impacts, thus if programmes cost more than expected, those on low incomes will shoulder a higher proportional burden.

A number of potential issues risk exacerbating the regressive nature of energy bill levies further. Firstly, it is possible that suppliers do not pass costs through in as straightforward a manner as is generally assumed. As discussed in section 2.1.3, lower income households appear less likely to switch suppliers or tariffs, and as a result receive less favourable rates. Boardman further suggests that those who don’t switch are more likely to be vulnerable, with the example that those who are digitally excluded may not be able to access better online deals. It is plausible that these customers also, then, pay a higher proportion of the costs of policies. Preston et al. (2010: 80) model this potential loading of costs and estimated that ‘unattractive non-switchers’ could pay 34% more than ‘attractive non-switchers’. One energy supplier representative interviewed for this work reported that that company treated outlay on obligation fulfilment like any other cost of delivery, however, if this was not the case, they would be unlikely to declare publicly that they effectively penalise low income households. As such, it would likely require government or regulator intervention to ascertain how costs are passed through in practice.

A second risk group is the 8.7% of households who use electricity to heat their homes (DCLG 2013c). The fuel poverty rate amongst this group is 16.2%, against 10.9% in the general population (based on analysis of DCLG 2013c). This is primarily because lower income households more commonly use electricity as their main fuel, as illustrated in Figure 6.10.
Figure 6.10: Proportion of households using electricity for as main fuel by disposable income decile

As shown in Figure 6.6, electricity consumers pay a higher proportion of their bills towards environmental levies than gas consumers. Over the next decade, electricity prices are predicted to rise more steeply than gas prices, primarily because of increased investment in low-carbon technologies (as opposed to energy efficiency technologies) (see CCC 2012: 15-33). Preston et al. (2013b: 23) predict that electricity consumers will pay on average £48 more for their fuel by 2020, the only heating fuel group to see an increase in costs. This is compounded by the fact that fewer efficiency measures are available for electrically heated homes; Preston et al. (2013b: 23) anticipate that the total cost gap between electrically heated homes with and without measures in 2020 will be £540. There is, then, a case that a per-unit charge on gas would be a more progressive means of raising funds, however, as ACE (2011a) note, this would mean that households without gas connections would not contribute and – their modelling suggests – that those in large households and underoccupiers would be penalised.

Further risks may arise when households use more or less than that which they ‘require, a potential already discussed in section 2.1.3. If low income households
consume more because their needs differ from those assumed (e.g., because of a disability) their levy payments will consequently be higher (see also ACE 2011a). However, further regressive impacts can be seen when considering modelled (i.e., idealised) usage. Figure 6.11 is similar to Figure 6.9, but considers the median proportion of income contributed by fuel poverty gap deciles (so all households considered are in fuel poverty, with those in the tenth decile in the deepest fuel poverty).

Source: Own analysis of EHS data (DCLG 2013c). Amount raised is £11.2bn.

Figure 6.11: Median LIHC household contribution as a proportion of equivalised disposable income by fuel poverty gap decile, two alternative funding methods

The proportion contributed is almost entirely consistent where the charge is fixed, indicating low variance in incomes within the fuel poor group. However, a per-unit charge is regressive, with those in the deepest fuel poverty paying significantly more than those at the margins. This might be expected, because those who are in inefficient homes will need more energy. However, it is notable that this is modelled use, i.e., assuming occupants are using energy ‘perfectly’, thus the issue is entirely the efficiency of the dwelling. Ideally a SAP 69 programme (as is modelled here) would target such households; however, given the time it would take to deliver a programme of this scale, there would be a compelling incentive for households to underconsume in the meantime.
It is no secret that levies have a disproportionate impact upon low income households. The literature on energy taxes – which is what per-unit charges effectively are – resoundingly recognises that they are a regressive means of levying charges (see Crawford, Smith & Webb 1993, Speck 1999, Preston, White & Guertler 2010, Moser 2013). DECC’s own research into the likely distributive impacts of policies (including those not aimed at alleviating fuel poverty) also recognises that this method is regressive (see DECC 2011e: 31, DECC 2013g: 36). However, the most recent Government research has focused on distribution by expenditure level rather than by income (DECC 2013g: 62) and emphasises that DECC anticipate that policies will result in energy bills being, on average, 11% lower in 2020 than they were in 2002 (DECC 2013g: 5). While it is estimated that, on average, households in the lowest three income deciles are expected to spend 1.0-2.4% less of their income on energy than they would had these policies not been enacted (DECC 2013g: 12), no figures for high income households are provided for comparison. That same policy document also emphasises the benefits gained by those who receive measures, without accounting for the targeting problems previously discussed in section 5.3, putting a rather positive spin on the likely situation for low income households in 2020. DECC’s work has also been criticised by the non-departmental public body Consumer Futures as relying on “heroic” assumptions about the impacts of policy (Scorer 2013). Consumer Futures’ own commissioned work, carried out by CSE\textsuperscript{131}, predicts that average bills in 2020 will be reduced by only £31 (2%) as compared to a ‘no policy’ scenario, modelled from 2010; if product policy fails, the result could be an increase of £93 (7%) (Preston et al. 2013b: 16). The government attitude to distributive concerns around policies might therefore be characterised as putting a positive spin on a recognised problem.

\textsuperscript{131} Both CSE and DECC used CSE’s DIMPSA model, albeit with different assumptions.
6.2.2 Exchequer-led Funding Mechanisms

Surely it’s a simple matter of fairness to implement these government policies, like most others, through a fair system of taxation? It would also help tackle fuel poverty by shielding the vulnerable.

Alistair Phillips-Davies, Chief Executive of SSE (2013c)

As already established within Chapter Four, in the early years of fuel poverty policy it was assumed that much of the necessary activity would be delivered by the state, and so would be funded by the Exchequer. Indeed, at least one MP in the WHECA debates suggested that if suppliers were to deliver any activity, they should perhaps be subsidised by the government in doing so (see section 4.2.1). By 2013, all DECC-led fuel poverty policies were financed via levies, with only the DWP-led economic interventions – CWP and WFP – funded via general taxation.

The primary case for funding measures via income taxes or national insurance is that they are progressive, as the amount paid increases in line with the taxable base and those on the lowest incomes are exempt. The same principle may apply to sales taxes (e.g., VAT) and other indirect taxes, though this is contested, and vastly dependent on the types of goods that are taxed (see Crossley, Phillips & Wakefield 2009, ONS 2011b, ONS 2013c). Another possible approach would be a levy on Council Taxes, particularly if some of the delivery of measures were transferred to Local Authorities. However, in their current format these taxes are both regressive and inflexible to changing circumstances, as household burden is based rather bluntly upon often outdated valuations of property (see Orton 2006, Hoogland 2010, Adam, Browne 2012).

For the purpose of this discussion, it is assumed that an income tax-based levy is the form of an Exchequer-led funding mechanism, given that this represents the most probable route to a progressively funded system. The possibility of shifting levies from bills back to income or sales taxes has frequently been posited by a range of organisations, including some Big Six energy suppliers (see above quote), but also by organisations such as NEA (see Stockton, Campbell 2011), CSE and ACE (see Preston, White & Guertler 2010). Brenda Boardman supports this approach, arguing
that, “in an ideal world, all of the funding for fuel poverty programmes would come out of taxation since few of the fuel poor pay income tax (and pay less of other taxes such as VAT)” (2010: 93).

Adjustments to taxation are infamously difficult to model due to the complexities of the tax system and impacts such as substitution effects (see, for example, Hutton, Lambert 1982, HMRC 2011b). The Hills Fuel Poverty Review opted to consider the likely impact of an income tax-funded policy by using 2009 EHS datasets to model the impact of £500m of expenditure (Hills 2012: 144), with this sum assumed to be raised via a equi-proportional 0.1% tax on disposable income (Hills 2012: 215-216). A similar exercise has been undertaken here, substituting the £500m expenditure assumed by Hills for the £11.2bn used previously. A further deviation from Hills’ methodology has been to take account of Personal Allowance – i.e., the amount that can be earned before tax is payable - set at £7,475 for the tax year 2011/2012 (see HMRC 2011). Figure 6.12 graphs median household contributions as a percentage of disposable equivalised income by decile for an income tax, set at 1.75% to raise the funds required. Figure 6.13 then graphs median proportion of income contributed by fuel poverty gap deciles (so those in the tenth decile are in the deepest fuel poverty).

Note: Zero incomes have been disregarded. Certain non-taxable benefits have been included in income due to limits of data. Amount raised is £11.2bn.

Source: Own analysis of DCLG (2013c).

Figure 6.12: Median household contribution as a percentage of equivalised disposable income (deciles), income taxation funding
Figure 6.13: Median LIHC household contribution as a percentage of equivalised disposable income by fuel poverty gap decile, income taxation funding

As with Hills’ modelling, this only represents only an approximation of the impact of income tax-based funding of measures. However, it does demonstrate that funding via income taxation is progressive, with those on the lowest incomes contributing much smaller proportions of income (cf. Figure 6.9). The relationship between the depth of fuel poverty and contribution as a percentage of income is also weaker than when a per-unit levy is used as a collection method (cf. Figure 6.11). More sophisticated modelling undertaken by Preston et al. includes a range of climate change policies and accounts for likely impacts, confirming income taxation-based funding as comparatively progressive when contrasted with levies on bills (2010: 70). Moser’s examination of European energy efficiency policies (2013) also concludes taxation based energy efficiency funds are less regressive than those drawn from bills.

A further advantage of funding measures via income tax is that it removes some of the uncertainty discussed previously in relation to energy bill levies. Whilst energy suppliers have comparative freedom to adjust prices, income tax levels are customarily set annually in the United Kingdom budget, offering households greater stability when budgeting. There would also be greater transparency as to the burden
shouldered by each household, as income levels and resultant taxation are less ambiguous than the composition of energy tariffs. Income taxes, unlike energy taxes, are inherently tied to the ability of households to pay. The comparatively high burdens that some households will carry (i.e., because they heat their dwellings with electricity or because of underoccupation) are also mitigated by what is effectively a shift from an indirect to a direct tax. Under a Warm Front-style programme\textsuperscript{132}, there would be a lower risk around ultimate costs, as such a programme would be based upon a pre-determined level of expenditure, as opposed to an obligation-style model wherein suppliers are given targets based upon energy savings to be achieved and seek to do so as cheaply as possible. However, it is important to add the final caveat that this discussion has assumed that any shift to an Exchequer-funded approach would be met with a corresponding increase in taxation. In practice, this might not be the case; it could be that cuts are made to other public services in order to raise the funds required. As lower income households are likely to be more dependent on services offered by the State it follows that these households will be more deeply affected by possible cuts (see, for example O’Hara 2014, Reed, Portes 2014 on the impacts of austerity), resulting in further negative outcomes for those on low incomes.

6.2.3 Alternate Approaches

Beyond the two primary options for sourcing funds, a number of more innovative means of raising the money necessary to improve the UK housing stock have been posited. These include: long-term public borrowing (Lockwood 2013); use of capital from pensions (Carrington 2011); social impact bonds linked to public health improvement (Preston, Banks & Sturtevant 2013); specialised feed-in tariffs (Eyre 2013); accessing property equity (Boardman 2010: 226-227); funding integrated into mortgages (Roberts, Chambers & Kaur 2005). Detailed comparison of these options is beyond the scope of this thesis, and some are likely inappropriate to fuel poverty mitigation; however further consideration could prove a fruitful avenue for future research.

\textsuperscript{132} Alternate state-led models are to be discussed in section 7.1.1.
One proposal that has received significant attention in the last few years is the use of hypothecated taxation, championed since February 2012 by the campaign group Energy Bill Revolution (EBR) (EBR 2014a), with notable supporters including three of the Big Six energy suppliers - E.ON, npower and SSE – as well as ACE, CSE, NEA and the Liberal Democrat party (EBR 2013, EBR 2014b). Hypothecated taxation is the process by which tax revenues from one particular source are ring-fenced for a given purpose. With reference to energy efficiency, the source in question is generally an environmental tax. This is, in part, because of the appealing (but oft-debated) notion of the environmental ‘double dividend’ whereby revenues from taxes on ‘bads’ such as energy consumption, carbon or pollution are used in favour of taxes on ‘goods’, e.g., labour or sales taxes (see Pearce 1991). The idea is that by taxing something that the state desires to reduce (e.g., carbon emissions), it is possible to then reduce taxes on things that the economy wishes to encourage (e.g., income, labour; these are often called distortionary taxes because they ‘distort’ incentives). An extension of this notion is to transfer that revenue directly towards the funding of environmental schemes. Other European countries have recycled revenues from the European Union Emissions Trading Scheme (EU ETS) in this way (see Sunderland 2012). Germany, for example, has, since 2012, ring-fenced almost all EU ETS revenues within a sondervermögen, an extra-budgetary fund that dedicates all expenditure to energy and climate change initiatives (see Esch 2012). Boardman (2010: 93) suggests that a similar tactic might work in the UK, and notes that Ofgem (2007b: 13) has recognised that such an approach is worthy of consideration. The EBR campaign is based upon commissioned research considering the likely impacts of the use of hypothecation in the United Kingdom (the same work used in estimating costs of tackling LIHC fuel poverty in section 6.1). That report (Washan 2012) considers the potential impact if the revenues from EU ETS and Carbon Price Floor (CPF) revenues were allocated to tackle fuel poverty. It is predicted that the revenues from these schemes will total £63.8bn in the period 2011-2027, an average of £4bn/annum (Washan 2012: 27). If this figure were allocated wholly to fuel poverty reduction, it would surpass not only the current anticipated annual ECO...
budget, but even the anticipated cost of a more ambitious SAP 69 upgrade programme (as established in section 6.1.3), albeit over a prolonged period of time.

Ultimately, households will pay the costs of both EU ETS and CPF via levies on energy bills (DECC 2013g). EU ETS revenues are drawn from auctioning emission allowances to polluters, who pass these costs through to consumers, e.g., via energy bills or product costs (see European Union 2013). Power generators are liable for CPF and so those costs will also be passed through to energy bills (see Ares 2014). As discussed in section 6.2.1, both increases to the costs of products and levies on energy bills are likely to be regressive unless offset elsewhere. Currently, revenues from EU ETS are channelled into general expenditure\(^\text{135}\) (see HM Treasury 2013: 102). The EBR campaign therefore doesn’t advocate a shift to a more progressive funding method so much as taking advantage of new revenue streams (EU ETS and CPF having only been launched in 2005 and 2013 respectively, see European Union 2013, Ares 2014) to engage in an ambitious programme of expenditure that could more effectively mitigate the effects of levies. Many studies have been conducted into the extent to which it may be possible to mitigate the regressive impacts of carbon or energy taxes by recycling revenue towards distortionary taxes (i.e., income tax) or into the welfare system (see Ekins 1994, Ekins 1999, Baranzini, Goldemberg & Speck 2000, Ekins, Barker 2001, Zhang, Baranzini 2004, Dresner, Ekins 2006, Clinch, Dunne & Dresner 2006, Callan et al. 2009, Ekins et al. 2011a, Beznoska, Cludius & Steiner 2012, Kosonen 2012, Preston et al. 2013a). However, a key barrier identified in the literature is the difficulty in targeting such benefits at low income households in such a way that they are efficiently compensated for an effective tax on energy used, given differing consumption rates within income bands (see, for example, Dresner, Ekins 2006). As such, using that revenue to pay for targeted energy efficiency measures could be an effective means of both reducing carbon emissions and of scaling support to need. However, it is still important to consider the opportunity cost of spending this revenue on fuel poverty alleviation rather than upon competing priorities. The argument as to how revenue should be apportioned is largely a political one, as will be considered in section 6.3.3.

\(^{135}\) CPF had only just been introduced at time of writing, and so no budget was available.


6.3 Implications of Options

It is apparent from the literature synthesis and quantitative analysis that the choice of funding mechanism has important implications for policy efficacy. For those who are fuel poor or low income to pay a higher proportion of their income towards policies risks negating their positive impact. This issue takes a distinct form where energy efficiency measures are concerned as – whilst such interventions provide sustainable support – they are comparatively expensive and delivery is time-consuming. As such, fuel poor households could end up contributing toward policies for many years before they become beneficiaries.

This section begins by bringing together analysis undertaken in this chapter and the last to assess the likely impacts of funding options. A brief summary of the distributional effects discussed previously is given, with a further discussion of the likely distributional impacts from other environmental policies. This is then extended to consider the likely effect of policies on fuel poverty, including evaluation of targeting efficacy, impact of support received, and cost of interventions. Finally, broader policy constraints are discussed - including political and economic motivations for retaining the current system – before the chapter is concluded.

6.3.1 Distributional Effects of Policies

Figure 6.14 draws together analysis reported previously in Figures 6.8 and 6.11 to demonstrate the distributional impacts of per-unit energy bill levies and income taxation, again using £11.2bn for illustrative purposes.
A further means of considering the impact of funding approach is by using equity weightings. These are weights that can be applied to incomes in order to account for the fact that each extra pound has a greater value to a lower income household than to a higher income household. Equity weighting thus offers a means of making an effective comparison, in monetary terms, of the impacts of changes upon households in a manner that takes account of different incomes. Figure 6.15 reports median equity weighted contributions by equivalised disposable income decile, with weightings calculated using the same methodology applied by Hills (2012: 222-224), as recommended in HM Treasury’s *Green Book* (HM Treasury 2011: 91-94). The impact of income taxation charges is shown to be lower for those in the lowest seven income deciles. The equity-weighted value of a per-unit charge on the bottom decile is just under £900, as compared to a little over £250 for those in the top decile.
Source: Own analysis of DCLG (2013c), with reference to (HM Treasury 2011). Amount raised is £11.2bn.

**Figure 6.15:** Median equity-weighted household contribution by equivalised disposable income decile, per-unit energy charge and income taxation

It should be emphasised that these regressive impacts are not limited to policies that are expected to directly reduce fuel poverty. The Renewables Obligation (RO) and Feed-in-Tariffs (FiTs), for example, are funded via electricity bills, which, as discussed in section 6.2.1, intensify the regressive impact. Chawla and Pollitt (2012: 21) model the distributive burden of all environmental policy costs (including state and supplier policies) using data from 2009-10, and estimate that these equate to an average of 0.61% of disposable income for the bottom three income deciles, compared to an average of 0.16% of disposable income for the top three deciles.

**6.3.2 Impact on Fuel Poor Households**

Section 3.1.1 cited Richard Titmuss as arguing that a fundamental purpose of social policy is to be progressively redistributive (2008: 144). Thus far this chapter has considered the distributive impacts of the way in which funds are raised. However, even very regressive effects could be mitigated by an effectively delivered policy.

Furthermore, Leicester (2011) finds that FiTs currently primarily benefit higher income households, and suggests that an aggressively targeted programme would be needed to correct this imbalance.
This section will consider the extent to which fuel poor households are likely to be net contributors or recipients of funds under the 2013 set of fuel poverty policies. Outcomes are a function of a number of factors; the overall cost of policies, the manner in which funds are collected, the number of households helped, and the efficacy with which fuel poor and low income households are targeted. These are, of course, inter-related, with some being more difficult to adjust than others. It would also be possible for accompanying non-fuel poverty policies to contribute to in positive redistribution (e.g., via increases to income tax personal allowance, as considered by Preston et al. 2013a); however, discussion of such options goes beyond the scope of this work.

• Energy Company Obligation

One issue particular to technical measures is that it is generally considered undesirable – and even technically challenging – to give a smaller benefit to a large number of people, rather than a greater benefit to a minority. Whilst many Compact Fluorescent Lamps (CFLs) were distributed under early supplier obligations (see, for example, Ofgem 2008c: 54), these were not included the CERT extension period amid fears that they were being distributed, but not installed (see DECC 2011i: 4). Increasingly, policymakers have instead favoured ‘whole house’ approaches as being more economically efficient, and enabling installers to ensure measures work together effectively (see DECC 2011i: 71). Boardman (2010: 222) further notes that a piecemeal approach only introduces further “administrative costs and hassle” for occupants. However, the whole house approach does bring a new challenge in promoting distributional equity in the short-term as fewer dwellings can be improved for the same amount of expenditure, increasing the number of households who are contributing without benefiting. A further emergent issue is that, as noted in section 6.1, the remaining measures needed to be installed tend to be the more expensive ones, notably SWI, which generally costs several thousand pounds per dwelling, as opposed to CWI, which usually costs closer to £500 (see EST 2014e, 2014b). ECO as a whole – in line with this recognised need – is more focused on SWI than previous policies, particularly the CERO element (see DECC 2011i: 69-71) which, whilst not aimed at fuel poor households, will increase the overall regressiveness of the programme over comparable activity under previous obligations.
DECC’s Impact Assessment for ECO included modelling of distributional impacts, as reproduced in Figure 6.16. This shows that, by DECC’s own assessment, the Green Deal and ECO are expected to have an overall average regressive impact by 2020, with (as would be expected) the effects intensified for those households that do not receive measures.


**Figure 6.16: Distribution of impact on energy bills for different income groups in 2020, Green Deal and ECO**

Drawing data from the first year of ECO HHCRO and CSCO delivery, 239,455 households received help under HHCRO (at a scaled annual cost of £319m) (figures taken from DECC 2014c) and 96,094 households received help under CSCO (at a scaled annual cost of £175m) (DECC 2014c). Figure 6.17 illustrates the distributive impacts of raising these sums via a per-unit levy and via income taxation, by income decile. Figure 6.18 shows the same impacts, by fuel poverty depth decile (ten being
Together these demonstrate that the poorest households, and those that are in the deepest fuel poverty, contribute the largest proportions of their income to pay for fuel poverty policies if consumption is as modelled\textsuperscript{138}.

These graphs will not be produced for further policies discussed, as it should be assumed the relationship would be the same, scaled to the size of the contribution required.\textsuperscript{137}

In practice, the contribution of fuel poor households is expected to be lower where there is underconsumption and higher where certain low income households tend to overconsume, as established in Chapter Two. However, it is no less concerning that the “ideal” energy usage patterns lead to regressive outcomes.

\textsuperscript{137} These graphs will not be produced for further policies discussed, as it should be assumed the relationship would be the same, scaled to the size of the contribution required.

\textsuperscript{138} In practice, the contribution of fuel poor households is expected to be lower where there is underconsumption and higher where certain low income households tend to overconsume, as established in Chapter Two. However, it is no less concerning that the “ideal” energy usage patterns lead to regressive outcomes.
Figure 6.18: Median household contribution as a proportion of annual income by fuel poverty gap decile, two alternative funding methods (ECO costs)

Extrapolating from the analysis reported in section 5.1.2, 25% of ECO HHCRO recipient households and 12% of ECO CSCO recipient households are expected to be fuel poor (see Table 5.3). Thus approximately 2.32m LIHC fuel poor households (97%) are expected to be paying for, but not receiving, measures under ECO in the first year. If it is assumed that recipient fuel poor households are evenly distributed across income deciles, that use is as modelled, and that interventions are of equal cost, the net contribution of fuel poor households under the current levy funding method is £55m; fuel poor households contribute £69m to the programme but receive only £15m of expenditure. If an income tax were used to raise the funds, the fuel poor would remain net contributors, but to a far lesser extent, a net contribution of £5m. A policy that was more ambitiously targeted on fuel poor households could further mitigate the regressive impacts of funding via bill levies; if the leakage of these policies were reduced from 79% to 72%, the fuel poor would become net recipients. These outcomes align with the findings of Hills (2012: 176), who concludes that the expected form of ECO at that time - with its lack of focus on low income households - was regressive and so likely to result in increased LIHC fuel poverty by 2016.

Source: Own analysis of DCLG (2013c).

139 All modelling in this section based on analysis of DCLG (2013b)
• Warm Home Discount Scheme

It is difficult to model the full impact of WHDS because of the autonomy suppliers have in defining the Broader Group. As such, the focus here is on the Core Group, though analysis of CWP (discussed later in this section) may offer some insights into Broader Group impacts, as these policies are likely to reach similar populations. Considering the Core Group alone, £97m of expenditure in 2011/12 was expected to benefit 800,000 households (see DECC 2011f). However, analysis of targeting efficacy for that year suggests that only 12% of recipients are fuel poor. Under the current levy funded model, the net contribution of fuel poor households under the current levy funding method is £10m; fuel poor households contribute £14m to the programme but receive only £4m of expenditure. If the policy were funded via income tax, the fuel poor would become net recipients (though only to the level of £0.1m). That said, DECC’s Impact Assessment for WHDS indicates that the policy as a whole (i.e., including the Broader Group) is expected to have a progressive distributive impact on incomes, even in its current form (DECC 2011f: 24). However, the distributive impact on fuel poverty is not indicated, i.e., the policy may be progressive, but benefit few fuel poor households. The programme was expected to reduce short-term 10pct fuel poverty by 88,000 in 2011/12 (i.e., a cost of £2841 per household temporarily removed, though some will be supported but not removed) (DECC 2011f: 28). Baker (2011: 24) finds that expanding the WHDS Core Group to include CWP eligible households would reach 45% more 10pct fuel poor households at a cost of £440m annually.

• Winter Fuel Payment

That WFP has at least some regressive impacts – despite being Exchequer-funded – is evident simply in that removing it from incomes before calculating poverty reduces fuel poverty by around 370,000; this indicates that WFP increases income inequality. Whilst £2175m was distributed to 12.6m households in 2013, it is estimated that only 7% of recipients are fuel poor. However, as the policy is funded via taxes, it is expected that the fuel poor are the net recipients of £718m; this would reduce to £498m if levy funding were used. Hills (2012) found that changes to WFP had a very
small impact on LIHC fuel poverty, in part because of targeting efficiency, and because few households were close enough to the income threshold for the 30% increase modelled to make a difference.

• Cold Weather Payment

It is difficult to model the impact of CWPs given that they are distributed based upon local weather conditions. An average annual spend of £244m (as modelled in Table 6.8) goes to c. 3.9m households (see Table 5.4), and it is estimated that 16% goes to the fuel poor. Currently, the fuel poor are estimated to be the net recipients of £55m; this would reduce to £30m if the policy were funded via a levy. There is comparatively little literature considering CWPs, perhaps because it is a fairly minor element of the overall support structure (see Table 6.8). Hills’ analysis does consider an increase to means-tested benefits as a possible income-related intervention, an adjustment that would likely have a similar impact to increasing CWP-type payments, an finds that the reduction in fuel poverty would be greater than for similar changes to WFP (Hills 2012: 163). As with WFP, though, poor targeting and the minimal impact of a fairly small payment hamper reduction in fuel poverty levels. Overall, given that CWP is targeted fairly tightly at low income households and funded via the Exchequer, the overall impact is expected to be progressive.

• Overview of Policy Impacts

By way of summary, Figure 6.19 presents the figures reported above within a Policy Analysis Matrix.
<table>
<thead>
<tr>
<th>Current funding method</th>
<th>Energy Company Obligation (CSCO and HHCRO)</th>
<th>Warm Home Discount Scheme Core Group</th>
<th>Winter Fuel Payment</th>
<th>Cold Weather Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total annual expenditure</td>
<td>£494m</td>
<td>£97m</td>
<td>£2165m</td>
<td>£244m</td>
</tr>
<tr>
<td>Proportion fuel poor in annual receipt</td>
<td>3%</td>
<td>4%</td>
<td>37%</td>
<td>26%</td>
</tr>
<tr>
<td>Annual expenditure on fuel poor households</td>
<td>£30m</td>
<td>£18m</td>
<td>£476m</td>
<td>£49m</td>
</tr>
<tr>
<td>Net annual amount contributed/received by fuel poor households – if levy funded</td>
<td>£55m</td>
<td>£10m</td>
<td>-£497m</td>
<td>-£29m</td>
</tr>
<tr>
<td>Net annual amount contributed/received by fuel poor households – if tax funded</td>
<td>£5m</td>
<td>-£0.1m</td>
<td>-£718m</td>
<td>-£54m</td>
</tr>
<tr>
<td>Likely Current Overall Distributional Impact on Fuel Poor Households</td>
<td>Regressive</td>
<td>Regressive (expected to be progressive if the Broader Group is included)</td>
<td>Progressive</td>
<td>Progressive</td>
</tr>
</tbody>
</table>

Note: Current funding method highlighted in grey. CWP cost estimates use same approximation methodology as applied in Table 6.8.

Based upon analysis of DCLG (2013c) (including analysis reported in Chapter Five) and compilation of sources: (DECC 2014c, DECC 2011h, Kennedy 2013a, Kennedy 2013b).

**Figure 6.19: Policy Analysis Matrix of distributional impacts of current fuel poverty policies**

6.3.3 Policy Constraints

Given that levies on energy bills are fundamentally regressive, an obvious question arises: why retain them as a means of funding fuel poverty policies? Here, it is argued that the reasons are primarily political in nature. This section discusses policy constraints identified as impacting the choice to fund fuel poverty policies via levies on energy bills. In this instance, political and economic constraints are discussed together as they are inextricably entwined. Organisational constraints also have some relevance here. The discussion primarily focuses upon income taxation and supplier levies as competing funding mechanisms, however, some consideration is also given to the EBR hypothecation proposition.
Organisational Constraints

Perhaps the strongest argument for maintaining levies on bills as a funding mechanism is that a policy regime in which suppliers must treat the cost of complying with obligations as an unavoidable delivery expense is integral to the manner in which the market is currently used to incentivise efficient delivery of technical interventions. Under this model, it is in the financial interest of suppliers to meet these obligations at the lowest possible cost, whether via efficient delivery or by selecting the most cost-effective measures. Doing so will enable suppliers to avoid fines, and have greater scope to lower prices (to win business) or increase profit margins. To have government subsidise suppliers (as was very briefly considered in the WHECA debates) would undermine this incentive. Alternative delivery structures (such as Warm Front-style procurement and Payment-by-Results) will be considered in the next chapter. However, the fact that suppliers are faced with potentially enormous fines if they fail to deliver is an incentive that would not apply to public sector-led delivery.

That said, this argument does not apply to economic measures such as WHDS as these are simply cash rebates. There is little way in which suppliers could improve efficiency in delivery here, except perhaps in terms of better targeting of the Broader Group (which is not required or monitored) or via a reduction in administrative costs (the potential for which is likely to be minimal).

Political and Economic Constraints

In section 6.1.3, the cost of upgrading all currently viable LIHC fuel poor households to SAP 69 was estimated at £57.9bn. This is considerably more than the £540m government currently anticipates being spent in fulfilment of ECO CSCO and HHCRO (DECC 2012h: 84), which itself is a reduction in spending under the previous suite of fuel poverty policies (see Figure 6.5, Table 6.8). Numerous commentators have suggested that the current budget is too low to make a significant dent in fuel poverty levels (see Boardman 2010, 2012, ACE 2011b). One option would simply be to redress the overall balance of ECO, which is currently
apportioned 73:27 in favour of expenditure targeted at non-fuel poor homes (i.e., CERO is almost three times larger than CSCO and HHCRO combined) (DECC 2012h: 84). This balance was considered during the consultation period (at which point it was 75:25), with “many” respondents feeling the balance was too far in favour of able-to-pay homes (DECC 2012j: 85). The government response in the consultation itself was somewhat vague, simply stating they felt the current balance was “the most appropriate split to help [them] deliver the twin objectives of ECO” (i.e., carbon reduction and fuel poverty mitigation) (DECC 2012h: 86). Examination of the ECO final impact assessment offers more of an insight into the decision-making process, as four different adjustments to the policy balance were modelled and scored (DECC 2012h: 188-194). Adjusting the policy balance to 35:65 was expected to improve the Net Present Value (NPV) of the policy, achieving the second-best score of all options considered, and increasing savings to HHCRO eligible households by 28% (DECC 2012h: 193). However, that policy option reduced expected carbon savings to around two-thirds of those achieved by all other options, illustrating the tensions between fuel poverty policy and environmental goals discussed in Chapter Two. As such, CSCO was introduced, effectively as a compromise measure that was expected to increase savings to the HHCRO, but by only 5% (lower than all other options considered, see DECC 2012h: 193).

There are strong arguments for a more ambitious energy efficiency programme beyond the alleviation of fuel poverty or even the allied goals of carbon reduction and improvement of health and wellbeing. A larger programme could function as an economic stimulus package, creating jobs via the delivery of measures that could largely pay for themselves140 (see Smith 1998, Clinch, Healy 2000, Stern 2006, Guertler, Preston 2009, Ekins et al. 2011b, Cambridge Econometrics/Verco 2012). Ideally such a programme would focus effectively on fuel poor households to ensure equity in delivery, e.g., by ensuring the majority of benefits are delivered to – or at least targeted towards – fuel poor households. Government certainly recognise the potential of energy efficiency in this respect; in the Green Deal consultation documents, “investment driving economic growth” is given as one of the six goals of

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140 The NPV is a calculation of costs and benefits frequently used by government in assessing policy (see Cabinet Office 2014).
141 Though this would rely on the development of an appropriate supply chain in order to deliver that uplift in measures.
the project (DECC 2011i: 11). However, despite the government’s appreciation of the benefits of investment in energy efficiency, the inclination appears to be to cut back on spending in this respect. This reticence is in line with the political characteristics of the coalition government\(^{142}\) outlined in section 2.2.1, i.e., a desire to limit public spending, reduce taxes, and to limit the role of the state. Certainly, significantly increased public spending on fuel poverty policy (e.g., via a renewed Warm Front or other increased Exchequer-funding of activity) would seem inconsistent with a political environment in which cuts to public spending on benefits and services dominate the agenda. It further renders the extensive use of hypothecation – such as is advocated by EBR – unlikely, as revenues from EU ETS and CFP can be used to reduce the deficit.

That said, the policy choices made in recent years appear not to be the result of a straightforward desire to reduce spending on energy efficiency, so much as a desire to distance the financing from general taxation. The announcement of the Green Deal and ECO in the 2010 Spending Review was accompanied with a description of the benefit to the public purse:

*Extra support to reduce energy bills and help improve heating and insulation will be provided by energy companies to combat fuel poverty This will allow the Warm Front public spending programme to be phased out over time, saving £345 million by 2013-14.*

(HM Treasury 2010: 62)

The implication is that energy suppliers will be required to counterbalance state cuts to fuel poverty spending. However, given that ECO is assumed by government to be transferred in full to customers as a cost of delivery (DECC 2012h: 85), the actual outcome is a slight cut in spending, which is then transferred to by what is known to be a more regressive means of raising money. It would appear, then that FPAG were right in describing government as “disingenuous” in their framing of the policy shift (FPAG 2012: 18). Certainly the option of reverting back to income taxation as the

\(^{142}\) Though this lack of ambition is by no means a new development, as established in Chapter Four (see also Boardman 2010: 206).
primary source of funding has not been considered, only possible means of mitigating against the recognised (but unchallenged) regressiveness of policies (DECC 2011i: 128-133). This is a far cry from the original statement in the UKFPS, that:

The Government has confirmed that it will not impose new taxes on the domestic use of fuel and power. This would have an unacceptable social impact and runs counter to fuel poverty policies.

(DTI 2001: 13)

Although not taxes in the strictest sense, levies on energy bills have been characterised in the media – and by some suppliers – as “stealth taxes” (Nichols 2013, Phillips-Davies 2013a), the popular description for charges that effectively function as taxes, but either exist outside the conventional system or are otherwise concealed. Politicians have long been accused of using such tactics to avoid increasing income tax, with the New Labour government of 1997-2010 often held up as particularly keen practitioners of the approach (MacErlane 2004, Hirsch 2006). It can well be argued that levies on energy bills meet this description; they are a compulsory charge on a necessity good, and – as government need to at least appear to be pursuing fuel poverty eradication – if the necessary funds were not raised via bills, they would presumably need to be collected via the income tax system. Given the Conservative Party’s ongoing commitment to cutting income taxes and reducing public spending (see Conservative Party 2014), the current approach must be somewhat appealing to the current coalition government from a political perspective. Taken as a whole, the Green Deal and ECO limit the role of government in energy efficiency policy delivery to one of oversight, and so the policy structure meets all three characteristics of a neoliberal approach to governance described in section 2.2.1.

These changes are probably also symptomatic of some level of path dependency (see section 4.4.2) given that that the obligations levied on bills have gradually increased since 1994, with policies such as the RO and FiTs added along the way. As the public and policymakers adapt to the notion of higher bills and additional charges it seems plausible that energy levies will become more palatable as a funding option, even as

143 The 1997 Labour Party election manifesto also promised not to raise the basic or top rate of income tax over their first five years in government (see Labour Party 1997).
they run counter to the intentions of policy because of their regressive nature. Political short-termism will tend to result in income tax rises for the purposes of funding long-term investment being seen as unpalatable due to electoral pressures, and placing the charge on energy bills instead can function as a means of distancing government from the need to raise funds for policy. However, Vaze and Hewett (2012) found that consumers were more supportive of income taxation over bill levies as a means of funding social and environmental schemes after participating in deliberative workshops designed to promote understanding of funding mechanisms (64% of participants preferred payment via bills over taxation before workshops, 38% afterwards, see Vaze, Hewett 2012: 28). An Irish study by Clinch and Dunne (2006) examined public attitudes to increased energy levies and found widespread misinformation or lacking understanding around the existence of such an option. This was identified as a major impediment in gaining consumer support for alternate policy funding mechanisms, with “focus groups show[ing] resoundingly that people were suspicious and distrustful of the government in relation to tax policy” and “hostile” to the notion of increased energy taxation in that country. The indication from these studies, then, is that energy ‘taxes’ have been successfully stealthy, the general public aren’t aware of their impact and – by extension – that it is not something that government have an electoral incentive to reform.

Beyond the more overtly political incentives, there are environmental arguments for maintaining levies on bills, some of which have already been discussed. From a carbon reduction perspective, levies on bills – particularly those linked to consumption as per-unit charges – are in line with the ‘polluter pays’ principle, i.e., that there should be disincentives to prevent high consumption. This theoretically also enables the ‘double dividend’ (Pearce 1991) to be reaped, i.e., taxes on desirable activities (such as labour) can be cut. The Conservative Party manifesto of 2010 indicated a preference for such an approach, pledging to:

...increase the proportion of tax revenues accounted for by environmental taxes, ensuring that any additional revenues from new green taxes that are principally designed as an environmental measure to change behaviour are

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144 This effect could be further amplified via the use of Rising Block Tariffs, see section 7.2.3.
However, as demonstrated in Figure 6.10, fuel poor households that consume ‘ideal’ amounts of energy will then pay an even larger proportion of their income towards schemes, creating an incentive to keep homes below healthy temperatures. Overall, the selection of levies over income taxation as a means of funding fuel poverty policies – as well as the current balance of ECO – is indicative of carbon reduction being pursued in a manner that does not also prioritise equality, to the detriment of fuel poverty policy. This is perhaps unsurprising given the comparably strong legal and political constraints driving carbon reduction, as discussed in section 4.4.2.

The most ambitious proposal covered in this chapter was the EBR campaign to hypothecate EU ETS and CFP revenues. This complies with the ‘polluter pays’ principle by incentivising energy saving (indeed, one of the issues with hypothecation is that if the tax is successful, there will be less revenue). It could also provide a means of offsetting the regressiveness of the rapidly accruing levies on energy bills by harnessing the proceeds from new environmental taxes to specifically support low income households. The anticipated revenue from EU ETS and CFP would be at levels more in line with the required spending modelled in section 6.1 than current ECO funding. There is wide support for such a programme within the policy community (see PRASEG 2012, EBR 2014b), and international precedent for the hypothecation of EU ETS (see Sunderland 2012). However, there are a number of impediments to adoption of such a policy. Firstly, hypothecation is subject to many of the same barriers as any increase in spending, i.e., a desire to reduce spending, a lack of incentive for politicians to be ambitious with regard to fuel poverty, a focus on carbon reduction. The argument for hypothecation is primarily about securing commitment to a certain level of expenditure - the source identified remains regressive – and so political ambition remains a key constraint. It is also notable that the EBR report (Washan 2012) includes little detail as to how the money raised

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145 As recognised by Martyn Williams of EBR who has stated that the goal is more about ambition than method of funding: “the heart of the campaign is not strict legally binding hypothecation. It is a broader concept. We would like a commitment that money of the scale of £64bn will be reinvested.” (PRASEG 2012).
would be used, for example, how energy efficiency supply chains might handle such a steep increase in expenditure on measures. Furthermore, UK governments have historically been opposed to the use of hypothecation on the grounds that it is inflexible to need, and sets a precedent for the (perhaps under-informed but enthusiastic) public to demand expenditure be earmarked towards more popular causes (see Jordan et al. 2003: 188, Seely 2011). In the House of Commons Committee Debates around the Energy Act 2011, Minister for Energy and Climate Change Greg Barker stated that the adoption of any such policy would ultimately be down to the Treasury and has “300 years of prejudice against hypothecation to contend with” (Energy Bill [Lords] Deb col 299). That said, there has been a particular case made, historically, that environmental taxes are well suited to hypothecation as the practice could raise public support for such levies by enabling a means of directly demonstrating how they can be beneficial (see Seely 2011: 11-13). A rare example of this occurring in practice is the Landfill Communities Fund\(^{146}\), which effectively hypothecates a proportion of Landfill Tax to promote environmental activity near landfill sites (see Morris, Read 2001 for a critical discussion). A possible precedent for fuel poverty hypothecation can also be found in the fourth FPAG annual report, which cites an instance of taxation on the windfall profits of upstream producers being recycled to finance interventions for low income households (FPAG 2006: 12). It can be argued that the need for flexibility in funding sources is something of a non-issue where fuel poverty is concerned given that the amount of extra expenditure required is so great (and the funding source stable). Whilst there is some merit to the argument that hypothecation sets a difficult precedent, that an approach has not tended\(^{147}\) to have been used historically is not itself a reason to rule it out.

In conclusion, Figure 6.20 summarises the implications of different financing options discussed in this chapter within a Policy Analysis Matrix, linked to the evaluation criteria established in Chapter Three.

\(^{146}\) Formerly known as the Landfill Tax Credit Scheme.

\(^{147}\) Though it has been used to some extent, e.g., with regard to earmarking of road tax, tobacco duties, and National Insurance contribution (see Seely 2011: 14-17)
<table>
<thead>
<tr>
<th>Compliance with 'polluter pays' principle</th>
<th>Income Taxation</th>
<th>Levies on Energy Bills</th>
<th>Hypothecation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regressiveness: income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
</tr>
<tr>
<td>High</td>
</tr>
<tr>
<td>High, but with greater increased for mitigation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regressiveness: fuel poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
</tr>
<tr>
<td>High (and greater than for income)</td>
</tr>
<tr>
<td>High (and greater than for income), but with increased potential for mitigation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implications for those who overconsume</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
</tr>
<tr>
<td>Increased regressive impacts</td>
</tr>
<tr>
<td>Increased regressive impacts, but with increased potential for mitigation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implications for those who underconsume</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
</tr>
<tr>
<td>Decreased regressive impacts (and so may be encouraged), but with increased potential for mitigation</td>
</tr>
<tr>
<td>Decreased regressive impacts (and so may be encouraged), but with increased potential for mitigation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact on the public purse</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
</tr>
<tr>
<td>Very low</td>
</tr>
<tr>
<td>Very low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact on energy bills</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
</tr>
<tr>
<td>High</td>
</tr>
<tr>
<td>Very high</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requirement for state involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
</tr>
<tr>
<td>Restricted</td>
</tr>
<tr>
<td>Restricted</td>
</tr>
</tbody>
</table>

Figure 6.20: Policy Analysis Matrix of fuel poverty financing options

Conclusions

This chapter has synthesised evidence and mixed-methods analysis to offer a comparison of income taxation and supplier levies as means of funding fuel poverty policy. Employing a systematic review of literature on improving the English housing stock it has been established that – whilst the sheer number of assumptions required make estimating programme costs difficult – it is evident that the expenditure required to meet potential new LIHC fuel poverty-based targets by 2016 far outstrips current government projections of expenditure on energy efficiency interventions for low income households. Indeed, the overall trend identified is towards lower sums being collected and distributed in ways that are increasingly regressive. It has further been quantitatively demonstrated that funding programmes via energy bill levies, as is now the default approach, is fundamentally more regressive than doing so via income taxation. The impact on fuel poor households is likely to be particularly stark as, under the LIHC definition, having higher than median energy requirements is an intrinsic part of the definition; thus fuel poor households will be compelled to either contribute a greater proportion of their income than non-fuel poor households, or – as seems likely – to underconsume energy with grave implications for health and
wellbeing. In view of evidence that current funding approaches run counter to the intentions of policy, the chapter concluded with a detailed analysis of the policy constraints that would lead the government to persist in such a regressive course of action. It was suggested that a number of factors are likely to contribute, including: the desire to retain supplier obligations as a market-led means of delivery; favouring of levies on environmental pollutants over taxes on labour and income; that transferring expenditure to levies enables lower income taxes, reduced public expenditure, and limited state involvement, all of which are politically and ideologically appealing to neoliberal governments.

The furore surrounding Ed Miliband’s pledge to freeze fuel prices demonstrates that domestic energy bills are an issue of greater political (and electoral) significance than they perhaps once were; indeed, the Labour Party has chosen to make the cost-of-living a core campaign issue of the 2015 general election (see Labour Party 2014). A rise in the real costs of household energy is to some extent unavoidable so long as the UK remains primarily dependent on fossil fuels as an energy source (see DECC 2014j). However, recent years have also seen creeping regressive impacts with regards to the policies charged to bills, and it might be argued that a more constructive means of equitably reducing the costs of living would be to tackle that issue. Shifting financing to income taxation wholesale may not be possible if supplier obligations are to be maintained as a delivery vehicle, but a more ambitious focus on the fuel poor – with spending maintained at levels that would enable achievement of carbon reduction targets - could go a long way to offsetting regressive impacts and ensuring an equitable transition. This approach would represent a long-term investment in the English housing stock, insulating against fuel poverty, creating opportunities for businesses and increasing employment. However, there is no comparable argument for funding economic measures via energy bills. Whilst WHDS may be progressive, it would be more so if financed from general taxation; the delivery implications for this will be considered in the next chapter. What is clear it that whatever approach is chosen, ultimately the money is collected from households. The choice is between more and less regressive means of doing so, and to pretend otherwise is intellectually dishonest. Given that government has accepted the need for intervention whilst acknowledging the regressiveness of programmes, it can be argued that effective fuel poverty policy is being sacrificed to competing priorities and
political expediency. The key possible counter-argument to this is that supplier obligations are the best possible vehicle for measures, and that funding source and delivery agent are inextricably linked; this claim will be examined in the next chapter.
Over the past twenty years, the private sector has become increasingly involved in the provision of support to fuel poor households. The pursuit of privatisation is motivated by a belief that private industry makes for a more effective delivery agent than the public sector. Beginning in the late-1970s, the Thatcher government began to experiment with the denationalisation of state-held industries, ultimately selling off holdings in telecommunications, steel, air travel, water, railways, gas, and electricity (see Evans 1997, Parker 2009). This policy was continued under John Major’s government, which privatised coal, electricity generators, and rail travel (see Dorey 1999, Parker 2012), and – to some extent – Tony Blair’s New Labour administration, via its Private Finance Initiatives model of funding public infrastructure projects (see Wilks-Heeg 2009, Toms, Beck & Asenova 2011). The trend persists into the current coalition government, with the recent sale of Royal Mail (see Parker 2014b), and indications of similar intentions towards both the NHS (see Davies 2013) and road infrastructure (see Watt 2012).

The increased involvement of private actors in leading the delivery of domestic energy efficiency makes for an interesting case study given that, as discussed in Chapter Four, supplier obligations are in some sense a side effect of privatisation; they exist as a legacy of provisions within the *Electricity Act 1989* – the legislation that privatised the electricity industry – that were introduced by Labour peers in an effort to encourage a sense of responsibility towards energy consumption within fledgling private providers. Energy efficiency is a relatively new concern of government, and for most of the last two decades state and supplier-led programmes have co-existed (see Figure 2.7). As such, the transition to an entirely industry-driven approach has been gradual rather than dramatic. Indeed, energy efficiency is, unusually, not even the main business of those tasked to deliver it, with their involvement merely a requirement of participation in that other, more lucrative industry, the supply of gas and electricity to domestic customers. With regard to technical obligations, the government have sought to create additional markets that incentivise effective delivery of supplier obligations and with the end of the Warm Front scheme in January 2013, the responsibility to provide energy efficiency
measures to fuel poor households now falls entirely to suppliers under the auspices of ECO. As of 2011, suppliers also have a role in delivering economic interventions; however, the potential for these to achieve efficiency gains would seem to be limited given that, for the most part, scheme cost and delivered benefit are effectively the same.

This chapter will compare the ability of suppliers and the state to effectively support fuel poor customers, with a focus on the delivery of measures. Fundamental differences between the two agents result in very different delivery model options; this chapter explores these, analysing the differences in depth, with a particular focus on the implications for fuel poor households. The chapter is divided into two distinct halves, as technical and economics measures are so distinctly different when it comes to delivery that they must be considered separately. Each section outlines available delivery models, offers evidence-based analysis of the fundamental differences between the models and the implications for fuel poverty alleviation, and reviews relevant policy constraints. For economic measures, some alternate methods of providing economic support are also considered. Ultimately, it is argued that the entrenched, established market for supplier obligations generates a dependency in that policy path that – along with political and economic motivations – strongly incentivises government to continue using this model to delivery fuel poverty policy, however inappropriate it might be. By contrast, economic supplier obligations are a relatively new phenomenon, and there is no compelling reason to maintain a comparatively ineffective approach beyond the end of WHDS.

**Methodological Overview**

The methodology applied in analysing the delivery of programmes is a more straightforward application of policy analysis than was used with regard to other elements. The primary approach has been to establish delivery model structure via close examination of policy literature, with consultation documents, impact assessments and technical guidance proving the most valuable sources of data; section 3.4.2 provided a description of document types and generalised analysis procedure. Analysis of the implications of models also incorporated broader academic and grey literature, particularly when looking to establish the likely impacts of policy elements.
on fuel poverty where that aspect may not have been considered before. For example, there is a growing literature on the efficacy of supplier obligations as an energy efficiency policy instrument, but authors rarely reflect on the implications of that model for fuel poverty; this work is intended to fill that gap.

A particular barrier to this element of the research was the limited number of instances in which the policy models under consideration have been applied; one (now concluded) instance of the state procuring technical measures, a series of supplier energy efficiency obligations that effectively represent the evolution of the same model, two state economic benefit supplements schemes, and one mandated energy bill rebate programme. To counter this issue, where possible the use of similar approaches in other policy areas has been examined, most notably the use of Payment-by-Results in the welfare-to-work arena. The comparative approach of this work also required that different delivery models be assessed in order to establish which elements of delivery inherently differ between agents in the institutional formation considered here. For details of the systematic process by which this was undertaken, please refer back to section 3.3.4.

7.1 Technical Interventions

The enduring answer to fuel poverty lies in material improvements to the housing stock. By replacing inefficient heating equipment, sealing leaky buildings and reducing the thermal conductivity of dwelling walls, energy demand can be reduced and affordability improved. Furthermore, reducing energy requirements is crucial both as a means of cutting carbon emissions and in making it easier for households to maintain internal conditions that are conducive to the health and wellbeing of residents. However, far-reaching improvement of the English housing stock will be both expensive and logistically difficult. Whilst a range of delivery models have been used to deliver technical interventions to fuel poor households (see, for example, EST/CSE/NEA 2005, E.ON UK 2010), the scope of this work limits focus to two main candidates, which this section describes and compares. The first model considered is that which government used in delivering Warm Front, i.e., the state
purchasing of packaged services via a procurement process. However, it is argued that such a model is unlikely to be selected by government even if a return were made to state-led provision, as it is too far removed from the market-driven strategies that are now favoured. As such, an alternative approach – one that is also procurement-based – is introduced for consideration, that of ‘Payment by Results’, which has been endorsed by the coalition government as a favoured model. The second class of delivery model discussed here is that which underlies supplier obligations, whereby the state serves as regulator and a market based on the trading of the ‘white certificates’ method of recording achieved savings is in operation. This section will discuss each mechanism in turn, outlining key structural elements and including, where available, data on their efficacy in practice. Where available, quantitative data are used to demonstrate delivery efficacy of these models. The section then moves on to offer a detailed comparative analysis of programmes, based primarily on synthesis of existing literature. Finally, the policy constraints that drive the current approach are discussed, and it is argued that supplier obligations are so firmly entrenched as to make change unappealing to policymakers at this stage.

7.1.1 Comparison of Delivery Models

• State-led Delivery Models

The only national-level Exchequer-funded schemes aimed at providing energy efficiency measures to low income households to date have been Decent Homes – which was delivered by LAs – and Warm Front. The latter programme started out as the Home Energy Efficiency Scheme (HEES), launched in 1991 via provisions in the Social Security Act 1990 (s.15). Boardman (2010: 1) describes this action as a means of consolidating earlier ad hoc policies, as already described in Chapter Four. From 2000, HEES was marketed in England as Warm Front, overseen first by DEFRA and later DECC, and monitored not by Ofgem, but via separate evaluations undertaken by both the House of Commons Committee for Public Accounts (CPA)

148 The descriptions used here are taken from Hill and Bramley’s (1986: 103-105) continuum of state-market service delivery, as already cited in Chapter Three.
149 Parallel schemes were in operation for the devolved administrations; see Richards and Hough (2012: 4).
and the National Audit Office (NAO) in 1998, 2003/4 and 2009. The delivery of the scheme itself was procured, initially from energy efficiency companies TXU Powergen and eaga Ltd., then from 2005 to eaga Partnership Ltd. alone who were then taken over – along with the Warm Front contract – by Carillion Energy Services in 2011 (Burr 2009b: 9, Jones, Tighe & Hammond 2011). Contractors were responsible for marketing the scheme and referring eligible customers to a network of subcontractors for the installation of measures (Burr 2009b: 10). Warm Front did not have prescribed annual targets, but rather sought to support as many households as possible with the budget available (Burr 2009b: 5). Eligible households received a capped level of financial support towards a range of standard energy efficiency measures, £3500 at the time the scheme closed (£6000 where certain advanced technologies were required) (Watson, Bolton 2013: 3).

Figure 7.1 graphs Warm Front annual budgets for the period 2000/01 to 2011/12, along with the number of households receiving assistance in that year. Note that funding for the scheme was scaled back drastically in the final years, and that the ambition of the scheme was always fairly limited in comparison to the level of fuel poverty.

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Assessors identified that one limitation of Warm Front was that it did not monitor the impact of the scheme on fuel poverty (see CPA 2004: 5, Bourn 2003: 2). The NAO evaluations opted to look instead at the scheme’s contribution to energy efficiency and found that, whilst the scheme did improve the SAP rating of participating households (Burr 2009b: 15), often this improvement was minimal, with more than half of all interventions achieving a SAP increase of ten points or fewer\(^{151}\) (Burr 2009b: 14-15). This was in part a consequence of expenditure restrictions that limited the level of intervention possible - a particular concern with regards to hard to treat homes – with solid wall insulation unavailable (Burr 2009b: 14). Sefton (2004) analysed data from the 2001 English House Condition Survey (EHCS; the predecessor of the EHS) and found that the scheme as it operated at that time could be expected to remove only 58,000 households from 10pct fuel poverty in the period 2000-2004 (against 1.2m 10pct fuel poor in 2004; DECC 2013a: 10), and reduce the 10pct fuel poverty gap by 7% (Sefton 2004: 31).

\(^{151}\) For comparison, in 2010/11, the scheme achieved an average uplift of 27 SAP points (The Warm Front Team 2011: 4).
The delivery mechanism underlying Warm Front was an extremely straightforward form of procurement. Whilst it should be expected that bidding companies would compete as to how many measures they expected to deliver for the allotted budget, after award the only requirement of the successful organisation was to distribute those funds via the installation of energy efficiency measures. This design might now seem rather old fashioned; more recently, government have tended to favour forms of procurement that incentivise contractors to achieve greater efficiencies in delivering programmes, effectively introducing market processes as an ongoing feature of provision. In particular, the Open Public Services white paper (HM Government 2011) asserted the coalition government’s preference for the ‘Payment by Results’ (PbR) model. As the name suggests, this is a contracting model whereby payments made to providers are in some respect conditional on successfully completed delivery\textsuperscript{152}. PbR is favoured as a means of achieving value for money by ensuring expenditure is linked to output; this aligns with austerity policies (see Pattison 2012). Though PbR is a comparatively untested policy instrument\textsuperscript{153}, it has recently been applied in UK welfare-to-work (see Bennett 2013, Rees, Whitworth & Carter 2014) and justice policy (see Maguire 2012, Fox, Albertson 2011). It seems likely, in this context, that a rejuvenated state-lead energy efficiency scheme might incorporate some element of PbR, i.e., whereby delivery organisations are not simply tasked with distributing a budget (as was the case for Warm Front; see Burr 2009), but with delivering a pre-established quantity of savings (as with a supplier obligation), for which full payment is then only made upon successful delivery. Accordingly, this analysis considers the implications of such a model.

\begin{itemize}
\item Supplier-led Delivery Models
\end{itemize}

The energy supplier obligation model in operation in the United Kingdom is an example of a ‘white certificate’ market-based policy instrument (MBI) (see EEA 2005, Mundaca 2007, Bertoldi et al. 2010, Pavan 2012). Bertoldi (2011) identifies five key elements of such schemes, as follows:

\begin{itemize}
\item \textsuperscript{152} So, for example, in delivering the Work Programme, providers received payment when clients joined the scheme, when work was found, and on sustainment of employment (see DWP 2014).
\item \textsuperscript{153} Though the New Labour government applied PbR extensively as a policy tool within the National Health Service, see Appleby and Jobanputra (2004).
\end{itemize}
1. The creation and framing of the demand (government set the overall target and its apportioning to obliged actors).

2. Institutional infrastructure and processes (such as measurement and verification) to support the scheme.

3. The cost recovery mechanism, in some cases.

4. A system of sanctions in the case of non compliance.

5. The tradable instrument (certificate) and the rules for issuing and trading.

Bertoldi (2011: 7)

White certificates are an example of ‘command and control’ governance (see Baldwin, Cave & Lodge 2013: 106-114); the state selects a target for energy savings, and wields its legal authority as a means to require agents to meet their share of the target or else face penalties. In such schemes, an official body such as a regulator or other governmental organisation will generally oversee compliance. Trading is also a common feature of programmes, under three main possible guises: horizontal (additional savings achieved are sold to other obligated suppliers), vertical (obligated suppliers purchase savings achieved by third parties), and temporal trading (excess savings achieved in one obligation period are carried over to another) (see Bertoldi, Rezessy 2009: 23). A number of European countries have white certificate schemes in place, including Denmark, France, Italy, the UK, and the Flanders region of Belgium (see Bertoldi et al. 2010), as well as the US states of Connecticut, Nevada and Pennsylvania, and the state of New South Wales in Australia (see Tyler, du Toit & Burchell 2011).

Beginning with the EESoP in 1994, the UK was an early adopter of the white certificate policy mechanism. An overview of supplier obligations in England has already been provided in Table 2.7; for a more detailed account of the evolution of supplier obligations through CERT, see Rosenow (2012). In the UK, government have used their role in framing obligations as means of shaping programmes, i.e., not simply requiring that agents comply with targets, but also prescribing, to some extent, how they should be met. The current ECO framework varies from previous
programmes, most notably in its mandated interaction with the Green Deal (though as already discussed, this is assumed not to substantially affect the elements of the scheme specifically aimed at low income households), a required increase in the overall focus on higher cost measures such as SWI (as discussed in Chapter Six), and a reduction in scheme ambition (as discussed in Chapter Two). However, the forms of ECO CSCO and HHCRO continue to broadly align with Bertoldi’s (2011) five key elements. Rosenow (2012) discusses changes to the form of the target, with a movement from energy savings (measured in TWh) under EESoP and EEC to carbon emissions (measured in MtCO$_2$) under CERT. ECO introduces a further development; whilst CERO and CSCO targets are still given as annual required reduction in carbon emissions, the HHCRO target is - for the first time in a UK supplier obligation – based upon a notional reduction in lifetime heating costs (measured in pounds) (see DECC 2012h: 84). The consultation stage Impact Assessment for ECO indicates that this shift is because DECC do not anticipate that measures delivered under HHCRO will necessarily result in carbon reductions, indeed many are expected to “take more comfort” and so “a new type of currency is needed” (DECC 2011b: 118). As was the case for previous supplier obligations, Ofgem, the legally designated ECO Administrator, oversees the scheme. Suppliers must provide monthly records of delivered interventions to Ofgem, who undertake audit and technical monitoring of delivery (see Ofgem 2013b). As covered in Chapter Six, cost recovery is via energy bills, with expenditure passed through to customers. Under the Utilities Act 2000 (s.59; s.95), Ofgem are empowered to penalise obligation non-compliance with fines of up to 10 per cent of company global turnover, a potentially enormous sum (see Murray 2011). All three forms of trading – horizontal, vertical and temporal – are possible under ECO (see Ofgem 2013b). The ECO design has further attempted to promote new options for vertical trading via the new ECO Brokerage. This constitutes an online platform on which obligations – or ‘ECO points’ – can be traded anonymously (see DECC 2012e). The goal of this is two-fold; “to provide a transparent platform for revealing the marginal cost of delivering the ECO targets and therefore the price faced by energy companies… [and] to contribute to an efficient working of the market by allowing fair access to ECO subsidy for all Green Deal Providers and reducing potential barriers to entry” (DECC 2012b: 8).
As ever, it is difficult to assess the extent to which ECO delivery has impacted upon fuel poor households because this is not measured. Indeed, data relating to ECO delivery is less accessible than Warm Front data because of attempts to retain commercial confidentiality. The projected impact of ECO on fuel poverty – a reduction of 125,500 – 250,000 households (10pct definition) across the whole delivery area (DECC 2012h: 70) is both limited (given that there were 3.2m 10pct fuel poor households in 2011, see DECC 2013c: 12) and unhelpfully broad. As ECO is now the sole technical programme, its impact might be tracked to some extent via official statistics, however, these operate with a two-year delay, and include no consideration of ECO’s impact above and beyond ‘business as usual’. For illustrative purposes, Table 7.1 shows progress in terms of delivery of measures, assuming delivery is consistent across scheme lifetime. Even allowing that delivery rates should be expected to increase as the scheme becomes better established, these figures suggest that progress is mixed, with some measures lagging behind. This may indicate that suppliers have opted to meet obligations via measure combinations different to those anticipated by DECC, as they are free to do under the policy framework, or to focus on different measures at different stages of delivery. In particular, loft insulation (under CSCO) and heating system replacement (under HHCRO) appear to have been favoured thus far.

Table 7.1: Progress towards ECO target delivery of measures, September 2013

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Measures expected delivered by March 2013 (27 months of delivery)</th>
<th>Measures delivered to end December 2013 (12 months of delivery)</th>
<th>Progress towards projected total, December 2013</th>
<th>Pro rata progress towards final projected total, as of December 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Saving Communities Obligation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Wall Insulation</td>
<td>39,100</td>
<td>1,952</td>
<td>5%</td>
<td>11%</td>
</tr>
<tr>
<td>Cavity Wall Insulation</td>
<td>181,500</td>
<td>26,454</td>
<td>15%</td>
<td>33%</td>
</tr>
<tr>
<td>Loft Insulation</td>
<td>68,300</td>
<td>66,641</td>
<td>98%</td>
<td>220%</td>
</tr>
<tr>
<td>Home Heating Cost Reduction Obligation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cavity Wall Insulation</td>
<td>45,000</td>
<td>9,297</td>
<td>21%</td>
<td>46%</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------</td>
<td>-------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Loft Insulation</td>
<td>90,000</td>
<td>33,429</td>
<td>37%</td>
<td>84%</td>
</tr>
<tr>
<td>Heating Systems</td>
<td>260,000</td>
<td>196,662</td>
<td>76%</td>
<td>170%</td>
</tr>
</tbody>
</table>

Source: Adapted from DECC (2012a, 2014b: 23-34).

Figures provided by Ofgem further indicate significant variation between suppliers in meeting obligations, as illustrated in Figure 7.2. For reference, at time of reporting, 67% of time available for delivery had elapsed.

Note: Some measures delivered but not yet submitted to Ofgem may be missing from these figures. Some carryover from CERT and CESP may also have not been included. First Utility is by far the smallest obligated supplier, and as such it can be assumed that their extreme over-compliance with HHCRO is because their burden is significantly smaller. They may intend to sell this excess to other suppliers, or trade for savings under CSCO and CERO where their performance is significantly behind (see Figure 3.1 in Ofgem 2014d: 3)

Source: Adapted from Figures 3.2 and 3.3 in Ofgem (2014d: 3).

Figure 7.2: Individual supplier progress towards ECO compliance, through December 2013
And so the overall picture at this stage is that, whilst suppliers are mostly on track with the delivery of HHCRO, CSCO is lagging behind.

### 7.1.2 Key Differences in Delivery

Thus far, three possible delivery models have been considered; the straightforward procurement of services (as per Warm Front), a potential (but thus far untested) Payment-by-Results (PbR) model, and a white certificates scheme such as has been applied for previous UK supplier obligations. For reference, Figure 7.3 illustrates these options.

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1. Ofgem (and predecessors) have fulfilled this role for supplier obligations; the NAO and CPA did so (though only periodically) for Warm Front.

Source: Own analysis of prior delivery, partially modelled upon Ipsos MORI/CAG Consultants/BRE(2011: 22).

**Figure 7.3: Three candidate delivery models for technical measures**

As marked in Figure 7.3, consideration here is firmly at the meso level. It is assumed that the macro level will stay constant – government will oversee whichever model is selected – as will the micro, with a similar group of installers involved in applying
measures at the household level\textsuperscript{154}. This section compares and contrasts the three candidate models, focusing on the following key elements identified via analysis of literature; establishing targets, cost-effective delivery, ensuring delivery success, and energy consumption behaviour. Whilst the natural focus is upon the implications of these differences for fuel poverty, broader issues are also considered where they have implications for the final choice of approach. These are then discussed further in the following section, which details identified policy constraints.

- Establishing Targets

Targets – particularly quantitative targets – have increasingly been utilised by UK government as a means of monitoring policy progress (see Hudson, Lowe 2009: 274-278) though, as discussed in Chapter Four, they have not always been assiduously applied where fuel poverty is concerned. It would seem likely that targets would be different under supplier and state-led programmes as a function of the dynamics involved. Supplier obligations require energy companies to achieve targets or face sanctions. By contrast, Warm Front simply procured an agent to distribute a set level of expenditure. A new state-led programme would be assumed to be similarly procurement based\textsuperscript{155}, though might respond to a savings-based delivery target (e.g., a predetermined level of carbon reduction) and apply a PbR model. Successful bidders could then attempt to deliver the required outcomes at lower costs in order to increase profit margins.

On the face of it, there exists no reason why state-procured delivery couldn’t respond to the same targets as supplier obligations. However, the differing dynamics of the options available suggest that differences would emerge. The command-and-control framing of supplier obligations empowers government to set ambitious targets, with suppliers having no option but to either achieve them, pay vast fines, or leave the market. As reported in Chapter Six, suppliers have repeatedly argued that government underestimate the expenditure required to meet obligations (though current ECO spending tallies with DECC calculations). Rosenow (2012) identifies that,

\textsuperscript{154} Though different policy models may influence the shape and size of that group to some extent.

\textsuperscript{155} Making reference to government guidelines on achieving ’Value for Money’ in procurement (see NAO/OGC 2013).
historically, suppliers have also disputed the extent to which proposed targets are achievable; this has persisted under ECO. Supplier responses to the ECO consultation (as well as media statements, see Chazan 2013b, Chazan 2013a) stated that they considered the proposed (and ultimately retained) targets were both too high\textsuperscript{156} and unachievable at DECC’s projected expenditure levels; meanwhile, consumer groups and LAs expressed concerns that the targets were not ambitious enough (DECC 2012: 84-86). As already illustrated in Figures 7.1 and 7.2 the current evidence is that whilst CSCO delivery is lagging behind, all suppliers but one are ahead of schedule with HHCRO, with E.ON UK having surpassed their obligation only two-thirds of the way into the period. This somewhat undermines supplier claims that the obligations are excessively burdensome and it seems likely that such protests are simply part of the lobbying and negotiation process.

By contrast, a scheme based upon state procurement would require that other delivery organisations (such as installers, LAs or energy service companies) bid to deliver measures. While government could set a target commensurate with those applied under supplier obligations, they might not initially be expected to achieve the same efficiencies (as will be discussed shortly), it would be paying for it directly from the public purse, and would be accountable for any failure to reach targets. As such, there would be a clear incentive to set less ambitious targets. Less ambitious targets would lead to diminished support for fuel poor households. Furthermore, it might be argued that output-based targets (e.g., those communicated in terms of the energy saving to be achieved) offer greater security in terms of outcome than expenditure-based targets, i.e., a set £100m of expenditure has the potential to offer very different outcomes, as discussed in Chapter Six and demonstrated in delivery of Warm Front (see Burr 2009b). That said, effectively tackling fuel poverty is an endeavour that goes beyond simply providing insulation to a vaguely defined target group. As already discussed, targeting weaknesses - teamed with regressive funding methods that are not mitigated by delivery - mean that compliance with obligations does not equate to correspondingly positive impacts for fuel poor households. However, such problematic elements are firmly in the macro domain, and thus down to the state.

\textsuperscript{156} Quirion (2005) further suggests that supplier obligation targets should be amended on an ongoing basis, in line with changing market share.
• Cost-effective Delivery

A presumption of increased cost-effectiveness is central to the rationalisation for releasing welfare functions to private providers. The ongoing incentive of “competitive pressures” on suppliers to keep costs low in meeting obligations is cited in ECO policy documents as a core justification for the use of the obligation mechanism (see DECC 2011d: 110, DECC 2012h: 27). This may hold up theoretically, though it is difficult to assess impact from real-world experience given the paucity of available evidence (prior supplier obligations having not required costs be made public), and the differences in scheme structure that make it hard to draw helpful comparisons (e.g., because Warm Front capped spending at the household level)\(^\text{157}\). The Hills Fuel Poverty Review compared a supplier obligation-style scheme with a Warm Front-style programme and concluded that, if targeted effectively, the former would be both more cost-effective and remove more households from LIHC fuel poverty in the long-term (see Hills 2012 169-170; Hills 2012: 225 gives an explanation of the efficiencies achievable via obligations in economic terms). Hills (2012: 152) also suggests that the two different archetypes should be expected to result in different combinations of technical measures being employed, with suppliers opting for those that are most cost-effective in meeting obligations\(^\text{158}\). It may well be that the most cost-effective measures are not the most appropriate to tackling fuel poverty; there is, for example, a risk that suppliers will ‘cherry pick’ the eligible households that offer the greatest cost effectiveness in delivery, rather than focusing on those who are genuinely in need\(^\text{159}\) (creating an effect not dissimilar to the 'creaming and parking' phenomenon encountered in PbR delivery of welfare-to-work services, see Rees, Whitworth & Carter 2013).

\(^{157}\) One energy supplier employ interviewed anecdotally evaluated the UK white certificate market as a strong one.

\(^{158}\) Usually cost-effectiveness in energy efficiency refers to payback time, e.g., the time it takes for a measure to pay for itself. A measure that cannot pay for itself within its lifetime would not be cost-effective. However, it can be argued that this is less relevant when considering fuel poverty, as households are largely not expected to be paying for the measure themselves, and the goal is to shield them from ongoing energy costs.

\(^{159}\) The example of widespread distribution of CFLs raised in Chapter Six might be taken as an example of this sort of activity, as it was a means by which suppliers could rapidly dispel obligations without necessarily having any impact on energy costs or carbon emissions (i.e., because lighting is comparatively cheap, and bulbs may never have been installed anyhow).
Some attempts to further enhance the efficiency of the market for technical measures have proved less than successful. Vertical trading is an important component of supplier obligations, as energy companies are not naturally equipped to deliver technical measures directly. The ECO Brokerage platform, discussed previously, was an attempt to improve market efficiency at this level by providing an anonymous means of trading savings, leaving price as the only signal. However, in practice it has proved unpopular, with suppliers wary of the risk involved in an anonymous platform. Suppliers have tended to prefer to continue to use known providers, seemingly placing a value on risk minimisation to ensure obligations are met (Parker 2014; supplier risk averseness is discussed shortly). Thus the barrier to entry for new providers remains, and the market is consequently stagnant. The government could feasibly make it obligatory to use the brokerage platform or offer incentives to suppliers, though these options were rejected at the consultation stage (see DECC 2014e). It might, however, be easier to compel use of such a platform within a renewed state scheme with fewer incumbent providers. Despite such issues, the cost of ECO introduces a compelling motive for efficient delivery. Figure 7.4 illustrates the estimated annual average costs of delivering ECO against reported supplier profits for 2013/14.

[^160]: Though some have opted to acquire installation businesses, see for example E.ON UK’s purchase of Matrix (Bounds, 2013).
Note: ECO estimated average costs derived by dividing DECC’s annual cost estimate of £1.3bn by six. A seventh supplier is obligated, however, as that company is so much smaller, its obligation will be a fraction of that of the Big Six companies. Based on compilation of sources: (DECC 2012h: 84, Ofgem 2014f (embedded tables analysed))

**Figure 7.4: Big Six energy supplier reported profits on domestic energy supply 2013/14 versus estimated average ECO delivery costs (£m)**

The anticipated annual total cost of delivering ECO is almost exactly the same as the average reported profits of Big Six suppliers in 2013/14, and represents 4.7% of the expenditure of domestic energy supply (based on own analysis of Ofgem 2014f). Given that it constitutes such a significant cost, there is a strong incentive for companies to deliver ECO efficiently. However, it is also worth noting that, whilst the risk of Ofgem fines is real, in practice they have yet to be used to their full extent, as the investigation into CERT and CESP non-compliance remains open (see, for example, Ofgem 2013f, Ofgem 2013g).
Whatever inefficiencies may lie in the current delivery model, there still remains doubt whether any alternate, state-led scheme has the potential to be as cost-effective. Certainly, Warm Front offered little motive for delivery efficiencies to be maintained beyond the initial bidding process, which included only four geographic ‘lots’ and which, tellingly, was dominated by a single supplier, Carillion Energy Services (see Burr 2009b: 9, Watson, Bolton 2013: 2). A PbR model could potentially offer a stronger motive for companies to deliver cost-effectively on an ongoing basis via financial incentives. This could be achieved by organisations bidding to deliver self-defined volumes of measures (as is the case via the ECO brokerage), or by the government dividing the overarching target into ‘lots’, possibly by geography (as with Warm Front), which companies could then bid to deliver (potentially via a network of subcontractors of the kind used in delivering the Work Programme, see Lane et al. 2013). However, there is no obvious existing market for such a scheme to tap in to. The current system is based around supplier obligations, and whilst some energy companies may have an interest in operating as ‘prime providers’ (cf. DWP 2013d) in any replacement market (particularly those who have been successful under the old model), others may prefer to completely withdraw, leaving a gap to be filled. Whichever method was chosen, establishing a state-led marketplace with sufficient capacity to rival the one that currently underpins supplier-led delivery is likely to be an extended process, as in the first instance there may be a limited number of organisations positioned to bid. An uncompetitive market would potentially leave companies in a position to make cautious bids, resulting in inefficient delivery.

- Ensuring Delivery Success

As already discussed, energy suppliers have tended to protest that obligation targets are too high. However, in practice they have tended to meet - and on occasion exceed them - though recently has there been some shortfall in compliance with CERT and CESP (see section 5.3.3). Delivery of ECO HHCRO has been fairly strong, though CSCO is lagging somewhat (see Figure 7.2). Certainly overall ECO delivery has outstripped that of the Green Deal, with more than forty times more measures installed (DECC 2014c: 6). It has further been suggested that the ECO delivery period might even be extended – or the obligation otherwise cut – as a means of ensuring success for companies currently trailing (see Straw 2013). It is difficult to extend such
comparisons to Warm Front, as the design of that programme made failure unlikely. The historic success of obligations might be taken as a sign that they have been appropriately – or even generously – pitched. While government will want obligations to provide as much value as possible, it is not in their political interest to have policies fail. It is perhaps also a testament to the power of fines as an incentive; though they have never been enforced, Murray (2011) speculates that government could apply them now both as a means of raising funds and to score political points. Rosenow (2012) suggests that the success of supplier obligations is likely to be a factor driving their retention as a means of driving energy efficiency, and it seems plausible that this also applies to fuel poverty.

A new state-led market would not have the option of imposing significant sanctions on unsuccessful delivery agents, as this would discourage participation in that voluntary market. This has been a significant issue with the government’s flagship welfare-to-work scheme, the Work Programme, another social welfare scheme that is currently delivered by the private sector, albeit under a PbR model. Though the market is seemingly healthy, targets have been consistently missed (see DWP 2013c). Whilst this may be due to broader economic factors, government would have no recourse where suppliers are simply not trying hard enough. The main penalty available would be to not offer future contracts to those providers. However, this is less viable when multiple agents fail, where there is little difference in performance across the board (as was true for CERT, see Ofgem 2013d: 14), or where the market isn’t large enough to sustain competitiveness once bidders are lost because of sanctions. Under the PbR model, there is a stronger incentive, however, it is worth noting that the Work Programme operates on this basis and has still encountered problems. By contrast, the obligations model offers a compelling means of ensuring policy success, by using companies’ own profit motives as an incentive.

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161 See section 5.3.1; failures to dispel budgets have attributed to an insufficient allowance for marketing which, if true, is the fault of government, not the delivery agent.
162 Though a PbR model would enable some form of financial punitive action to be used.
This work focuses on fuel poverty in the objective sense. Whilst energy consumption behaviour will not have an impact on fuel poverty levels as currently measured, it is undeniably important at the level of individual experience. Furthermore, the point at which interventions are delivered presents an excellent opportunity – and one in line with the ‘whole house’ philosophy – to ensure households understand how to use new and existing heating systems, are given advice as to what constitutes a healthy living environment. It is also important to affirm that, although standard energy behaviour narrative encourages using less, fuel poor households tend to under-consume so may need to be offered different support and advice, such as to ‘take savings in comfort’ from any new measures. However, this could present an area of tension with carbon reduction goals, and a risk of ‘mixed messages’ being given to certain households. Home Energy Advice (HEA) was included within Warm Front (see Burr 2009b: 10) and as a CESP-eligible measure (see Ofgem 2009b: 18-22). Such an intervention is not included with ECO: it can be funded under the Industry Initiatives element of WHDS, though only 5% of the 2012/3 budget was used to this end (see Ofgem 2013j: 6). The government do operate or support a number of other schemes that offer energy consumption advice, but these are not incorporated into the delivery of obligations (e.g., there is no requirement that households be referred), and are – with some exceptions - largely focused on energy saving over maintaining a warm home (see Home Heat Helpline 2014, DECC 2014a, EST 2014c). It might be argued that suppliers are not the appropriate agent to offer energy consumption advice, both because it might be seen as a conflict of interest, and because of indications that consumers tend not to trust them (as discussed in Chapter Two), and so may be wary if told by an energy company that they need to use more fuel. And so, whilst advice on energy use is crucial – and perhaps not sufficiently incorporated into the current policy structure – it would seem best operated by an external provider.

Chapter Two also referenced the ‘building performance gap’, the phenomenon whereby real-world installations do not achieve previously estimated savings levels.

163 Though the CESP evaluation found that energy advice was an underused measure; despite being supported at the consultation stage, stakeholders reported that the level of administration it required did not justify delivery given the relatively low carbon score awarded (CAG Consultants et al. 2011: 16).
Whilst some of the discrepancy might be accounted for by ensuring households know how to effectively heat their homes post-installation, it is also crucial that any scheme – supplier or state-led – includes robust technical assessment to ensure delivery is of a high standard; this role has traditionally been played by independent public sector bodies, e.g., the NAO and Ofgem.

- Overview of Comparison

Figure 7.5 summarises the examination of options undertaken in this section within a Policy Analysis Matrix.

<table>
<thead>
<tr>
<th>Establishing Targets</th>
<th>Supplier Obligation / White Certificate</th>
<th>State Procurement</th>
<th>State Procurement: Payment-by-Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Government are empowered to set ambitious targets.</td>
<td>Targets would need to be commensurate with the level of competitiveness in the market; this may be limited, particularly at first.</td>
<td></td>
</tr>
<tr>
<td>Cost-effective Delivery</td>
<td>Ongoing incentive for suppliers to deliver cost effectively. Some risk of ‘cherry picking’. Suppliers tend to be risk averse, creating market stagnancy.</td>
<td>Little incentive for cost-effectiveness beyond the initial bidding stage.</td>
<td>Slightly increased incentive to deliver cost-effectively.</td>
</tr>
<tr>
<td>Ensuring Delivery Success</td>
<td>Strong (though largely untested) incentive to achieve targets.</td>
<td>Weak incentive to reach targets unless market is competitive.</td>
<td>Some incentive to meet targets, but no recourse for the state if this does not occur.</td>
</tr>
<tr>
<td>Energy Consumption Behaviour</td>
<td>Suppliers likely unsuited to deliver this element of support due to conflicts of interest and lacking consumer confidence.</td>
<td>State (or other external contractor) potentially presents a more appropriate agent for advice. An external body is required to monitor work undertaken by contractors.</td>
<td></td>
</tr>
</tbody>
</table>

Figure 7.5: Policy Analysis Matrix comparing supplier and state participation in delivery of technical measures
One of the fundamental differences between supplier and state-led delivery is that those institutional structures result in the differing dynamics of obligations versus procurement. As such, organisational constraints play a pivotal role in differentiating between models. That said, both methods have been used previously – neither is prohibited by current circumstances – and as such it is fair to assume that political constraints and motivations also play a significant role in shaping the final decisions about how technical interventions should be delivered. A further identified constraint has only been briefly referenced thus far, the physical limits of the technical potential of supply chains in delivering energy efficiency measures.

• Technological Constraints

In Chapter Six, the cost of raising the currently occupied, viable, dwellings of all LIHC fuel poor households to SAP 69 was estimated at £57.9bn. Even if that money were made available with immediate effect it would not be possible to deliver all interventions in a single year because of the limits of the supply chain. The rate at which the industry can physically install measures therefore represents a natural physical constraint on policy. The most apparent limit is with regard to SWI, where there remains significant savings potential (see Element Energy/EST 2013: 76-77), in part because previous obligations have been focused on CWI.

The ECO and Green Deal final impact assessment estimated that annual SWI installations were expected to reach almost 42,000 in the first year (DECC 2012h: 166-167), exceed 100,000 within three years, and remain around the 110,000 mark through 2022 (DECC 2012h: 47). However, statistics for the first year of programmes show that only 28,000 installations were actually delivered (DECC 2014c: 30-31), of which only 11,000 were delivered under ECO CSCO (see Figure 7.1; HHCRO is not generally intended to include SWI). Previously, CERT delivered 59,000 SWI installations in 56 months (i.e., 12,000 per annum) (Ofgem 2013d: 33) and CESP – which was more focused on that measure – installed 80,000 in 40 months (or 24,000 per annum) (Ofgem 2013e: 13). These schemes ran largely concurrently, and so the installation rate through 2010-12 was around 36,000 per year, indicating that 42,000
installations under ECO was perhaps not an unreasonable expectation. Still, a significant uplift would be needed to exceed 100,000 annual SWI installations by 2015, as DECC had previously projected (DECC 2012h: 166-167).

Development of the market for energy efficiency measures has probably not been helped by the demand uncertainty that exists as a result of policy changes. Previous supplier obligations have enabled a strong market of installers to emerge around the delivery of energy efficiency measures, an element of the programme often praised by interviewees (see also Rosenow 2012). However, recent policy changes have created uncertainty within the industry. The activity hiatus between the end of CERT and CESP, and the point at which ECO and the Green Deal became fully active resulted in thousands of job losses (see BMJ 2013). Whilst the Green Deal was expected to build demand for energy efficiency measures beyond obligation activity, at least one major installation company has gone into administration as a result of problems with that scheme (see Shankleman 2013). In planning the Green Deal and ECO, DECC acknowledged that the SWI supply chain would need strong demand signals in order to achieve the required level of growth (see DECC 2012h: 27), but these do not appear to be forthcoming. If the supply chain is to reach the level necessary to effectively tackle fuel poverty within a reasonable timescale, the industry will need to be reassured by confident, ambitious policies, ideally accompanied by reliable, consistent investment.

- Organisational Constraints

The primary difference between the two delivery models considered here is in the internal power dynamics. Under supplier obligations, the state can wield legal powers to enforce compliance; under state procurement, government must generate market conditions that encourage participation to the point that delivery is efficient. Effectively, the difference is in the choice to either use regulatory powers as a ‘stick’, or to create a ‘carrot’ of potential profits that encourages a market to grow around delivery of energy efficiency measures. This dynamic is not, in itself, a policy constraint as such, as either option is viable at present; indeed they have recently been applied concurrently. However, as already discussed, the choice has significant implications, e.g., for the potential size of targets, and for cost-effectiveness. As such,
the organisational elements of the models effectively become constraints when considered together with political objectives.

- Political Constraints

Previous chapters have already considered the ideological reasons that might lead neoliberal governments to lessen their direct involvement in the delivery of energy efficiency measures. With reference to the delivery element of the process, it is also highly likely that some degree of electoral pragmatism is at work, and any government will wish to avoid being associated with an unsuccessful policy. Supplier obligations currently meet this requirement in two respects, i.e., by having a high success rate, and providing an expedient means of transferring accountability (and consequent price rises) away from government. Given the convenience of the current policy model, it is hard to imagine a government choosing to change this approach, particularly if fuel poverty is not regarded as an electorally sensitive issue. Any new policy design would introduce the risk of failure, and government might be expected to be particularly risk averse where energy efficiency policy is concerned in light of problems with the Green Deal (see Chapter Two). Ongoing and well-publicised problems with the Work Programme, a similarly handled policy in a different domain (see Gentleman 2013, Swinford 2013), might also leave government hesitant to launch a new large-scale procurement exercise. The notion of path dependency again applies here, as any change can be assumed to incur costs, both in literal terms, and in terms of opportunity cost as the system adapts to the new approach. For example, a new system based on state procurement would be likely to take time to establish a competitive market that could rival the cost-effectiveness of supplier obligations. By contrast, continuing with the twenty-year-old system of supplier obligations requires little extra effort and so should garner constant - if not increasing – returns to scale.

As discussed previously, frequent changes in energy efficiency policy have proved problematic for supply chains. Evidence suggests that suppliers, too, have found the “remarkable and frequent changes” in the development of obligations (Rosenow 2012: 381) difficult to manage, particularly as stipulations on the way those obligations must be met have increased (e.g., increasingly defined priority groups, restrictions as to what measures are allowed). All of the energy supplier
representatives interviewed for this work repeatedly identified changes to energy efficiency policy, particularly the “tweaking” and refining of obligations by DECC, as one of the most significant barriers they faced in compliance, making it difficult to plan ahead. Energy UK, reviewing CERT and CESP, also emphasised this as a problem in the delivery of those programmes, reporting on behalf of suppliers that “the more certainty [companies] have relating to their obligation, the easier it is to plan and deliver an obligation within time constraints and in a cost efficient manner” (ERA 2011: 9). One supplier representative interviewed for this project suggested that suppliers were unwilling to consider innovative means of delivery because of concerns about risk that policy would change suddenly, rendering experiments worthless; similar views have also been expressed by Energy UK (ERA 2011: 7-8).

Concerns about risk certainly appear to have impeded use of the ECO Brokerage mechanism, with suppliers seeming to favour the use known providers over unknown quantities, even if the initial cost is greater. Some level of risk might be unavoidable, e.g., because of electoral cycles; Labour’s promise to freeze energy prices, for example, was blamed by some for subsequent price rises where suppliers tried to account for that potential should they be elected (see Hickey 2014). Given the design of the obligation, households will bear the costs incurred both by suppliers adjusting to policy change, and as a result of the increased inefficiencies that stem from risk aversity on the part of obligated parties. Low income and fuel poor households will be most significantly affected by these costs because of regressive charges. As far as potential changes to policy are concerned, it seems unlikely that suppliers would object to having obligations withdrawn in any respect, however, it is important that any changes are clearly communicated with an appropriate lead-in period, to limit the extent to which fuel poor households bear the costs of delivery uncertainty.

7.2 Economic Interventions

Of the two ways in which fuel poverty can be alleviated, economic measures are a secondary resort. From Brenda Boardman’s early work (1991) through the Hills Fuel Poverty Review (2012) and to current Government policy (DECC 2013j), technical measures have – rightly – been identified as the enduring solution to both fuel poverty eradication and the sustainable reduction of carbon emissions. Indeed, under the LIHC definition of fuel poverty, economic measures can only provide temporary
alleviation. This is evident in the fact that the fuel poverty gap refers to “the [amount] by which the assessed energy needs of fuel poor households exceed the threshold for reasonable costs” (Hills 2012: 9), i.e., not lack of income, but excess of costs. So, whilst price adjustments could theoretically remove this gap, income supplements can only provide a commensurate amount of money with which to pay the difference between actual and reasonable costs. In a minority of cases, economic measures might persist as the only means of supporting households living in those dwellings for which technical measures are not sufficient to remove households from fuel poverty, however, there is a significant amount of ground to be covered before those households are the only ones remaining. This is not to say that economic interventions have no place in fuel poverty alleviation; their most obvious strength is immediacy; bureaucracy aside, economic measures can be applied, theoretically, instantaneously. This is particularly valuable given the timescales involved in delivering technical measures. Given that the ultimate goal of fuel poverty policy is to prevent low income households being forced to live in cold homes, this strength cannot be overlooked.

The core current economic policies under consideration here are effectively income supplements, rather than price adjustments\(^\text{164}\), though the potential of the latter will be considered later in this section. There is a clear distinction to be drawn between state and supplier-led economic measures at present, as the former is delivered entirely via benefits supplementation, whilst the latter consists of rebates delivered via bills. This section focuses upon comparing these two models, and the extent to which each is successful in meeting the specific intention of fuel poverty alleviation. It has a similar structure to the last, opening with an overview of the policy models under consideration, before moving on to report a comparative analysis of programmes. Then follows a slight diversion, wherein a number of alternate means of providing economic support to fuel are considered, with particular reference to the appropriate role of energy suppliers in delivery. Finally, relevant policy constraints are summarised and it is argued that the reasons for retaining the current, apparently ineffective use of supplier-led economic must be political and economic.

\(^\text{164}\) Whilst the impact of the two might be taken to be the same, price adjustments will be linked to energy consumption in a way that income supplements are not.
7.2.1 Overview of Current Structure

*WHECA* specifies only that fuel poverty should be eradicated “by means including the taking of measures to ensure the efficient use of energy” (s.2 (1)) with no mention of economic interventions. This means that there is no statutory requirement to provide economic support to the fuel poor, leaving all activity at the discretion of the state. Three national schemes are currently in operation, of which two – CWPs and WFPs – are long-running, state-led supplementary benefits, and the third – WHDS – is a comparatively new supplier-led rebate scheme. This section will give an overview of the delivery of each scheme, highlighting key elements and, where possible, an assessment of the likely impact of each upon fuel poverty.

- State-led Delivery Models

Whilst the technical interventions targeted at fuel poor households have undergone a significant evolution over the past ten years, economic mechanisms have remained comparatively consistent. CWP is the oldest of the current schemes, having been introduced in 1986, to replace earlier schemes such as Heating Additions and the Electricity Discount Scheme (Kennedy 2010, in a House of Commons Library Standard Note, offers a thorough history of the development of the scheme). CWPs are funded by general taxation, via the Social Fund, and eligibility is based upon receipt of particular income-related benefits (DWP 2013b). The payment itself is a supplementary benefit, with payment triggered automatically when temperatures (as forecast or recorded by local weather stations) dip below 0°C for a consecutive seven-day period (DWP 2013b). The payment level was £8.50 per period between 1995 and 2007, at which point it rose to the £25 rate where it currently remains\(^\text{165}\) (Kennedy 2010: 4-5).

WFPs were launched in the winter 1997/1998 by the Labour government\(^\text{166}\). They were immediately framed as a measure to “tackle fuel poverty amongst pensioners”, and their role in fuel poverty alleviation was later confirmed in *The UK Fuel Poverty*

\(^{165}\) For details of CWPs pre-1995, please refer to Kennedy (2010: 4-5).

\(^{166}\) Again, the House of Commons Library Standard Note offers a helpful and thorough historical overview; see Kennedy 2013b.
Strategy (Kennedy 2013b: 3, DTI 2001: 116-117). The initiative is Exchequer-funded, and usually paid as an automatic subsidy to the State Pension (or other social security benefit) (Kennedy 2013b, UK Government 2014e). WFPs are universally available to those born before a given date, updated annually, regardless of income or disability status. At time of writing this date was 5th January 1952 making the youngest recipients at the start of winter 2013/14 sixty-one years old (UK Government 2014e). Currently, those aged under 80 on the qualifying date receive £200, whilst those over 80 receive £300 (UK Government 2014e). This represents a significant increase from the £20 to £50 payment that was made WFPs were first introduced (see Kennedy 2013b: 8).

The government do not formally measure the contribution of either scheme to fuel poverty reduction. Modelling the likely impact of CWPs on fuel poverty is difficult, in part because of the variability of the payment. Because payments are triggered in periods of cold weather, they will vary both year-on-year and by geographical location. Furthermore, the EHS uses self-reported income data (see DCLG 2013e), which makes it seem likely that such small payments will be misreported particularly when, for example, households have opted to report their income on a monthly basis, or are interviewed during warmer times of year. However, it is possible to draw some broad conclusions by considering the size of the payments made, and the efficiency with which they are targeted at fuel poor. Firstly, in winter 2011/12, £129.2m was paid out in 5.2m individual payments (DWP 2012b). Of the 92 localities, only four were triggered three or more times, and all of these were rural Scottish locations with comparatively low populations. Of the 4.2m eligible individuals, 74.7% received some payment, with 46.8% of the total receiving two or more payments, i.e., £50 or more. However, the median fuel poverty gap in that year was £256, and only 13.5% of LIHC fuel poor households had a fuel poverty gap of under £50 (based on analysis of DCLG 2013c). Furthermore, as reported in Chapter Five, the estimated ‘leakage’ of CWPs is 69% (see Table 5.1). So, whilst CWP is undoubtedly valuable to those in receipt, it is unlikely to have much of an impact on the larger problem, even in the short term. As already discussed in Chapter Five, WFPs represent a particularly

167 Note that from winter 2015/16, WFPs will no longer be made to UK citizens living in European countries in which the average winter temperature is higher than that of the UK (HM Treasury 2013: 31). Those in residential care receive a partial payment (see Kennedy 2013c).
conspicuous example of inefficient targeting. Kennedy (2013b: 17) cites a Lords written answer that estimated that WFP reduced the number of households in 10pct fuel poverty by 850,000. However, as mentioned in the previous chapter, WFP exacerbates LIHC fuel poverty, as the new measure is relative. As the majority of WFP funds go to those already on high incomes, the programme exacerbates income inequality, raising the threshold for low income (as this is based upon a median income measure) and drawing a further 370,000 households into LIHC fuel poverty (see section 6.3.2).

• Supplier-led Delivery Models

The Warm Home Discount Scheme (WHDS) is the most recent economic scheme to be implemented, commencing in April 2011 and set to conclude in March 2015 (Ofgem 2013k). WHDS represents the first economic intervention that suppliers are mandated to deliver, though many suppliers have delivered support of their own volition in the past. A Voluntary Agreement existed between all Big Six suppliers and Government that enabled flexibility as to the form of social programmes, but committed them to agreed levels of expenditure (see Hough, Bolton (2012a: 11-13). The social requirements of suppliers were formalised as statutory under the Energy Act 2010 in a section specifically titled, “Schemes for reducing fuel poverty” (s.9-15), making the intention of the legislation clear. This commitment was later fulfilled by the Warm Home Discount Regulations 2011.

The scheme itself consists of four main elements. The Legacy Spending part enables suppliers with ongoing programmes established under the Voluntary Agreement, particularly social tariffs, to count a given level of that expenditure towards their WHDS targets (Ofgem 2013k: 28). This element of the scheme is intended to facilitate a smooth transition from the Voluntary Agreement to WHDS, and as such the level of expenditure is reduced annually (DECC 2011h: 12). The Industry Initiative element, similarly, builds on the support offered previously under the Voluntary Agreement, enabling suppliers to include expenditure on approved alternate initiatives including benefits advice or cancelation of energy debts (Ofgem 2013k: 31-33).
The other two elements of WHDS are a more distinct departure from the Voluntary Agreement, and account for a greater proportion of total expenditure (DECC 2011h: 12). Both the Core and Broader elements of the scheme offer a rebate on energy bills to eligible customers – £135 for 2013/2014 – and all are provided via rebates on electricity bills (so as not to exclude those not in receipt of gas) (see Ofgem 2013k: 17, DECC 2011h: 3). Core Group eligibility varies year-on-year, but is currently aimed at older people and linked to receipt of Pension Credit (DECC 2011h: 13-14). Participating suppliers have discretion over eligibility for the Broader Group scheme (subject to Ofgem approval; see Figure 5.2 for sample criteria). Broader Group spend is set at a minimum level, i.e., suppliers are only required to spend a set amount on the scheme and do not have to support every eligible customer. By contrast, suppliers are required to provide a rebate to any customer who meets Core Group eligibility and so - because WHDS spending is capped under the Levy Control Framework - higher than expected numbers of Core Group recipients will potentially result in cuts to the Broader Group (Ofgem 2013k: 11-14). However, suppliers do have flexibility to reappportion some level of Legacy Spending and Industry Initiative expenditure towards the Broader Group, and all companies chose to do so in the first year of activity (see Ofgem 2012b: 17). Figure 7.6 illustrates the manner in which DECC expect spending to be allocated between elements over the lifetime of WHDS.

Source: Adapted from DECC(2011h: 12).

Figure 7.6: Expected allocation of spending under the Warm Home Discount Scheme
The impact assessment for WHDS included modelling of the projected impact of the scheme, estimating that 41,000 households would be removed from 10pct fuel poverty (DECC 2011f: 51-54). However, as the LIHC definition classifies fewer households that contain older people (and are thus likely to be Core Group) as fuel poor, it seems likely that impact under the new definition might be lessened, given that the Core Group accounts for the majority of expenditure. The discretionary nature of the Legacy Spend, Industry Initiatives and Broader Groups make the likely impact of those elements fuel poverty difficult to model with the available data.

7.2.2 Key Differences in Support Provided

In many respects, economic measures are much more straightforward than technical interventions; money is either transferred to households as tax-funded benefits supplements, or else provided as a rebate which is both delivered and funded via energy bills. It is, in essence, a fairly straightforward reallocation of funds (though subject to the differences in targeting and distributional impacts discussed in previous chapters). This analysis identifies two areas where the choice of delivery agent alone could result in changed outcomes. The first of these is arguably less consequential; currently there is a cap on levy-funded expenditure on economic measures, with no counterpart for state-led delivery. However, this is a government-imposed restriction and so fairly pliable. More meaningfully, the way in which the money is applied – via benefits or directly to energy bills – could have implications for recipients. This section presents a thorough review of relevant evidence that can offer insight into the potential consequence of both options.

- Level of Overall Assistance Provided

Currently, the key difference between supplier and state overall expenditure is that supplier expenditure on WHDS is limited by the Levy Control Framework (LCF), which seeks to guard against “unsustainable increase[s] in electricity bills” (DECC 2011c: 3). State expenditure on CWP and WFP is not subject to the same type of cap, varying annually dependent on the number of eligible households, and (in the case of CWP) temperatures (though variance is subject to reasonably predictable factors).
Any shift towards supplier-led economic measures would require that this cap be lifted if a commensurate impact were to be achieved, an option that is entirely at the discretion of government. As discussed in Chapter Five, increased supplier levies would probably have regressive impacts (though it is not clear from policy documents whether this is an explicit intention of the LCF). If the cap were removed altogether, there would exist a further risk of uncertainty around energy bills, particularly if the CWP temperature-based eligibility criteria were retained\(^{168}\).

- Delivery Vehicle

Here, ‘delivery vehicle’ refers to the means by which funds are transferred between the delivery agent and recipients. Suppliers have historically delivered support via direct rebates to bills (i.e., a discount from costs), whereas state support has been via the benefits system (i.e., an increase to income received). On the face of it, it may not appear to make much difference how monetary support is delivered; a pound is a pound, whatever the form. However, there are evident differences. Firstly, from a definitional standpoint, if a benefit supplement is treated as increasing income and a rebate as reducing costs, it seems likely that – by way of example - an additional £200 rebate to a given group of fuel poor households energy costs would be more likely to reduce LIHC fuel poverty than a £200 income supplement to the same group. This is because incomes have a much greater variance and range than fuel bills, and so a given sum of money is more likely to move a household over the high costs threshold than over the low income threshold. Furthermore, as the fuel poverty gap primarily relates to energy costs, a rebate is also more likely to result in improvement to that metric. However, this inherent sensitivity to prices is arguably simply a quirk of the LIHC definition (and an effect that was much more significant under the 10pct measure, see Hills 2011: 106). What is more important is the extent to which the difference in delivery method has an impact on the experience of fuel poor households.

One core difference between the two options is that recipients have the freedom to spend benefits supplements as they wish, whilst rebates are automatically deducted

\(^{168}\) The weather-based variance can be surprisingly high, e.g., in 2010/11 the amount paid out was over three times that in 2011/12 (see Kennedy 2013: 4).
from bills. This distinction displays clear parallels with current debates around personal responsibility and the welfare state. Neoliberal thought tends to prioritise individual freedoms and personal responsibility over state intervention (see discussion in Harvey 2005 64-86). Under this ideology, it seems likely that direct payments would be viewed as paternalistic, as they remove the autonomy of individuals to spend their income as they wish, and instead effectively mandates that they make particular consumption choices (i.e., in apportioning a £135 rebate directly to fuel rather than allowing the household to choose how it is spent). This philosophical standpoint arguably underlies many of the changes to the benefits system introduced by the coalition government. For example, under the proposed Universal Credit system, all benefits are merged into a single monthly payment which recipients manage themselves, with Housing Benefit no longer sent directly to landlords (see DWP 2010b: 19-20). In this context, the shift to delivering economic support via direct rebates would seem out of step with broader patterns. That said, it might conversely be argued that the serious implications of underconsumption for the health and wellbeing of those living in cold homes justifies direct intervention. Any reduction in expenditure on heating will impact the quality of life and health not only of those making that decision, but also of others living in those households, including dependent children. Previous research by Probert (2010) examined the Fuel Direct programme, which enables customers that are both in arrears and in receipt of particular income-related benefits to have energy bills paid automatically, directly from their benefits (see UK Government 2014b). Whilst proponents of neoliberal thinking might consider this to be extremely paternalistic, the research found that both energy companies and consumer advocates enthusiastically supported the scheme. Suppliers reported that Fuel Direct worked in their favour, ensuring that the payment was made, and removing both the economic burden of pursuing debts, as well as the responsibility to make punitive disconnections (Probert 2010: 83-84). Independent advice agency representatives testified that consumers too, favoured the scheme – even though its use involves an extra charge – to the extent that one member of support staff for a charitable trust reported that they would purposely offer grants at a level that did not fully clear arrears, in order to ensure customers would remain

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169 Universal Credit payments will also go to households rather than individuals (see DWP 2010: 33), which could have implications, for example, where the thermal comfort requirements of individual residents differ.
eligible for Fuel Direct (Probert 2010: 84-85). A possible middle ground might be found in ‘soft paternalism’\(^{170}\), a phenomenon allied to that already encountered in section 5.4.1 with regard to the effect of labelling WFPs. Some research has indicated that labelling cash payments as being intended to contribute towards energy bills (e.g., CWP, WFPs) does create enough of a ‘nudge’ to ensure that they are used as intended (Beatty, Blow & Crossley 2011, Beatty et al. 2011, see Stockton 2011).

A final identified implication of delivery vehicle choice is that, under a rebate scheme, only customers who are with a participating supplier and, by extension, in receipt of the grid-delivered fuel used to transmit the discount can receive support. Though the majority of suppliers do participate in WHDS – including many who are not obligated to do so (see UK Government 2014d) – and most households receive electricity via the grid, this still leaves a possible gap in the effective delivery of support that could widen if the role of rebates were increased. On the other hand, rebates can be delivered to households that are not in receipt of state benefits, potentially reducing the necessary dependence on that means of transmitting support identified in Chapter Five\(^{171}\). Thus there is some level of trade-off in reaching particular groups with either delivery vehicle.

- Overview of Comparison

Figure 7.7 summarises the analysis presented in this section within a Policy Analysis Matrix.

<table>
<thead>
<tr>
<th>Level of Assistance Provided</th>
<th>State Delivery: Benefits Supplement</th>
<th>Supplier Delivery: Energy Bill Rebate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Delivery agent unlikely to make a difference, as this will be state-mandated, though currently Levy Control Framework limits supplier expenditure.</td>
<td></td>
</tr>
</tbody>
</table>

\(^{170}\) This term tends to be used by critics such as Glaeser (2006); Thaler and Sunstein (2003) write more sympathetically on what they call “libertarian paternalism”.

\(^{171}\) Though in practice guidance on Broader Group eligibility criteria generally encourages that support be focused on households who are in receipt of benefits (see Ofgem 2013g: 22-23). It also may be possible to develop state-led economic measures that are not benefits supplements, e.g., vouchers or targeted tax credits.
### Figure 7.7: Policy Analysis Matrix comparing supplier and state participation in delivery of economic measures

| Delivery Vehicle | Potentially has a more limited impact upon LIHC fuel poverty levels and the fuel poverty gap. Promotes autonomy, recipients are in control of cash payment. However, this may result in money being spent on commodities other than fuel. Requires recipients be in receipt of a state benefit. | Should have an increased impact on LIHC fuel poverty and will directly reduce the fuel poverty gap. Ensures benefit is applied directly according to intended purpose, however, may be viewed as ‘paternalistic’. Requires consumer be with a participating supplier. |

### 7.2.3 Alternative Means of Support

The economic measures discussed so far have all revolved around the straightforward redistribution of funds. However, a number of other measures have been applied that deviate from this form, whilst remaining fundamentally economic in nature. All have been made available on a limited and generally localised basis, i.e., not as national schemes; some remain active under the auspices of the Industry Initiatives and Legacy Spend elements of the WHDS (though provision is at supplier discretion). Literature on these interventions remains extremely limited, and it is an area where further research would be of clear value. This section takes steps to fill this gap by synthesising what literature has been sourced relating to five of the most prominent mechanisms, offering a brief overview of potential practical and political implications, and possible roles for delivery agents. For practical reasons, consideration has been restricted to those mechanisms that could provide households with economic respite from the effects of fuel poverty, as opposed to those that operate more structurally, providing no reduction in price or increase in income, but making payment for energy otherwise more manageable (e.g., Fuel Direct, debt management advice).
Energy companies have intermittently offered ‘social tariffs’, i.e., favourable pricing structures made available to those customers who are likely to be fuel poor or otherwise vulnerable, and which ideally should represent a supplier’s cheapest market price, regardless of payment method (as required by the regulator, see Ofgem 2008b). By reducing the costs of energy, social tariffs are arguably a more appropriate economic intervention than income supplementation in tackling LIHC fuel poverty, and will reduce the fuel poverty gap. Furthermore, unlike WHDS-style standardised rebates, social tariffs could feasibly provide a level of financial support that is in some way commensurate with individual fuel poverty gaps (and thus in some way account for the high variance discussed in section 6.1.2). Social tariffs found their greatest popularity under the Voluntary Agreement that pre-dated the Warm Home Discount Scheme, with all Big Six suppliers offering some form of social or otherwise discounted tariff during that time (see Ofgem 2011b: 20-21). As of March 2011, 112,803 customers across the UK were on such tariffs (see Ofgem 2011b: 17-18). However, there were a number of problems with this voluntary system of support. Firstly, there was a degree of variability in the social tariffs offered by different suppliers (see Boardman 2010: 86-88, Ofgem 2011b: 22-25). This is particularly problematic given that social tariffs were usually only available to existing customers, i.e., there was no option to switch directly to the social tariff of another supplier at a better rate (see Ofgem 2011b: 20). Furthermore, whilst Ofgem guidance was that suppliers should “keep in mind that support should be targeted towards customers vulnerable to fuel poverty” (Ofgem 2011b: 20) ultimately eligibility criteria were entirely at the discretion of energy companies, which Consumer Focus argued resulted in them being inequitably focused upon older people (see Consumer Focus 2009). Today, suppliers may still choose to offer social tariffs under the Legacy Spending component of WHDS, however, this is due to be phased out by 2014/15 (see DECC 2011h: 15). In the consultation that preceded WHDS, DECC clarified that social tariffs were no longer viewed as being in line with departmental guiding principles, stating that:
[social tariffs] do not provide a clear or targeted benefit, as different suppliers may offer different benefits to different groups of customers, depending on their tariff regime... It is therefore inconsistent with the principle of maintaining competitive markets.

(Dbcc 2010a: 18)

Cheaper rates also arguably violate the ‘polluter pays’ principle, and could encourage overconsumption. The notion of cheaper energy for those on benefits might further be politically at odds with the coalition government’s aim of reducing benefit dependency (see Conservative Party 2010: 15), though it is clearly not inconsistent with the goal of helping those on low incomes to achieve a decent standard of living.

One other alternative tariff structure is worth considering, the Rising Block Tariff (RBT). Baker and White (2008) assessed four different tariff models under a range of criteria. Of these, only RBTs were judged as offering outcomes comparable in social justice terms to social tariffs themselves (Baker, White 2008: 3). Currently, via standing charges, prices fall as consumption increases, a choice justified on the grounds that the marginal cost of supply is lower at higher volumes, with Ofgem actively encouraging cost reflective pricing (see Ofgem 2009a: 10). However, such a pricing strategy violates the ‘polluter pays’ principle and means that those who use less – including many fuel poor households – pay a higher average unit price. RBTs would reverse this structure so that the first units of energy were priced at a low rate (or even supplied for free), whilst energy use at higher levels would cost more, enabling supplier costs to be recouped overall. Effectively, essential energy use would remain cheap, while use that is more likely to be ‘optional’ would cost more. Baker and White conclude that such tariffs would be both more environmentally and socially progressive than the current tariff structure, though the extent of the improvement is somewhat dependent on the specific system structure (2008: 31). However, they register that although such tariffs are already common in parts of Europe, they require all suppliers to participate and so Government mandate would be required (2008: 29). Baker and White further emphasise that this type of intervention runs counter to the philosophy of economic liberalisation that underlies the current governance of the UK domestic energy market (2008: 31). The Hills Fuel Poverty
Review consideration of RBTs came to similar conclusions (2012: 122-124), and cited a piece of CCC-commissioned research by Hulme and Summers (2009) that modelled the impact of different RBT structures on 10pct fuel poverty, finding that under such a tariff regime, fuel poor households would be worse off. However, this finding rests upon Hulme and Summers’ assumption of energy use as required – rather than actual – in their modelling (2009: 11) and so, whilst they – and later Hills (2012) – conclude that RBTs would be regressive unless applied after consumption had been lowered via energy efficiency measures, it seems likely that in practice this would not be the case given that fuel poor households are actually likely to underconsume energy. Still, RBTs could create a difficult precedent by giving fuel poor households with high energy needs a financial incentive to keep their homes cold.

• Benefits Entitlement Advice

Chapter Five discussed Benefits Entitlement Advice (BEA), a form of guidance that allows individuals to check whether they are eligible for any state benefits that they are not currently claiming. The current take-up rate across all income-related benefits is between 77% and 84% (DWP 2012a: ii), and improving this might not only supplement incomes, but also potentially allow households to access fuel poverty-specific support such as CWP and WHDS, the eligibility for which is dependent on receipt of other benefits. Chapter Five offered examples of the successful delivery of BEA under Warm Front, Warm Zones, Challenge 100, and in Northern Ireland. All suppliers offered BEAs under the Voluntary Agreement activity (see Ofgem 2011b: 66-67); however, they have not been incorporated within supplier obligations, something that has been highlighted as a missed opportunity (see CAG Consultants, Ipsos MORI & Building Research Establishment 2011: 10). Currently, suppliers may choose to offer BEA under the Industry Initiatives element of WHDS, but in 2012/13 only 1% of the £22m expenditure was used to that end (Ofgem 2013j: 6). If BEA were to be expanded, it could feasibly be bundled with technical obligations, e.g., in requiring that it be offered to any household approached for delivery. However, the Challenge 100 final report suggests that energy suppliers may not be trusted with information relating to household finances (E.ON UK 2010: 51). This should be considered in the formation of any subsequent policy; it may be that separately
contracted provision, to which suppliers then refer, would make for a more appropriate model. However, expansion of BEA is likely to be unappealing to the coalition government given that increasing take-up would be a burden on the public purse, and possibly be viewed as at odds with stated goals of reducing welfare dependency (see Conservative Party 2010: 15).

- Charitable Trusts

In this context, Charitable Trusts (CTs) are those organisations that offer financial support to households struggling to pay their energy bills. At the time of writing, five of the Big Six energy suppliers have identifiable links with such trusts (see Charis Grants 2014a, E.ON UK 2014b) that, again, can qualify towards the Industry Initiatives component of WHDS. CTs can offer grants to support households that are in need, though negotiated cancellation of fuel debts (via links with individual suppliers) and the donation of energy efficient appliances have also been used. CTs are well placed to fill two particular gaps in the current provision of economic support. Firstly, via the provision of crisis loans or hardship funds so that households who find themselves suddenly struggling (e.g., because of redundancy) can afford essential costs. This function might be particularly valuable given that DWP have recently indicated that they intend to withdraw funding from local welfare assistance schemes designed to support those who face sudden hardship (see Butler 2014).

Secondly, in overseeing Payment Matching Schemes, sometimes christened ‘Restart’ schemes within the utility industry (see Auriga 2013). Under such schemes, customers who have found themselves in debt are asked to maintain a mutually agreed payment schedule for a predetermined period and, if they are successful, the supplier may cancel some or all of their debt, or offer another form of discount. Whilst there is little research on this support model, early work has indicated that it can be helpful in promoting trust in the customer-supplier relationship via a third party (the CT), particularly where that association is one of debtor-creditor (see Probert 2010: 92).

At present a single external contractor, Charis, operates the CTs for four out of the five suppliers (see Charis Grants 2014a) with only E.ON operating their Caring Energy fund in-house (see E.ON UK 2014b). Funding from suppliers will be
regressively raised, though at present the amounts involved are presumed to be fairly small. Using a third-party provider may be beneficial given that those accessing support may be wary about engaging with their creditors, and so be more comfortable dealing with an intermediary (applications for support often require that the individual divulge personal financial information; see, for example, Charis Grants 2014b). That said, suppliers are able to play a very useful role by engaging with such trusts, as they are positioned to cancel arrears directly, and to implement innovative Restart-style schemes.

- Improvements to Market Efficiency

Whilst it has been widely documented – including by Ofgem itself - that UK energy market is generally uncompetitive (see Platt 2012, OFT/Ofgem/CMA 2014), from a fuel poverty perspective the concern is whether inefficiencies are exacerbating underlying equalities to the detriment of those who are vulnerable, as opposed to affecting all households equally. Some of the reasons to believe this is the case were discussed in Chapter Two, including the additional charges imposed on those paying via prepayment meters, the potential that fuel poor households are subject to less favourable tariffs, and that those same households may be disinclined to switch or review energy tariffs. Improvements to the efficiency of the UK energy market are arguably slightly beyond the realm of this consideration, as they are not a ‘mechanism’ *per se*. However, they represent an economic means by which the impacts of high prices upon fuel poor households can be somewhat mitigated, ideally in a more enduring way than that which is achievable via more standard mechanisms.

In recent years, government has made some scattered moves to address and assess potential price differentials. These have included requiring that additional charges on prepayment meters be reflective of costs (by amending the Standard Licence Conditions, see GEMA 2014: 58), by incorporating the issue as a consideration of the Retail Market Review (see Ofgem 2013h), and through the Energy Prices, Profits and Poverty Commons Select Committee inquiry (see House of Commons Energy and Climate Change Committee 2013). However, a good starting point would be to gather quantitative data on real-world energy tariffs that could shed some light as to the scale of the problem (as may already be underway via the Energy Follow Up Survey, see
DECC 2012c: 10-11). This would support the development of an appropriate intervention, and the extent to which energy suppliers could be appropriately involved. Social tariffs have already been discussed in this section as a potential means of ensuring fuel poor or vulnerable customers were able to access the best available offers. Another option might be a campaign offering tariff advice to households who are likely to be fuel poor, possibly delivered in tandem with BEA. Under the Challenge 100 project, participants were offered tariff advice; however, whilst it is known that 58 of 102 participants took up the service, no data was made available as to the benefit gained (see E.ON UK 2010: 36-37).

- Collective Switching

Collective Switching (CS) refers to the arrangement whereby multiple consumers band together to negotiate better energy prices. The principle is that different suppliers can bid for the custom of the whole group, potentially gaining many new customers in one fell swoop whilst also saving the purchasers money. CS began to garner attention following the publication of a New Local Government Network (NLGN) White Paper by Scott-Smith (2011), which reported Dutch CS schemes as achieving average fuel bill reductions of around 20%, and suggested that LAs could spearhead similar initiatives in the UK. The idea was soon picked up by a number of LAs, including South Lakeland (see Bell 2013), Cornwall (see Cornwall Together 2014) and Greater Manchester (see Qureshi 2013). Additionally, a national-level not-for-profit-led programme, ‘The Big Switch’, received 287,365 sign-ups (see Which? 2014). DECC have since endorsed CS, publishing guidance for those looking to access schemes (see DECC 2013d), encouraging suppliers to cooperate (see Davey 2012), and launching the Cheaper Energy Together competition, which offered £5m funding in support of the establishment of CS programmes. In evaluating Cheaper Energy Together, DECC praised the success of winning schemes, reporting that they enabled over 21,000 households to save an average of £131 (see DECC 2013m: 21). DECC also noted the early successes of smaller suppliers in Collective Switching auctions (see DECC 2013m: 5). This is perhaps because CS represents a chance for such suppliers to gain a large group of new customers, despite lacking the marketing budgets and economies of scale available to the Big Six firms.
In principle, the notion of CS might be viewed as a relatively uncontroversial means of improving the competitiveness of UK energy markets – in which customers are notoriously ‘sticky’ - by creating a new impetus for households to switch supplier. However, there exists the potential for problems to emerge with regards to the situation for fuel poor customers. Most CS schemes – and DECC’s own literature – make reference to their potential to mitigate fuel poverty (see, for example, the very title of Scott-Smith 2011, DECC 2013m: 5). However, the literature review undertaken for this research found no published evidence evaluating the actual impacts of Collective Switching on fuel poverty. Furthermore, under the LIHC definition of fuel poverty, any collective scheme that lowered prices would have to help as many (or ideally, more) fuel poor households than non-fuel poor households, or risk exacerbating inequalities, and thus fuel poverty, further. This might seem to be a rather unnecessarily theoretical conceptualisation of the problem; arguably the most important thing is that the competitiveness of the market is improved, and that consumers benefit from lower prices. However, here the LIHC definition exposes a more problematic potential; that the savings received by those switching could be shifted on to the bills of households who do not participate. Should fuel poor households be adversely affected in this way, official statistics, which are based on modelled energy prices, would not register the issue.

The DECC review of Cheaper Energy Together reported that 11% of switchers across the various programmes reported annual incomes below £13,380 (DECC 2013m: 27) which tallies with the percentage of fuel poor in England as of the most recently published statistics (see DECC 2013h: 11): a positive indicator of the potential of such schemes (though a higher proportion would have been more progressive). Internet access could also constitute a barrier, with some of the largest CS schemes to date operating primarily via internet registration (see, for example, Which? 2014, thePeoplesPower 2014). This is particularly pertinent given the link between material deprivation and digital exclusion in the UK demonstrated by Longley and Singleton (2009). Whilst CS programmes could be designed to focus on fuel poor customers, there is a risk that suppliers may be disinclined to bid for their custom, perceiving that group of consumers as undesirable and at higher risk of default because of their income status. Indeed, it may be that some CS schemes might be more appealing to suppliers than others because of the types of customers included (i.e., schemes run by
Local Authorities in wealthier areas where houses tend to be larger), further weakening the benefit of such schemes for fuel poor customers. A well managed, appropriately targeted CS programme could go some way to countering the reluctance of low income customers to engage with the market. That said, the risks identified here suggest that it would be wise to proceed cautiously in case fuel poor customers are, unnoticed, bearing the brunt of savings enjoyed by wealthier participating households.

7.2.4 Policy Constraints

As with technical measures, both the state and energy suppliers have (and in this case, currently do) deliver economic interventions. It is therefore apparent that there are no substantial physical or legal blocks to either approach being applied. Furthermore, delivery of economic measures is inherently more straightforward, and is not subject to any sort of target, removing the incentive for government to apply the type of ‘stick over carrot’ approach that is used to drive installation of energy efficiency measures. Supplier obligations to deliver economic measures are a comparatively new endeavour, with WHDS commencing only in April 2011. Taken together, the evidence presented so far indications that suppliers are, on balance, poorly suited to the delivery of economic interventions; they have no particular ability to ensure measures are appropriately targeted (though there may be some scope to improve this, as discussed in section 5.2.3), the manner in which they finance delivery is inherently more regressive than a tax-based method, and – unlike with energy efficiency interventions – there is no significant way in which they can be feasibly expected to achieve greater delivery efficiency via a competitive delivery model. Whilst it might be argued that rebates are a more effective means of ensuring funds are spent on energy bills than simply giving cash to households, this is suspiciously inconsistent with the broader anti-paternalism trend of coalition welfare policies such as Universal Credit. It might also be argued that rebates reduce energy costs (as opposed to supplementary benefits, which increase income), and so are more consistent with LIHC fuel poverty alleviation; however, in practice this is effectively a definitional issue. Perhaps the most compelling argument for rebates is that they enable a means of delivering economic support to those not in receipt of state benefits, countering a
persistent targeting problem identified in Chapter Five. However, no indication is
given in any of the policy documents reviewed that the government recognises this
strength of that model, and at present WHDS remains primarily directed at benefits
recipients anyhow.

Given the apparent inferiority of energy company-led delivery of economic measures,
the obvious question is; why introduce an economic supplier obligation? Examination
of policy documents undertaken for this work illustrates that, once again, the
constraints directing action are primarily political and economic. The clear precedent
for the WHDS was the Voluntary Agreement that ended in March 2011. Spending
under this agreement was lower than under WHDS, and was primarily disseminated
in the form of social tariffs (see Hough, Bolton 2012b: 11-13). However, in light of
criticisms of the coverage of the Voluntary Agreement, government opted to make
supplier delivery of economic measures an obligation via the Energy Act 2010 (see
Smith, Smith & Gore 2009). It is very clear from policy documents that WHDS was
intended as the successor of the Voluntary Agreement and the one-off 2010 Energy
Rebate Scheme, cementing functions that were previously optional under both (see
DECC 2010a: 15, DECC 2011h: 10, DECC 2011f: 11, Hough, Bolton 2012b). In
assessing policy options, the WHDS Impact Assessment considers only voluntary
supplier activity against mandated delivery, and does not consider an option whereby
a similar level of support was instead delivered by the state (DECC 2011f: 1). Whilst
consultation respondents did question whether a state-funded scheme would be more
appropriate, DECC’s response was simply to say that that they felt suppliers should
play a role, and took participation in the Voluntary Agreement as confirmation that
companies concurred (DECC 2011h: 9). There are clear reasons to believe a
government – particularly one focused on austerity politics – might not want to
introduce a new state economic obligation, some of which have already been
discussed; additional cost, potential for failure, and lack of electoral capital in tackling
fuel poverty. WHDS represents an alternative approach that it is easy to imagine
appealing to government as it makes it appear that they are being tough on suppliers
(who are often poorly regarded by the public), but requires only fairly light touch
regulation of a scheme that is comparatively straightforward, being based primarily
upon rebates. WHDS is a way for government to appear to be doing something to
offer help to fuel poor households in the short-term, even if the evidence suggests that it is not the best use of resources. It might also be taken as another example of path dependency; government choosing simply to adjust, enforce and streamline existing activity, rather than design a new programme from scratch.

In considering technical measures, it was suggested that supplier obligations have progressed far enough along a set ‘path’ – having developed supply chains and a market for achieved savings, and with suppliers accustomed to the model – that the disruption of change would make policy adjustment undesirable. The initial phase of WHDS is set to last for four years, and it is hard to argue that its ‘path’ is truly entrenched, particularly given that there are concurrent state-led programmes running, and economic measures delivery model is inherently less complex, involving no supply chain or market. If the supplier-led model is indeed less effective in achieving the policy’s stated goal of fuel poverty mitigation, the March 2015 end of WHDS would provide an apposite point for reassessment, i.e., a ‘critical juncture’ at which alternatives models – including state-led options – might be considered. This could also be taken as an opportunity to address broader issues with economic schemes, for example; reassessing the poorly targeted expense of WFPs\(^\text{172}\); uniting DWP and DECC in considering how economic policies can achieve effective coverage; clarifying overarching intentions (e.g., via specific targets) within a broader policy ‘road map’; potentially considering some of more ambitious proposals of the type advocated by Ekins and Lockwood (2011), whereby receipt of technical and economic measures interact to ensure subsidies intended to tackle fuel poverty are provided only to those in inefficient homes. However, government are likely to be reluctant to undertake such an evaluation, firstly because it is likely recommend a state scheme that would be undesirable to them for the reasons outlined above. Secondly, because – as WHDS is not quantitatively monitored or subject to any target – it is easier to call the policy effective and follow the path of least resistance: inertia.

\(^{172}\) WFP has arguably demonstrated a creeping path dependency of its own, as the minimum payment has increased tenfold over time without external reassessment (see Kennedy 2013b: 8).
This chapter has examined the policy mechanisms by which the state and energy suppliers deliver both technical and economic fuel poverty interventions. With regard to energy efficiency measures, distinct differences have been identified between the two; supplier-led delivery occurs within a well-established market of ‘white certificate’ obligations, whilst state-led delivery to date has only been via the straightforward purchase of measures by a single designated subcontractor. Commercial confidentiality has resulted in a dearth of data on the costs of previous delivery that – along with the limited examples of each mechanism – makes it difficult to effectively compare efficiency. However, it seems plausible that supplier obligations would result in energy companies striving to deliver measures as efficiently as possible, given the high costs of delivery, and the link between cost-effectively discharging obligations and increased profits. Certainly, fulfilment of obligations has been largely successful, likely due in no small part to the ‘stick’ that government have at their disposal in enforcing compliance, i.e., fines of up to ten per cent of global turnover. Supplier obligations also have the political advantage of distancing government – and the treasury – from a costly, involved activity. The alternative considered here, a new state-led market similar to that currently underlying welfare-to-work provision – would be subject to an establishment process that is likely to be both drawn-out and difficult, and with a high risk of failure. And so, whilst it is possible that a state-led market would be more effective in terms of fuel poverty reduction (because the attached funding method should be more progressive), this chapter has argued that it seems unlikely that government would pursue such a model, particularly given the political and economic climate.

By contrast, the ways in which the state and suppliers deliver economic measures have been shown to be much more similar, particularly given the increased emphasis on straightforward rebates as the medium of support. The choice of delivery vehicle could raise concerns with reference to the paternalism of rebates, or the lack of access to state supplements faced by those who are low income but not on benefits. However, the first issue is out of step with broader coalition policy with regard to personal responsibility and the latter could be surmountable (e.g., via labelled tax credits or vouchers). In this context – given the regressiveness of funding measures
via bills, and problems faced by suppliers in targeting – it is recommended that WHDS should be discontinued when the current phase is over. Furthermore, it is suggested from a review of the available literature that some alternative models of economic support could prove valuable to fuel poor households. Whilst Ofgem has rejected social tariffs as non-compliant with the ‘polluter pays’ principle (and so are being phased out), Rising Block Tariffs would seem worthy of further consideration, certainly as energy efficiency levels increase, though these would require regulatory intervention to be enacted. Collective Switching should be treated cautiously as it has the potential to exacerbate inequalities, but current literature indicates that Charitable Trusts, Benefits Entitlement Advice and advice on energy tariffs all offer value to fuel poor households. However, delivery of these is minimised under the current structure of WHDS (see Figure 7.6). Energy companies may not be the most appropriate agents to deliver these more complex interventions given the significant potential for conflicts of interest, and consumer distrust of suppliers. However, they can play a valuable role, for example, in facilitating Restart schemes and referring customers for BEA.

This chapter ends the part of this thesis that is focused on comparing the manner in which the state and suppliers manage the different elements involved in delivering fuel poverty mitigation schemes. The next chapter will integrate the conclusions drawn to provide a response to the overarching research question, critically examine overall findings and the contribution made, and offer recommendations based on this work, both for policy, and for future research.
Part Three
After close to a decade of stagnancy in fuel poverty policy, this research coincided with a period of crucial change. Whilst the specifics of delivery remain in flux, there has been an undeniable shift towards government holding energy companies accountable for the delivery of fuel poverty mitigation activity. Energy suppliers are now responsible for primary delivery of energy efficiency measures to low income households, and for the first time have been mandated to deliver economic support. This research set out to analyse the implications of this transference with regards to the policy goal of fuel poverty mitigation. The evaluation approach adopted has been to compare supplier and state delivery of current and previous fuel poverty mitigation programmes. A pragmatically mixed methodology has been applied, incorporating analysis of policy via documents, quantitative analysis, synthesis of existing literature, and interviews and engagement with energy industry professionals. These approaches have been combined as a means of exploring the efficacy of emergent policies, and identifying, as far as possible, relevant policy constraints.

This chapter concludes the thesis by drawing together the findings to provide a response to the overarching research question, ‘what role is appropriate to the energy supplier in alleviating fuel poverty?’ The opening section gives an overview of findings, addressing the overarching research question, aims and objectives supplied in section 3.2.1. The second section then elucidates the core argument of this work: that energy suppliers have been designated as primary delivery agents for fuel poverty policy, not because they are the most appropriate agent, but because they are, economically and practically convenient. The third section discusses the two main identified limitations of this work, which pertain to restrictions in access to data, and potential constraints as to the extent that the LIHC definition can represent the real-world experiences of households that are struggling to afford energy. The penultimate section outlines the contributions of this work, to current understanding of fuel poverty policy, to broader theory, and methodologically. The chapter then closes by delineating the key recommendations drawn from the results of this research, in terms of suggested improvements to fuel poverty policy, and of possible avenues for future research.
8.1 Overview of Findings

The structure of this research was aligned with the identified policy process (see Figure 3.3), with mixed methods applied pragmatically to compare the probable implications of delivery agent choice on fuel poverty levels, taking into account policy constraints (as described in Table 3.2).

Chapter Four examined the fuel poverty policy process, with a particular focus on the initial aims of government, as established via WHECA. Analysis of the Hansard debates determined that politicians did not appreciate the scale of the commitment they made in passing that legislation. However, WHECA was further undermined by the ‘practicability clause’, which effectively removed the legal constraint on government with regards to fuel poverty eradication. These factors together, it is argued, have motivated and facilitated government in moving incrementally towards a supplier-led delivery model of a type that was never anticipated when WHECA passed. Document analysis suggests that fuel poverty has been gradually subsumed into the larger, more politically demanding, goal of carbon mitigation, which is largely delivered by supplier obligations. The targets, milestones and metrics that politicians were so eager to embrace when WHECA passed were effectively immediately abandoned. Indeed, if they had been maintained when the UKFPS was written, the resource requirements might have been clearer from the start.

Chapter Five considered the differing ability of the state and suppliers to effectively target and identify the presumed target group, fuel poor households. Initial examination of policy documents highlighted that even policies ostensibly aimed at reducing fuel poverty rarely evaluated success in reaching this target group, and quantitative analysis of EHS datasets showed that current criteria are extremely inefficient in this respect. It was subsequently demonstrated via literature review and interviews that suppliers are comparatively poorly placed to both identify fuel poor households, and those meeting government-endorsed eligibility criteria. Whilst the government is able to compel suppliers to seek out households, energy companies do not have the necessary data, e.g., on incomes, benefits receipt or housing quality. By contrast, the state does have access to much stronger data, but tends not to exploit it,
opting for more ‘passive’ methods of identification such as benefits supplementation. As a result of this policy approach, energy suppliers spend what is believed (though the data available is limited) to be significant resources in meeting their obligations, with the competitive nature of the model driving duplication of effort. Energy consumers will pay the resultant costs via bill increases. On these grounds, it is recommended that the state intervene to centralise identification functions.

Chapter Six turned to programme funding. Here, the divide between suppliers and the state is stark; suppliers fund programmes through levies, whilst the state use Exchequer funds, collected by taxation. A process encompassing literature synthesis and meta-analysis estimated that the cost of raising all viable LIHC dwellings to an average SAP rating of 69 would be £57.9bn, which would take one hundred and twenty five years to complete at current ECO spending rates. However, the impact of this spending would be dampened under a supplier-led delivery model, as policies would be funded via energy bills, which are comparatively income inelastic. This has regressive implications, with those on the lowest incomes – many of whom would be fuel poor and not in receipt of measures - paying the most.

It was further demonstrated that there is additional negative distributional effect affecting customers in fuel poverty, with those in the deepest fuel poverty paying the highest proportions of their income under a levy funded system (though the relationship was more complex when a tax funded policy was considered). One way to mitigate such effects would be simply to raise more money, but then subsequently spend enough to cancel out the costs more quickly, i.e., a more aggressive campaign of redistribution of the sort proposed by Energy Bill Revolution. However, it was argued that in view of the current level of ambition towards fuel poverty mitigation, this would seem unlikely. The use of levies (rather than taxes) to fund programme delivery is undoubtedly worse for fuel poverty, but does offer government the further political and economic incentives of keeping expenditure away from the public purse and restricting state involvement.

Chapter Seven analysed the differences between the state and energy suppliers in terms of delivery models used. With respect to technical measures, a ‘white certificates’ market has been created around compliance, and suppliers are compelled
to deliver volumes of savings, or else face fines. By contrast, the state is likely simply to buy in measures via some form of procurement. There is an assumption that suppliers have an incentive to deliver at a lower cost; however, there is insufficient evidence to establish the extent to which this might work in practice. The fact that the state is able to legally compel suppliers to delivery enables it to be more demanding with regards to targets, and supplier obligations have been fairly successful to date. Furthermore, the supplier obligation model has the not-inconsiderable advantage of being already in place, and in placing delivery – and, by extension, the risk of failure – at a distance from government. Economic measures are more straightforward, in that (with some minor differences) the fundamental form of the intervention is effectively the same under either delivery agent, and there is little potential for efficiencies to be achieved. As such – in view of the fact that suppliers struggle to target households, and fund measures regressively – there is no compelling reason to retain the recently introduced supplier economic obligation.

8.2 Contention of Work

This work responded to the overarching research question, ‘what role is appropriate to the energy supplier in alleviating fuel poverty?’ That question assumes that somebody has a role in alleviating fuel poverty and – as explained in section 3.1.2 – this is taken to have been established through WHECA, which made fuel poverty eradication a legal responsibility of the state. However, as established in sections 4.2.3 and 4.31, the law contains a significant loophole that weaken its effect and mean that, in practice, government can meet their legal requirement simply by making minimal effort to tackle fuel poverty. As a result, in the absence of an effective mandate, government have opted not to tackle fuel poverty in any concerted way, but simply to include an imprecise focus on low income households within larger, pre-existing supplier obligations aimed chiefly towards carbon mitigation.

In all the literature reviewed whilst undertaking this research – policy, grey and academic – never has any policymaker been cited as disagreeing that fuel poverty should be tackled. Whilst those on benefits have been the target of rhetoric that divides the population into ‘scroungers’ and ‘strivers’ (see Jowit 2013), such (highly questionable) judgements seem not to have been handed down to fuel poor
households. This is perhaps because, firstly, many older people (a valuable voting bloc) are fuel poor, certainly under the 10pct definition. Secondly, because of the confounding factor of housing quality as a determinant of fuel poor status, it is perhaps harder for politicians to cast aspersions and imply shirking of responsibility when it is so indisputably evident that the English housing stock is aging and inefficient. Furthermore, it is hard to believe that it is beyond the ability of government to take steps to tackle to problem; section 6.1.3 estimated that the cost of upgrading, where necessary, the dwellings of all 2.3m currently viable fuel poor households to SAP 69 – even assuming 73% leakage and 20% management overheads – would be £57.9bn, which would need to be spread over a number of years due to supply chain constraints. While this might seem an enormous amount of money, consider that in 2011/12 alone, £2.2bn was spent on WFPs, of which it is estimated that upwards of 90% went to non-fuel poor households (see Kennedy 2013b: 29, section 5.1.2). If government spending on fuel poverty in the first decade post WHECA had been commensurate with the £23bn spent on WFP in that period (Kennedy 2013b: 29), the problem would be closer to solved.

Given that it is possible to make significant inroads in tackling fuel poverty, the clear follow-up question is: why hasn’t this been done? The only apparent answer would seem to be a lack of political willpower to do so. Of all the policy constraints examined within this work, political constraints have been arguably the most consistent and most significant. This disinterest is even more jarring given the focused, technocratic policy community that exists around fuel poverty as a policy issue (see section 2.4.5). The lack of government commitment to fuel poverty is likely the product of a number of factors: political short-termism (see Oxford Martin Commission 2013); a lack of ‘electoral capital’ in the issue; that the benefit is somewhat confounded by the medium, i.e., the benefit of provision of insulation is less clear than, for example a equivalent cut to income tax. The commitment to tackling fuel poverty was undoubtedly lacking under the Labour government (see section 4.3.4); however, it seems to have deteriorated further since the election of the austerity-focused coalition government. Ambition towards energy efficiency more generally has fallen substantially under the Green Deal and ECO set of policies (see Figure 2.6). Essentially, the type of action required to reduce fuel poverty – a significant annual expenditure, ideally with focused state input to improve targeting
and reduce regressive impacts – conflicts with the coalition’s core goal, to “achieve cyclically-adjusted current balance” (HM Treasury 2010a: 1). The change to the definition and closure of Warm Front are not coincidence; both were included in that first spending review, with the specific aim of reducing public expenditure (see HM Treasury 2010b: 62). Shortly after election, David Cameron declared he wanted “the greenest government ever” (see Randerson 2010). Three years later, however, he was quoted as wanting to “get rid of all the green crap” (i.e., policies like ECO) from energy bills (see Mason 2013) as a means of bringing down prices before the election. Whilst the latter statement was not made in public, it seems representative of the approach taken by the coalition to date.

Where successive governments have been successful – intentionally or otherwise – is in ‘muddying the water’ to the extent that it is difficult to clarify where problems are occurring (and so difficult to research, as will be discussed in section 8.3). Whilst annual statistics (but no strategy updates) continue to be released, there is no ‘road map’, no clarification of the effect individual policies are intended to have, who they are meant to target, or why. More information would, at this stage, simply be more detail as to where government has fallen short. Here, there are parallels with the government’s other poverty eradication target, the commitment to end child poverty made under the Child Poverty Act 2010 (see Brewer, Brewer & Joyce 2011, Dickens 2011, Piachaud 2012). Fuel poverty has emerged as a policy goal that requires more resources than governments have been prepared to commit, now an expensive policy objective inherited by an austerity-driven coalition government. Once a law has been passed, it takes another Act of Parliament to revoke it; this is not an easy process, and one that would draw further attention to the problems. As such, governments have appeared to go for the next best option: obscuring the lack of progression as far as is possible within the requirements of the law.

Grafstein (1988) argues that the constraints imposed by political institutions have an inherent circularity; governments both create laws, and are subject to them. In the case of fuel poverty, the legislation was poorly constructed and ill informed, and government are left in the position of having to abide by the product of their own mismanagement. Approaching the issue from a policy analysis perspective, it is evident that fuel poverty policy has failed from the top-level statistics alone (see
Figure 1.1), and there are clear deficiencies with regard to both the management of policy (see section 4.4.1) and in dedicating sufficient resources. These shortcomings have been in place since the UKFPS was released thirteen years ago; they are not new. As such, it is argued that government have never tried in any meaningful sense to eradicate fuel poverty. Ideally government would have taken meaningful action from 2000, but they never did. Instead, they have moved towards outsourcing that responsibility to delivery agents who are, this thesis has posited, ill suited to that task.

So, to return to the overarching question of what role is “appropriate” to the energy supplier in fuel poverty policy – if the intention of policy is to alleviate fuel poverty, the answer is: a minimal role. However, if the goal is to handle fuel poverty policy in the most politically advantageous way, cutting costs and keeping it at arms length, minimising risk, while still appearing to make some nominal effort to address the problem, suppliers clearly have something offer.

8.3 Research Limitations

Whilst every effort has been made to ensure that this work has been as comprehensive as possible within the natural limits of a thesis, inevitably there are some limits as to what can be concluded from findings. Numerous approaches would have been viable in addressing the overarching research question (see section 3.2.1 for justification of selection), and some of these are discussed in section 8.6.2 as possible routes for future research. However, two key limitations were encountered in taking the particular route selected here, and had an impact upon the final output.

- Inaccessible Data

The most prominent limitation was in accessing relevant data. As established in section 3.4.5, information on the internal working of energy suppliers is extremely difficult to access – even with E.ON UK as project sponsor – because of concerns around commercial confidentiality. Whilst this was understood as a barrier from the outset, it became apparent as the project progressed that government effectively present a further obstacle to data access. Only the state, with its legal authority, can compel suppliers to release data on their performance under obligations. Whilst government have a duty to ensure that confidentiality is sufficiently protected so as to
ensure markets function well, there are instances where doing so is in the public interest. It would appear that government have recognised that this is the case with regard to data of supplier obligation delivery, as anonymised information on ECO fulfilment costs is now available (see, for example, DECC 2014c: 27). This format protects individual suppliers, whilst enabling external stakeholders to assess performance. This helpful development should be applauded, but it comes only after two decades of supplier obligation delivery. As speculated in section 8.2, it may be that government have opted to not make data public because it reflects poorly on policy (i.e., in making the burden on bills transparent). Whatever the reasoning, the first twenty years of delivery represent a lost opportunity to understand the cost implications of supplier obligations, and now we find ourselves in a situation whereby energy companies are the main delivery agent. For the purposes of this project, it would have been possible to gain a much clearer picture of the implications of the shift with better data – both quantitative and qualitative – for example, on the costs of delivering given measures under Warm Front versus average supplier delivery, or with validated supplier data on the costs of targeting measures to compare with state programmes. It is difficult to have an informed discussion about policy options when information is so hard to come by, and it is worth questioning whether poverty reduction policy, particularly, should be impeded by efforts to sustain commercial confidentiality.

- Understanding Everyday Impacts

The second limitation relates to the extent to which this research can be said to assess the true implications of delivery agent choice for those living in cold homes. As justified extensively in section 2.1.4, the Hills definition was used as the key metric in this work because it is set to become the manner in which government assess policy, it is held to be more appropriate that the 10pct definition, and it considers fuel poverty as an inequality (i.e., relative), in line with current consensus on poverty measurement. However, whilst all of this may be valid, the available evidence suggests that objective measures of fuel poverty do not align with the perceptions of households, e.g., they often tend to consider themselves fuel poor when they do not meet the definition, or vice versa (see Waddams Price, Brazier & Wang 2012). Furthermore – as considered throughout this work – assumptions about energy tariffs
and consumption are often inconsistent with the reality. This work has effectively assessed whether the state or suppliers are better at complying with the goals of policy, under those specific assessment conditions prescribed by government. It is important, then, to recognise the limitation that this doesn’t necessarily correspond to an assessment of whether the state or suppliers are better at delivering a situation that will result in more people feeling they are able to keep warm affordably. As such, there remains a risk that policies won’t address that core issue.

Despite these recognised limitations, this work offers a valuable contribution in exploiting what data is currently available to evaluate government policy via its own yardstick. It is hoped that future research will be able to build on this work, assessing policy approaches via improved data and an increasing understanding of the problem.

### 8.4 Contributions of Work

The broad contribution of this work is in applying mixed-methods to offer a novel comparative analysis of the potential for the state and energy suppliers to effectively support fuel poor households, taking into account motivations for policy choices. In doing so, this work combines two topics that have rarely been explicitly considered together. Firstly, fuel poverty, on which there is a growing literature, but little work exploring the issue from a more political or social policy-led perspective. Secondly, the role of markets in delivering social welfare service, on which there is a significant literature (e.g., Taylor-Gooby, Lawson 1993, e.g., Gingrich 2011) but no work yet considering the (comparatively recent) growth of the private sector in addressing fuel poverty. This work has developed an original argument that the use of supplier obligations is effectively a ‘get-out clause’ for a government disinterested in fuel poverty, rather than a considered policy approach. In doing so, the link between politics and policy failings has been made explicit. The scope of this work also positions it as a contribution to a growing body of ‘austerity literature’ (e.g., Yeates et al. 2011, Levitas 2012) that examines the implications of the policies of the coalition government upon welfare.

Subsidiary contributions of this work are as follows:
• An in-depth analysis of the process by which *WHECA* was passed established the disparity between the intentions of politicians and the interpretation of that legislation. It was further identified that suppliers were not originally intended as delivery agents and – via further document analysis – the incremental manner in which they have been drawn in, culminating in full responsibility for delivery of technical measures under ECO.

• Quantitative assessment of the targeting efficacy of schemes currently in operation, including the most recent set of programmes. The implications of this for misdirection of spending were demonstrated.

• An evidenced assessment of the ability of the state and suppliers to target and identify households established the different data available to each agent. This included a full review of data sources available to government with the potential to improve efficacy. The notion of active and passive targeting – a core difference between state and supplier delivery – was introduced.

• A systematic review of literature relating to the costs of energy efficiency established that there is enormous variance in estimations, and catalogued the identified sources of uncertainty that could cause discrepancies.

• Meta-analysis was used to establish a first known estimation of the potential costs of tackling LIHC fuel poverty.

• The distributive effects of levy- and taxation-based funding were considered according to depth of LIHC fuel poverty gap.

• The implications of three different delivery models were analysed and discussed with regard to the goal of fuel poverty alleviation. The models evaluated included a previously unconsidered model favoured by the coalition government in other domains, Payment-by-Results.

• The potential for alternative economic interventions was considered, including some measures that have not previously been fully explored with regards to implications for fuel poverty, e.g., collective switching and ‘Restart’ schemes.

This research also offers a methodological contribution, in the application of policy constraints as a tool of comparison. A set of policy constraint classifications, based largely upon those proposed by Dunn (2012) was selected as an explanatory device within analysis. Dunn’s suggested application was to real-world policymaking, as a
means by which the limits on policy could be catalogued. Here they have proved useful as a means of differentiating between the positions of the state and suppliers, enabling underlying dynamics to be effectively considered. That said, consideration of fuel poverty policy constraints could have a practical value, given that one way of improving policy may be to see where said constraints could be ‘loosened’. For example, if the legal constraint on access to Pension Credit data were loosened, identification of eligible households might be improved.

Given the inherent pragmatism of policy, this work is consciously devoid of theory, though Pierson’s (2000) account of path dependency, and theories of the policy process (e.g., Hogwood and Gunn (1984)) have proved valuable to analysis. That said, the use of policy constraints as an explanatory tool has clear links to concepts used in governance theory, for example, the work of Ellen Immergut on institutional constraints (e.g., Immergut 1998, 2006). A key contribution of this work is in beginning to apply a similar theoretical approach to fuel poverty as a policy area, and one that is particularly interesting given the growing requirement that private industry participate in a system which is delivering social welfare functions via a governance approach that is increasingly regulatory.

8.5 Final Recommendations

The recommendations ensuing from these research findings fall into two sets; recommendations aimed towards policymakers, with a view to supporting improved delivery, and recommendations of potentially fruitful avenues for future research.

8.5.1 Recommendations for Policy

As befits a work of policy analysis, the primary recommendations of this work relate to ways in which the current approach could be adapted to better meet declared goals (i.e., the mitigation of fuel poverty) and in some instances, ways in which government might consider amending these goals to encourage outcomes that are closer to presumed intentions. The overall indication is that the state are the delivery agent best suited to fuel poverty alleviation; however as already discussed in section 8.2, there are reasons – primarily political – to think it unlikely that the role of government will
be significantly expanded in the near future. Assuming, then, that the overarching model will remain broadly similar to the current configuration, the following changes are suggested as having the potential to improve outcomes.

• Policy Monitoring

Fuel poverty policy has been plagued by monitoring issues almost since WHECA was passed, as detailed in section 4.4.1. In section 8.2, it was argued that these should not be assumed to be the product of negligence or incompetence, but that it is more likely an indication that the level of ambition is so low by comparison with the target set as to render the evaluation process ineffectual. Accordingly – given that raising the ambition of government with regards to fuel poverty is not something that can easily be accomplished – a first recommendation is that government should produce a more workable target, one which is achievable within short enough timescales that politicians cannot disown the commitment, and based on a considered assessment of the likely costs of activity, availability of expenditure, and the technical capacity of the energy efficiency industry. The obvious risk is that a new target would shift the goalposts too far in the opposite direction, resulting in unambitious policy. This would appear hard to avoid if those setting targets are the ones expecting to have to meet them; however, risks could be alleviated by an effective and transparent consultation, particularly given the enthusiasm of the policy community to participate in similar processes previously (see Hills 2012: 178-179, DECC 2012j: 7-8). Introducing a new, more achievable, target would make it harder for a government to justify – legally and politically – any failure to comply, and political attention could give the issue a renewed prominence. The WHECA legislation is amenable to considerable adjustment via secondary legislation (see section 4.2.2), but its retention would preserve those loopholes that have proved problematic (see section 4.2.3). The ideal would be to remove these, however, it seems highly unlikely that government would move to introduce new legislation that would be more demanding.

The process of developing a new target should incorporate extensive consideration of the resources required in meeting that objective, so as to avoid pitfalls encountered in the first decade of fuel poverty policy. This should then be developed on an ongoing basis, accounting for changes (e.g., to fuel pricing) that could impact chances of
success. Developing and introducing in supplementary consensual or subjective measures of fuel poverty could further provide a valuable counterpoint to the Hills definition, particularly in addressing some of the definitional eccentricities of that measure and its operationalisation (see discussion in section 2.1.3, also Moore 2012, ACE, CSE & Moore 2012, Gordon 2014). Ideally, a quantitative road map of the sort endorsed by FPAG (see FPAG 2009: 5) could be used to model and assess the impacts of measures on the fuel poverty gap. This should consider the long-term impact of energy efficiency measures, but also the more temporary influence of economic measures. Whilst the latter do not represent an enduring answer to the problem of fuel poverty, there is a risk this means that researchers and policymakers overlook them; there is certainly less literature relating to economic measures than to technical solutions. However, given that a UK housing stock that is fully insulated against fuel poverty is years – if not decades – away, it is crucial that economic policies work effectively in combination, not as ineffective and somewhat piecemeal stopgap. For example, it is suggested that policies tend to be targeted overwhelmingly towards particular groups (e.g., Pension Credit recipients), and the impact of those in combination is not considered in any policy documents identified by this work. Now is perhaps a particularly opportune time for such a review given the planned shift to Universal Benefit, which will change the nature of the types of benefits that are currently used to target economic fuel poverty interventions. The JRF (2014b) have recently suggested that the Office for Budget Responsibility, an independent advisory body of UK government, should be tasked with external monitoring of income and child poverty policies, and such a function could also prove valuable for fuel poverty.

In summary, the recommendations for policy monitoring are as follows:
• Government should work with the fuel poverty policy community to establish a new fuel poverty policy target which is achievable, yet demanding.

• A ‘road map’ should be developed which lays out in detail, including quantitatively, how this will be achieved (i.e., taking into account expected targeting efficacy of policies, anticipated volumes of delivery).

• Progress towards the target should be stringently and consistently monitored, via quantitative metrics where possible. Introduce supplementary consensual and/or subjective measures for inclusion in official reporting. Any barriers that arise in complying with targets must be accounted for in annual revisions to the road map.

• The road map should also consider how economic policies can serve effectively as short-term support for fuel poor households, particularly how they can achieve effective coverage in combination with technical interventions.

• Improved Targeting

Chapter Five identified that the current means of targeting fuel poverty policies are inefficient both in terms of achieving coverage and in avoiding leakage (see table 5.2). This is potentially extremely problematic, both in terms of successfully reaching the households that are the object of policies, and in ensuring funds are effectively disbursed. Hills’ analysis found that the efficiency of targeting had a significant impact on policy outcomes, with only ‘narrowly focused’ archetypes succeeding in reducing long-term fuel poverty (see 2012: 169).

The initial problem identified by this work is a lack of clarity in terms of the ‘target group’ of policies (see section 5.1.3). Policy documents emphasise a focus on the overlap between vulnerability and low income (DECC 2011h: 5), but the definition of vulnerability used encompasses 73% of the population (see section 5.1.3), with no prioritisation. This is particularly problematic with regards to WFP, for which every individual over sixty-three years of age is eligible, but of whom 93% are expected not to be fuel poor (see table 5.2). It would seem advisable to develop a rationale for these decisions, and to understand where true vulnerabilities lie. For example, it is notable that 82% of EWMs occurred amongst those aged 75 and over (ONS 2013e: 2) (see
DECC 2013i: 8-9). There is also limited evidence on the impacts of cold homes upon children (see section 2.3.2); a full review of the thermal comfort needs of a range of vulnerable groups could support better policy monitoring. If government remain keen to retain WFPs for political reasons (see section 5.4.1), it may, then, be appropriate to relabel it as a pension supplement.

Having established an effective targeting strategy, the next step is to establish how these groups might best be reached. The findings communicated in Chapter Five indicated that suppliers are poorly placed – by comparison to the state – to do this, due to a relative dearth of information, and a required ‘active’ identification process that results in significant duplication of effort (see sections 5.2. and 5.3). Three adaptations were proposed as offering the potential to improve the situation; these comprised (in increasing order of difficulty) increased data-matching provisions, improved geographical targeting, and the establishment of a Fuel Poverty Data Observatory (see section 5.4.2).

In summary, the recommendations for improving targeting are as follows:

- Clearly identify and communicate which households fuel poverty policies are intended to support (i.e., additional vulnerable groups). This should be evidence-based, and not limited to older people.
- Where necessary, establish how policies might be effectively focused on those in need, e.g., via appropriate eligibility criteria, adaptations to policy evaluation process. In particular, it seems likely that Winter Fuel Payment will need to be reassessed.
- Review means of improving identification, particularly where energy suppliers are to continue to play a role in delivery. Suggested enhancements include increased sharing of benefits data with suppliers, development of more sophisticated geographical proxies, and the establishment of a dedicated Fuel Poverty Data Observatory.
• Exploration of Alternate Funding Mechanisms

Chapter Six demonstrated that energy bill levies are an inherently more regressive means of funding policies than income taxation. Whilst a more ambitious policy approach (such as that endorsed by supporters of the Energy Bill Revolution campaign) could offset regressive impacts, it seems unlikely that a government focused on austerity would embrace a programme of this scale (see section 6.3.3). Further consideration goes beyond the scope of this work; however, it is suggested that a less regressive means of funding supplier-led delivery of energy efficiency measures would considerably increase the impact of schemes like ECO in supporting fuel poor households (or at least, not overly negatively impacting upon those who do not receive support). This is no straightforward proposition; the fact that suppliers are expected to fund measures as a cost of delivery is the incentive for cost-effective delivery that drives supplier obligations. It may be, however, that there is some way in which a taxation-funded part-subsidy could be given to suppliers, so that some of the competitive motivation remains (albeit slightly diminished), but some of the regressiveness is lessened.

The recommendation made, then, is as follows:

• Investigate whether any means of funding measures could be devised that would lessen regressive impacts, whilst still incentivising cost-effective delivery, e.g., some level of part-subsidy for suppliers.

• Reconsidering the Warm Home Discount Scheme

As argued in the conclusion to Chapter Seven, there are numerous reasons why supplier obligations might appeal to government as a means of delivering technical measures, not least that the model is so deeply entrenched that to change it would introduce significant political risk. As a result, despite the potential unsuitability of obligations as a means of tackling fuel poverty (e.g., because of regressive funding methods), change seems unlikely at this point. However, such constraints do not exist
for economic measures; WHDS only launched in 2011, and so economic supplier obligations are a relatively new phenomenon. As explored in section 7.2.1, supplier delivery offers no inherent benefit over state delivery; indeed, the benefit is likely limited by the regressive nature of funding. DECC’s impact assessment for WHDS indicates that they expect the scheme to be progressive, as the broad impact of what is effectively a cross-subsidy is predominantly in favour of low income households (see DECC 2011f: 24, also Baker 2011: 16). Regardless of any the political desire to keep expenditure away from the public purse, it is recommended that funding of WHDS should be transferred to the state when the current cycle concludes in 2016. It would then be possible to have the scheme continue as currently, but with government transferring money to suppliers with which to make the payments. Alternately, the government could develop a new state-led economic measure. Re-evaluation of the WHDS would also present an appropriate point at which to resolve issues with the inconsistency of eligibility criteria (as discussed in section 5.3.3), and perhaps to consider making Broader Group eligibility universal (as suggested by Baker 2011) so as to prevent qualifying households from missing out simply because they are not amongst the first to apply.

As established in section 7.2.4, WHDS was designed explicitly as a replacement for the pre-existing Voluntary Agreement between suppliers and the state. This previous programme was primarily based upon offering social tariffs, a means of support that Ofgem have since renounced (see section 7.2.2). The literature review and synthesis reported in section 7.2.3 identified a number of ways in which suppliers can play a role in supporting fuel poor customers that effectively employs their position within the energy supply process. For example, as creditors, suppliers are positioned to support the delivery of ‘Restart’ schemes. Whilst suppliers may be inappropriate agents to convey advice on benefits eligibility and energy tariffs, they could be required to refer customers to an externally contracted agent (including through ECO delivery). Finally, Rising Block Tariffs could provide a means of ensuring essential energy is available at a lower price, though currently there is a risk that fuel poor households living in inefficient homes (or with otherwise high actual energy needs) would be penalised by such a system. However, as the housing stock becomes more efficient, RBTs could become an increasingly viable and equitable, though it would require that government mandates suppliers to comply.
In summary, the recommendations for Warm Home Discount Scheme are as follows:

- After the current cycle concludes in 2016, the support currently offered under the Warm Home Discount Scheme should be reconfigured so that it is funded via general taxation.
- At this stage, the eligibility criteria and scope should be reassessed to ensure support is consistently applied.
- The ways in which suppliers can appropriately offer economic support (i.e., by virtue of their position) should be reviewed and, where suitable, integrated with technical obligations.
- The potential of Rising Block Tariffs should be assessed on an ongoing basis, and enforced if and when the expected result is to increase equity and energy affordability.

- Enhanced Data Collection and Dissemination

As raised in section 8.3, access to data has been a particular barrier to this research. Whilst the nature of commercial organisations means that some data on energy suppliers will likely always be beyond the reach of investigators, two main ways have been identified in which government could intervene to make research of this type more practicable without compromising commercial confidentiality. Firstly, government can require that energy suppliers release more information on performance, anonymised as necessary. This could even be to the benefit of suppliers: for example, as discussed in section 5.3.3, suppliers have claimed that the costs of identifying eligible households are excessively high, but individual companies will not release details for commercial reasons. Requiring that these be released in anonymised form could shed light on the scale of the problem. Such an approach would furthermore be in line with government policy on improving the transparency and accountability of public services (see Cabinet Office 2014b). Secondly, the EHS is an extremely valuable resource for fuel poverty researchers, being the only resource of its size that combines detailed information on dwelling construction with data
relating to the demographics and income status of residents. Cuts to this survey (such as have previously occurred, see Inside Housing 2010) should be avoided for risk of reducing the potential of a valuable source of information. Ideally, the data would be enriched further, for example, incorporating data on actual unit price paid by households, and real-world consumption. These could be gathered via the Energy Follow Up Survey, or via the collection methods used for NEED as referenced in section 5.2.2. The most recent version of the EHS included a very small number of questions on individuals’ experiences of maintaining warmth in the home (DCLG 2012a: 70). These could be expanded and linked to a formalised subjective or consensual measure of fuel poverty, as suggested in section 8.3.

In summary, the recommendations for data collection and dissemination are as follows:

- Government should collect, anonymise, and release as much data on supplier obligation performance as is feasible without compromising commercial confidentiality in such a way as might harm the cost-effectiveness of delivery.
- The English Housing Survey should be maintained, and ideally augmented with data on real-world energy tariffs and usage. The interview element of the survey could incorporate more questions on experiences of energy affordability, which in turn might be reported alongside official fuel poverty statistics or used as the basis for a subjective or consensual measure.

8.5.2 Recommendations for Future Research

Fuel poverty continues to evolve as an area for research, and many avenues remain open for future work. Three particular themes are identified here as potentially valuable, all of which build from this work.
• Micro-level Delivery

Section 3.1.2 justified the decision to approach this topic from a macro perspective, evaluating the manner in which multiple social policies are delivered by two delivery agents with the aim of tackling fuel poverty at the national level. A natural next step would be to shift focus to the micro-level, and consider particular elements of delivery. There would, of course, be an immediate barrier to handling such a study as a comparison, given that no state-led technical scheme is currently running and so supplier obligations would be the only active object of examination. This work has established that suppliers are not so well suited as the state to meet the goals of fuel poverty policy; however, it would appear that they are set to be tasked with delivering technical measures, at least, for the foreseeable future. As such, one possible focus for future work would be in establishing how individual elements could be adjusted to improve outcomes, and how the state might play a role in this. For example, considering in detail the kinds of options for improved targeting discussed in section 5.4.2, establishing how data sources might be combined to greater effect in policy. Future research could also consider the ways in which suppliers engage with the recipients of interventions and the impact this has upon policy success and obligation compliance, as well as for the experiences of fuel poor homes. Previous research – including this work – has tended to focus on delivery ‘best practice’ in energy efficiency delivery, but not individual-level experiences as recipients of supplier obligations specifically. It could be valuable to consider how and why suppliers engage in Corporate Social Responsibility (CSR) work above and beyond what is mandated of them. For example, Probert (2010) explored the potential for better customer relations to improve payment rates and reduce the incidence of customers defaulting upon debts. Another potential area of study would be the extent to which fuel poor customers may not be viewed as ‘desirable’ by energy suppliers (given their low income status), and how this might have an impact on delivery. Evaluation at this level would introduce different areas for consideration, as supplier staff will not be the only agents engaging with customers; in large part, it will be contractors, unless there is debt involved. Research of this type would be subject to significant barriers, as it would require access to suppliers who, as this research has found, have a desire to retain commercial confidentiality, and may not be willing to publicly contemplate
the profitability of poor fuel poor customers. It would also require the involvement of consumers who may themselves be difficult to identify and engage.

- **Political Theory**

One of the objectives of this work was to introduce consideration of political drivers of policy in a way that previous literature has tended to avoid (see section 3.2.1). The approach taken here was consciously pragmatic, as befits a social policy perspective (see section 3.1.2), and the focus has been on making a contribution that is empirical rather than theoretical. That said, the work has touched upon a number of theoretical concepts from social policy and – in particular – new institutionalism; most notably path dependency, but also policy networks and constraints. The appropriate roles of the state and the market in delivering public services are undoubtedly amongst the major topics of study in political and economic theory of the last century. This work has made some headway in extending this consideration to the social problem of fuel poverty in England. There is certainly further scope for philosophical debate around the role of the market in delivery of energy efficiency measures. This is a social problem that presents a particularly interesting case, in this respect, as it requires large-scale investment that is often beyond the capabilities of individuals, and so presents a strong case for intervention. In *The Road to Serfdom*, Friedrich Hayek – considered by many to be the father of classical liberalism – famously argues against state intervention. However, even in that definitive defence of freedom, Hayek recognises that there are some areas in which government should play a role. These include environmental issues (Hayek 2006: 40) and in ensuring that all individuals can access, “some minimum of food, shelter and clothing, sufficient to preserve health” (Hayek 2006: 124-125). Even within the confines of a continued neoliberal approach, a case might be made that intervention on fuel poverty is necessary to enable all adequate shelter. Whatever the case, this work has demonstrated where politics is fundamental to the decisions made, as the current dominant ideological emphasis on austerity, low income taxes and the liberalisation of energy markets – along with institutional structure – play a definitive role in shaping approaches to fuel poverty. A more theoretical consideration could extend the generalisability of this work to alternative political contexts.
Beyond England

This work focused upon the English case, for reasons explained in section 3.2.2. The most apparent next step as far as scope is concerned would be to consider the implications for the devolved nations. Effects may vary from those experienced in England because, for example, there are variances in the housing stock, fuel mix, and demographic compositions (DECC 2013c: 18-19). The political configuration of devolved governments are different, and a different set of energy companies are in operation in Northern Ireland (see Utility Regulator 2013: 15). After the UK, Europe presents a clear potential for further investigation given comparative similarities in the climatic conditions, housing stock and political institutional structures. Indeed, some early dissemination of this work has reflected on the implications of findings for EU member states (see Probert 2010, Probert 2014). Whilst a growing body of work considers the incidence and experience of fuel poverty in the EU (e.g., Tirado Herrero, Ürge-Vorsatz 2012, Bouzarovski, Petrova & Sarlamanov 2012) little of this work takes a policy perspective, for example, in considering the use of supplier obligations in countries such as Denmark and France, and the implications for low income households. The UK has long been at the forefront of fuel poverty policy (thanks in large part to the pivotal research of Brenda Boardman, along with a dynamic fuel poverty policy community), and as such can offer something in the way of lessons learned – both positive and negative – to countries like France and Austria, who have more recently begun to forge their own way in tackling the problem.
9 | Conclusion

*Illness is neither an indulgence for which people have to pay, nor an offence for which they should be penalised, but a misfortune, the cost of which should be shared by the community.*

Aneurin Bevan, 1948 (cited by Bevan Commission 2011: 2)

The communal solution famously endorsed by Bevan was introduced under the National Health Service Act 1946. Clear parallels exist between the problem described above and that of fuel poverty. The majority of England's housing stock was built before 1945 (DCLG 2013d: 12) and so fuel poverty is largely an inherited problem, with those living in low quality housing having little choice in the matter; it is neither ‘indulgence’ nor ‘offence’. Furthermore – as with health services – the cost of energy efficiency measures is often prohibitively high, introducing a need for government intervention. Even Friedrich Hayek, the father of neoliberalism, held the state should play a role in ensuring all can achieve a decent standard of living, including adequate shelter (Hayek 2006: 124-125).

This thesis has addressed the research question, *what role is appropriate to the energy supplier in alleviating fuel poverty?* with the conclusion: a minimal one, if fuel poverty alleviation is the true goal of policy. For a start, suppliers are poorly situated to know who is fuel poor because (as might be expected) they hold little of the required information with regard to customers’ incomes and dwellings. The market-based instrument of supplier obligations is designed to incentivise cost effectiveness in the conveyance of technical measures by requiring suppliers to absorb costs of delivery. However, this results in commensurate regressive impacts, as measures must be funded via bills, or risk the loss of some of that theoretical cost-effectiveness that is the incentive in the first place. For economic measures, the rationale underlying supplier obligations as a mode of delivery is even weaker, as there is little efficiency to be achieved when simply distributing money.
Ultimately, fuel poverty does not lend itself to being easily resolved via market forces, in part because the parameters of the problem are so complex. This is not to say that suppliers have no role in supporting fuel poor customers. Involvement in the (highly profitable) market for an essential good should come with a moral duty towards customers, particularly those who are vulnerable. It should perhaps go without saying that suppliers should treat customers well, and not disconnect (or act in such a way as to encourage the self-disconnection of) of any household, particularly those that are vulnerable. However, such behaviours are not themselves a means of addressing fuel poverty (as defined in policy); there is a line between suppliers behaving in a way that is socially responsible, and in actually taking a role in alleviating fuel poverty. The selection of policy mechanisms should be about ensuring the best outcomes for fuel poor households, rather than selecting an inadequate response because it better suits the economic approach and ideology of government. Today’s energy market was created by government, in the hope that the pursuit of profit would drive more efficient delivery. To then criticise said market for doing exactly that would seem hypocritical on the part of the state. Here, there are clear parallels with the ineffectual regulation of the banking sector that was a major cause of recent periods of economic recession (see Gamble 2009). One might further argue that capitalism both created the inequalities that are the root cause of fuel poverty (i.e., in income, and in variations in the housing stock), and continues to perpetuate them via the new role of markets in delivering support to that group. There is also an inconsistency in the fact that neoliberal governments tend away from intervention in markets, but in this case impose significant obligations on private companies. The result is a weak, incoherent, inconsistent middle ground, with energy suppliers fulfilling a task to which they are unsuited, but compelled to continue to deliver. A core problem identified by this research is that WHECA, which was initially intended as little more as an expression of good faith by policymakers, became a burden on government. Fuel poverty alleviation is high cost, politically low yield, operationally complex, and – on occasion – conflicts with carbon mitigation goals. Given the identified weakness of the legislative incentive, the lack of political impetus to tackle the problem, and the current political pursuit of austerity and a limited role for the state, supplier obligations are likely to be viewed as a delivery mechanism ‘appropriate’ to the broader aims of government, if not to optimal fuel poverty mitigation.
The most convincing justification here identified for the maintenance of supplier obligations is, effectively, that they are already in place, and it would be difficult at this stage to develop an alternative, state-led market. That said, policies continue to evolve. Since the data collection period of this research concluded, there has been a continuing stream of amendments to energy efficiency policy, including a consultation on the future of ECO (DECC 2014f); a proposal for a new fuel poverty strategy, encompassing a suggested target that is aligned with the ‘SAP 69’ programme modelled in Chapter Six of this work (though with the ‘practicable’ loophole intact) (HM Government 2014); and a further proposal on required energy efficiency standards within the private rented sector (DECC 2014i), an area of particular relevancy given that these households are 2.6 times more likely to be fuel poor than the wider population (see Table 5.7). There have been fewer amendments to economic policies, though these are arguably easier to change, in part because the logistical requirements of delivery are less burdensome; it is a core recommendation of this work that WHDS be reassessed when this phase of the policy concludes in 2016.

The necessary shift to a low carbon economy in the face of climate change is unquestionably one of the greatest challenges of the age. In the UK, demand management is likely to comprise a significant element of any successful transition (see HM Government 2010: 94-124) and so it is vital to ensure that delivery of this is equitable. A true commitment to fuel poverty eradication could reduce carbon emissions whilst also boosting the economy and improving the lives of those on the lowest incomes. Such an approach is not unheard of in economies similar to that of the UK; the German Energiewende, though not without problems of its own (see Dehmer 2013), certainly displays a level of ambition above and beyond what has yet been seen in the UK. The choice is fundamentally a political one, and at present the desire for lower taxes and reduced public spending dominates. If fuel poverty is to be eradicated, government need a realistic goal, a workable plan, strong data and – perhaps most importantly – resources and commitment. And unless the state are prepared to exhibit greater ambition in ensuring an equitable transition, the fuel poor will continue to be left behind.
Appendix 1 | Methodological Appendix

A1.1 Core Document Coding Categories

The codes used to analyse policy documents were established in the preliminary stages of research, whilst evaluating the fuel poverty policy process (see section 3.3) and drawing up aims and objectives (see section 3.2), and then piloted during the initial scoping review of literature (see section 3.4.4). Codes were purposely kept to a minimum in view of the sheer volume of material under consideration; a ‘light touch’ was applied in initially analysis, and more detailed undertaken once documents had been broken down. Table A1.1 lists the codes applied; documents analysed are listed as references due to space constraints.

Table A1.1: Codes used in policy document analysis

<table>
<thead>
<tr>
<th>Definitional Issues</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributional Impacts</td>
<td>Performance Data</td>
</tr>
<tr>
<td>Economic</td>
<td>State</td>
</tr>
<tr>
<td>Energy Supplier</td>
<td>Targeting</td>
</tr>
<tr>
<td>Environmental Issues</td>
<td>Technical</td>
</tr>
</tbody>
</table>

Codes were only universally applied to policy documents and interview transcripts (see section A1.7) for the most part, though similar mark-ups proved helpful as a means to obtain a consistency of analysis in reviewing broader literature. Each document was considered at least twice, though some of the more significant and technically orientated documents had to be appraised many more times (for example, DECC 2012, Ofgem 2013). Coding was primarily applied in the Preview PDF editor, occasionally by hand on some of the more complex documents (making use of colour mark-up for ease).
A1.2 Analysis of Hansard

All WHECA debates were downloaded for analysis from the UK Parliament website, as listed in Table A1.2. Note that sometimes a stage in the passage of a bill may not involve any debate, for example, the first reading tends to be a formality (see Parliament.uk 2014). Parliament has many esoteric traditions and customs that can make processes difficult for outsiders to understand. For an explanation of these (with particular reference to the House of Commons), see House of Commons Information Office (2010).

Table A1.2: WHECA Hansard debates included in analysis

<table>
<thead>
<tr>
<th>Date</th>
<th>House</th>
<th>Stage Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>10th March 2000</td>
<td>Commons</td>
<td>Second Reading</td>
</tr>
<tr>
<td>4th April 2000</td>
<td>Commons</td>
<td>Money Resolution</td>
</tr>
<tr>
<td>5th April 2000</td>
<td>Commons</td>
<td>Standing Committee First Sitting</td>
</tr>
<tr>
<td>12th April 2000</td>
<td>Commons</td>
<td>Standing Committee Second Sitting</td>
</tr>
<tr>
<td>21st July 2000</td>
<td>Commons</td>
<td>Third Reading</td>
</tr>
<tr>
<td>13th October 2000</td>
<td>Lords</td>
<td>Second Reading</td>
</tr>
</tbody>
</table>

As established in Chapter Four, the analysis process used was iterative; each transcript was considered twice, and following first pass-through any themes not satisfied by the predetermined category set (which were based largely on those used for policy documents and interview transcripts, see Table A1.1) were then added and applied on second consideration, as shown in Table A1.3.
A1.3 Supplementary Quantitative Methodological Information

The primary quantitative analysis in this work is based upon the 2011 English Housing Survey (DCLG 2013b), with the broad approach described in section 3.4.3. A detailed account of the EHS survey methodology is provided in DCLG supplementary publications (2013e, 2013b), and research development included survey specific training on the EHS methodology (see section A2.2). To summarise the process, an initial systemic random household sample is drawn from the Royal Mail’s Small User Postcode Address File. Some sub-sampling is then employed to ensure that all tenure-types are sufficiently represented so as to facilitate reliable analysis. This sample is then released to interviewers, who conduct a computer-assisted routed survey which includes detailed questions on demographics, satisfaction with accommodation and neighbourhood, tenancy status, occupation, and
Further sub-sampling is then applied to those households for which a physical survey is possible (i.e., where the household is either vacant or the occupant consents) to ensure the final ‘paired’ sample (the sample for which both interview and physical data is available) is reliably representative of the population. Qualified building surveyors then undertake full physical surveys, which includes consideration of dwelling size, age, and space heating (see full survey document at DCLG/BRE 2012).

The EHS dataset analysed in this work was downloaded from the UK Data Archive, with the usage purpose registered. The particular version used was the 2011 EHS Housing Stock Dataset, which holds data on both the physical characteristics of the home and from the household interview with occupants (as opposed to the EHS Household Dataset, which only includes the latter). The sample size for this was 14,386 (with no vacant dwellings), which weights to just under 22m households. The specific tables used in analysis were the general, interview and physical derived tables (general_10plus11.sav, interview_10plus11.sav and physical_10plus11.sav), as well as the energy performance table (energy_performance_10plus11.sav). These were merged on the unique household identifier (aacode) and weighted by the provided variable (aagph1011) to create a single dataset that served as the basis for the quantitative analysis reported in this thesis.

A requirement of analysis – particularly that on targeting – was the development of dummy variables that signalled whether or not a given household qualified for particular policies. Earlier issues of the dataset used for preliminary analysis (e.g., DCLG 2011, DCLG 2012) did not include any such variable, however, the 2013 release included pre-established variables signifying eligibility for Warm Front, CERT PG and SPG and ECO HHCRO. For the remaining schemes, dummy variables were created: the processes for these are described in Table A1.4.
Table A1.4: Development of dummy variables signifying scheme eligibility

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Process</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CESP</strong></td>
<td>True if household is in the lowest decile ranked according to IMD (Imd1010 = 1).</td>
<td>The actual indicator is based only on the income component of the IMD measure (see CAG Consultants et al. 2011: 20). This information is not available in the EHS, and so the full indicator was substituted.</td>
</tr>
<tr>
<td><strong>CWP</strong></td>
<td>True if household is in receipt of Income Support, Jobseeker’s Allowance or Employment and Support Allowance AND household contains someone under 5, over 65 of long-term sick or disabled ((DECC_IS = 1 OR DECC_JSA = 1 OR DECC_ESA = 1) AND (pyngx &lt; 5 OR ageoldx &gt;= 65 OR hhltick = 1)).</td>
<td>These eligibility criteria are particularly difficult to approximate given the available data. To test validity, checked that number eligible corresponded reasonably closely with number listed in actual receipt (i.e., within 5%).</td>
</tr>
<tr>
<td><strong>Decent Homes Programme</strong></td>
<td>True if property is social housing (tenure2x = 2) AND property does not meet the Decent Homes Standard (dhomesy = 0).</td>
<td>Decent Homes Standard applied according to the Housing Health and Safety Rating System (HHSRS) 15 model.</td>
</tr>
<tr>
<td><strong>WFP</strong></td>
<td>True if someone in the household is over 61 (ageoldx &gt;= 62).</td>
<td>Actual eligibility is based on birthdate, however, as this level of detail is not included in the EHS, age in years was used as an approximation.</td>
</tr>
<tr>
<td><strong>WHDS Core Group</strong></td>
<td>True if in receipt of Pension Credit Guarantee Credit (DECC_PCguar = 1).</td>
<td>Eligibility criteria change year-on-year; applied criteria from scheme year one (Ofgem 2013: 11).</td>
</tr>
</tbody>
</table>

Estimations of ECO CSCO efficiency were not conducted within SPSS due to lack of relevant data; the process by which this was undertaken is described in section 5.1.2.
Ethical Clearance Checklist

(To be completed for All investigations involving human participants)

If your research is being conducted off-campus and ethical approval has been granted by an external ethics committee, you may not need to seek full approval from the University Ethical Advisory Committee. However, you will be expected to provide evidence of approval and the terms on which this approval has been granted.

If you believe this statement applies to your research, please contact the Secretary of the Ethical Advisory Committee for confirmation.

If your research is transferring into Loughborough University and approval was obtained from your originating institution, there is a requirement on the University to ensure that appropriate approvals are in place.

If you believe this statement applies to your research, please contact the Secretary of the Ethical Advisory Committee with evidence of former approval and the terms on which this approval has been granted.

It is the responsibility of the individual investigators to ensure that there is appropriate insurance cover for their investigation.

If you are at all unsure about whether or not your study is covered, please contact the Finance Office to check.

Section A: Investigators

Title of Investigation
The Role of the Energy Supplier in Fuel Poverty Alleviation

Name, Status and Email Address of Senior Investigators (University Staff Research Grade II and above):
(Please underline responsible investigator where appropriate)
Dennis Loveday, Professor (d.l.loveday@lboro.ac.uk)
Victoria Haines, Research Fellow (v.j.haines@lboro.ac.uk)

Department: School of Civil and Building Engineering (Dennis Loveday)/Loughborough Design School (Victoria Haines)
Name, Status and Email Address of Other Investigators (other University Staff and Students):
Lauren Probert, PhD Student (l.probert@lboro.ac.uk)

**Department:** School of Civil and Building Engineering

A1. Do investigators have previous experience of, and/or adequate training in, the methods employed?

Yes ☒ No† ☐ †If No, Please provide details below

A2. Will junior researchers/students be under the direct supervision of an experienced member of staff?

Yes ☒ No† ☐ †If No, Please provide details below

A3. Will junior researchers/students be expected to undertake physically invasive procedures (not covered by a generic protocol) during the course of the research?

Yes† ☐ No ☒ ☐ †If Yes, Please provide details below

A4. Are researchers in a position of direct authority with regard to participants (e.g., academic staff using student participants, sports coaches using his/her athletes in training)?

Yes† ☐ No ☒ ☐ †If Yes, Please provide details below

If you have selected one of the answers above marked with an † please provide additional information on how you intend to manage the issues (please continue onto a separate sheet if required), then submit this checklist to the Secretary to the EAC:

---

**Section B: Participants**

<table>
<thead>
<tr>
<th>Vulnerable Groups</th>
<th>Will participants be knowingly recruited from one or more of the following vulnerable groups?</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1. Children under 18 years of age</td>
<td>Yes# ☐ No ☒ (please refer to published guidelines)</td>
</tr>
<tr>
<td>B2. People over 65 years of age</td>
<td>Yes# ☐ No ☒</td>
</tr>
<tr>
<td>B3. Pregnant women</td>
<td>Yes# ☐ No ☒</td>
</tr>
<tr>
<td>B4. People with mental illness</td>
<td>Yes# ☐ No ☒</td>
</tr>
<tr>
<td>B5. Prisoners/Detained persons</td>
<td>Yes# ☐ No ☒</td>
</tr>
<tr>
<td>B6. Other vulnerable group (please specify )</td>
<td>Yes# ☐ No ☒</td>
</tr>
</tbody>
</table>

If you have answered ‘No’ to questions B1-B6, please now go to Section C
If the procedure is covered by an existing generic protocol which refers specifically to the vulnerable group(s), please insert reference number here
If the procedure is not covered by an existing generic protocol, please submit a full application to the Ethical Advisory Committee

Chaperoning Participants
If appropriate, e.g. studies which involve vulnerable participants, taking physical measures or intrusion of participants' privacy:

B7. Will participants be chaperoned by more than one investigator at all times?
   Yes ☐  No* ☐  N/A† ☐  †If N/A, please provide details below

B8. Will at least one investigator of the same sex as the participant(s) be present throughout the investigation?
   Yes ☐  No* ☐  N/A† ☐  †If N/A, please provide details below

B9. Will participants be visited at home?
   Yes* ☐  No ☐  N/A† ☐  †If N/A, please provide details below

* Please submit a full application to the Ethical Advisory Committee.

If you have selected one of the answers above marked with an † please provide additional information on how you intend to manage the issues (please continue onto a separate sheet if required), then submit this checklist to the Secretary to the EAC:

Section C: Methodology/Procedures

To the best of your knowledge, please indicate whether the proposed study:

C1. Involves taking bodily samples
   Yes# ☐  No ☒
   (please refer to published guidelines)

C2. Involves using samples previously collected with consent for further research
   Yes# ☐  No ☒

C3. Involves procedures which are likely to cause physical, psychological, social or emotional distress to participants
   Yes# ☐  No ☒

C4. Is designed to be challenging physically or psychologically in any way (includes any study involving physical exercise)
   Yes# ☐  No ☒

# If the procedure is covered by an existing generic protocol, please insert reference number here
If the procedure is not covered by an existing generic protocol, please submit a full application to the Ethical Advisory Committee

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C5. Exposes participants to risks or distress greater than those encountered in their normal lifestyle

Yes* ☑ No ☒

C6. Involves collection of body secretions by invasive methods

Yes* ☑ No ☒

C7. Prescribes intake of compounds additional to daily diet or other dietary manipulation/supplementation

Yes* ☑ No ☒

C8. Involves testing new equipment

Yes* ☑ No ☒

C9. Involves pharmaceutical drugs

Yes* ☑ No ☒

(please refer to published guidelines)

C10. Involves use of radiation

Yes* ☑ No ☒

(please refer to published guidelines). Investigators should contact the University’s Radiological Protection Officer before commencing any research which exposes participants to ionising radiation – e.g. x-rays).

C11. Involves use of hazardous materials

Yes* ☑ No ☒

(please refer to published guidelines)

C12. Assists/alters the process of conception in any way

Yes* ☑ No ☒

C13. Involves methods of contraception

Yes* ☑ No ☒

C14. Involves genetic engineering

Yes* ☑ No ☒

* If you have answered ‘Yes’ to any of the above please submit a full application to the Ethical Advisory Committee

C15. Involves testing new equipment

Yes† ☑ No ☒

† If you have answered ‘Yes’ to C15 please provide more information below (please continue onto a separate sheet if required), then submit this checklist to the Secretary to the EAC. Please attach a description of the new equipment and a risk assessment.

Section D: Observation/Recording

D1. Does the study involve observation and/or recording of participants?

Yes ☒ No ☐ If No, please go to Section E

If Yes,

D2. Will those being observed and/or recorded be informed that the observation and/or recording will take place?

Yes ☒ No* ☐

* Please submit a full application to the Ethical Advisory Committee

Section E: Consent and Deception

E1. Will participants give informed consent freely?

Yes ☒ If yes please complete the Informed Consent section below.

No* ☐ *If no, please submit a full application to the Ethical Advisory Committee.
Note: where it is impractical to gain individual consent from every participant, it is acceptable to allow individual participants to "opt out" rather than "opt in".

**Informed Consent**

E2. Will participants be fully informed of the objectives of the investigation and all details disclosed (preferably at the start of the study but where this would interfere with the study, at the end)?

   Yes ☒ No* ☐

E3. Will participants be fully informed of the use of the data collected (including, where applicable, any intellectual property arising from the research)?

   Yes ☒ No* ☐

E4. For children under the age of 18 or participants who have impairment of understanding or communication:
   - will consent be obtained (either in writing or by some other means)?
     Yes ☒ No* ☐
   - will consent be obtained from parents or other suitable person?
     Yes ☒ No* ☐
   - will they be informed that they have the right to withdraw regardless of parental/guardian consent?
     Yes ☒ No* ☐

E5. For investigations conducted in schools, will approval be gained in advance from the Head-teacher and/or the Director of Education of the appropriate Local Education Authority

   Yes ☒ No* ☐

E6. For detained persons, members of the armed forces, employees, students and other persons judged to be under duress, will care be taken over gaining freely informed consent?

   Yes ☒ No* ☐

* Please submit a full application to the Ethical Advisory Committee

**Deception**

E7. Does the study involve deception of participants (ie withholding of information or the misleading of participants) which could potentially harm or exploit participants?

   Yes ☒ No If No, please go to Section F

If yes,

E8. Is deception an unavoidable part of the study?

   Yes ☒ No* ☐

E9. Will participants be de-briefed and the true object of the research revealed at the earliest stage upon completion of the study?

   Yes ☒ No* ☐

E10. Has consideration been given on the way that participants will react to the withholding of information or deliberate deception?

   Yes ☒ No* ☐

* Please submit a full application to the Ethical Advisory Committee

**Section F: Withdrawal**
F1. Will participants be informed of their right to withdraw from the investigation at any time and to require their own data to be destroyed?
   Yes ☒  No* ☐

* Please submit a full application to the Ethical Advisory Committee

Section G: Storage of Data and Confidentiality

Please see University guidance on Data Collection and Storage

G1. Will all information on participants be treated as confidential and not identifiable unless agreed otherwise in advance, and subject to the requirements of law?
   Yes ☒  No* ☐

G2. Will storage of data comply with the Data Protection Act 1998?
   (Please refer to published guidelines)  Yes ☒  No* ☐

G3. Will any video/audio recording of participants be kept in a secure place and not released for use by third parties?
   Yes ☒  No* ☐

G4. Will video/audio recordings be destroyed within ten years of the completion of the investigation?
   Yes ☒  No* ☐

G5. Will full details regarding the storage and disposal of any human tissue samples be communicated to the participants?
   Yes ☒  No* ☐

* Please submit a full application to the Ethical Advisory Committee

Section H: Incentives

H1. Have incentives (other than those contractually agreed, salaries or basic expenses) been offered to the investigator to conduct the investigation?
   Yes† ☐  No ☒  †If Yes, Please provide details below

H2. Will incentives (other than basic expenses) be offered to potential participants as an inducement to participate in the investigation?
   Yes† ☐  No ☒  †If Yes, Please provide details below

If you have selected one of the answers above marked with an † please provide additional information on how you intend to manage the issues (please continue onto a separate sheet if required), then submit this checklist to the Secretary to the EAC:

Section I: Work Outside of the United Kingdom
G1. Is your research being conducted outside of the United Kingdom?

Yes ☐ No ☑

If Yes, you may need additional insurance cover/clearance for your research.

If, having completed this checklist, you will be making a full application to the EAC this issue will be checked for you as a part of the process. If however you do not need to complete a full application please contact Hiten Patel (H.Patel@lboro.ac.uk).

Section I: Declarations

**Checklist Application only:**

If you have completed the checklist to the best of your knowledge without selecting an answer marked with an * or †, your investigation is deemed to conform with the ethical checkpoints and you do not need to seek formal approval from the University’s Ethical Advisory Committee. Please sign the declaration below, and lodge the completed checklist with your Head of Department or his/her nominee.

**Declaration**

I have read the University’s Code of Practice on Investigations on Human Participants. I confirm that the above named investigation complies with published codes of conduct, ethical principles and guidelines of professional bodies associated with my research discipline. Please sign below

**Checklist with additional information to the Committee:**

If, upon completion of the checklist you have ONLY selected answers which require additional information to be submitted with this checklist (indicated by a †), please ensure that all the information is provided in detail and send this checklist to the Secretary to the EAC.

**Full Application Needed:**

If on completion of the checklist you have selected one or more answers which require the submission of a full proposal please download the relevant form from the Committee’s web page.

A copy of this checklist, signed by your Head of Department should accompany the full submission to the Ethical Advisory Committee.
Advice to Participants following the investigation

Investigators have a duty of care to participants.

When planning research, investigators should consider what, if any, arrangements are needed to inform participants (or those legally responsible for the participants) of any health related (or other) problems previously unrecognised in the participant. This is particularly important if it is believed that by not doing so the participants well being is endangered. Investigators should consider whether or not it is appropriate to recommend that participants (or those legally responsible for the participants) seek qualified professional advice, but should not offer this advice personally. Investigators should familiarise themselves with the guidelines of professional bodies associated with their research.
PhD Project: The Role of the Energy Supplier in Fuel Poverty Alleviation
Participant Information Sheet

PhD Researcher: Lauren Probert (l.probert@lboro.ac.uk), c/o School of Civil and Building Engineering, Loughborough University, Loughborough, Leicestershire. LE11 3TU.
Telephone: +44735882248.
Supervisors: Dennis Loveday (d.l.loveday@lboro.ac.uk), c/o School of Civil and Building Engineering, Loughborough University, Loughborough, Leicestershire. LE11 3TU.
Telephone: +441509222635.
Victoria Haines (v.j.haines@lboro.ac.uk), LDS 2.15, Loughborough Design School, Loughborough University, Loughborough, Leicestershire. LE11 3TU.
Telephone: +441509226915.

What is the purpose of the study?

This study explores the role of the energy supplier in the alleviation of fuel poverty. Government legislation such as the Energy Company Obligation looks set to increase the responsibility of energy suppliers in achieving fuel poverty eradication targets and more generally upgrading the energy efficiency of the national housing stock. This project seeks to establish how this role might be most effectively fulfilled, both in terms of economic and technical solutions.

Who is doing this research and why?

This study is part of a PhD research project being conducted by Lauren Probert within the School of Civil and Building Engineering at Loughborough University, under the supervision of Dennis Loveday (School of Civil and Building Engineering) and Victoria Haines (Loughborough Design School). The research is supported by an Industrial CASE studentship, co-funded by the Engineering and Physical Sciences Research Council (EPSRC) and E.ON.

What will I be asked to do?

We are seeking participants who have been involved in fuel poverty alleviation programmes to be interviewed about their experiences of conducting this work. We are interested in opinions and experiences – there are no right or wrong answers. Interviews will be recorded using digital audio equipment.
How long will it take?

Interviews are expected to last no longer than one hour, though there is scope for shorter or longer discussions as appropriate.

Where will these take place?

It is anticipated that most interviews will take place face-to-face. However, the project looks to maintain a high degree of flexibility and a phone interview may be arranged where convenient for both parties.

Is there anything I need to do before the sessions?

You do not need to do anything, however, if there were any documents relating to your work that you would be happy to share (e.g., reports, promotional materials), these would be much appreciated as a means of directing and supporting discussion. You may also wish to discuss your involvement in this project with colleagues if you feel this is appropriate, but the extent to which you do so is entirely at your discretion.

Will my participation in this study be kept confidential?

Neither participating individuals nor the organisations that they represent will be identified by name unless permission is granted in writing. If you have any questions about anonymity, please do not hesitate to contact the main investigator (Lauren Probert). Digital recordings and transcripts of interviews will be stored on a secure laptop accessible only to the investigators, and will be kept for no longer than seven years.

Once I take part, can I change my mind?

Yes! After you have read this information and asked any questions you may have, we will ask you to complete an Informed Consent Form. However if at any time, before or during the interview you wish to withdraw from the study please just contact the main investigator (Lauren Probert). You may also withdraw after the interview has been taken place, providing analysis of the data has not progressed so as to make your contribution indistinguishable from those of others (the investigator will be able to provide details of timescales for analysis on request). You can withdraw for any reason, and you will not be asked to explain your reasons for withdrawing.

What will happen to the results of the study?

The project will form the basis of a PhD thesis, and may also be disseminated via other academic channels (e.g., journal articles, conference papers), as well as through presentations and reports.

What do I get for participating?

Participants will be given access to the final PhD thesis and other outputs, as far as is practical. Researchers will also be available to discuss results with participants, with a
view to identifying how findings might benefit future work. Where possible, researchers would also be open to presenting findings to participating organisations.

I have some more questions who should I contact?

The main investigator is Lauren Probert (contact details are at the head of this sheet).

What if I am not happy with how the research was conducted?

Please feel able to contact the Project Supervisors at any time with concerns (details at the head of this sheet). Loughborough University has a policy relating to Research Misconduct and Whistle Blowing, which is available online at http://www.lboro.ac.uk/admin/committees/ethical/Whistleblowing(2).htm.
INFORMED CONSENT FORM
(to be completed after Participant Information Sheet has been read)

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethical Advisory Committee.

I have read and understood the information sheet and this consent form.

I have had an opportunity to ask questions about my participation.

I understand that I am under no obligation to take part in the study.

I understand that I have the right to withdraw from this study at any stage (prior to data processing) for any reason, and that I will not be required to explain my reasons for withdrawing.

I understand that all the information I provide will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others.

I agree to participate in this study.

Your name

Your signature

Signature of investigator

Date
**A1.7 Interview Approach**

Due to the limited accessibility of interview participants, the role of formal interviews in this work was largely corroborative, e.g., in substantiating messages from consultation responses and clarifying the manner in which policies are enacted in practice. Five extended key informant interviews were undertaken for this project; Table A1.5 provides the dates of these, and gives details of interviewee roles. To avoid compromising interviewee anonymity (a particular challenge given the highly specialised nature of the industry under consideration), only very broad descriptions of interviewee roles are supplied.

**Table A1.5: Research interviews undertaken**

<table>
<thead>
<tr>
<th>Date</th>
<th>Role of interviewee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(^{st}) June 2012</td>
<td>Third sector worker, role involves targeting energy efficiency schemes</td>
</tr>
<tr>
<td>28(^{th}) June 2012</td>
<td>Energy supplier employee, role involves targeting and delivering obligations</td>
</tr>
<tr>
<td>21(^{st}) August 2012</td>
<td>Local Authority Energy Efficiency Officer, role involves partnering with energy suppliers to deliver obligations</td>
</tr>
<tr>
<td>24(^{th}) October 2012</td>
<td>Private sector contractor to energy industry, role primarily involves targeting obligations</td>
</tr>
<tr>
<td>25(^{th}) January 2013</td>
<td>Energy supplier employee, role involves delivering obligations</td>
</tr>
</tbody>
</table>

Following the advice of Bernard and Ryan (2010: 371) with regard to conducting key informant interviews, a loose structure was used in interviews. All those interviewed were experts discussing their specific professions, and no one set of questions would be appropriate to all. All those interviewed proved keen and able to talk at length about their work (without overly digressing), and overall the process was straightforward. However, the following list of generic questions was established in advance as a means of ‘breaking the ice’ and of recording core information about participants:
Could you give an overview of your professional responsibilities?

How do you see fuel poverty as fitting into your role? For example, do you have any objectives that relate to fuel poverty mitigation? What proportion of your work relates in some way to fuel poverty?

How would you define fuel poverty for your purposes? Do you use the official definition, or would another conceptualization be more appropriate?

What drives the work you undertake on behalf of [employer]? For example, is your role primarily about generating profit? Legal compliance?

Who do you feel should play a role in tackling fuel poverty?

With regard to fuel poverty mitigation, are there any tasks currently fulfilled by your organization that you feel another agent could do better? If so, why?

What, if anything, would you change about the way in which fuel poverty is tackled?

What, if anything, could government do to improve fuel poverty policy?

Are there any other issues you feel would be useful to discuss?

Interviews were digitally recorded on a secure machine, transcribed into a text editor, and then coded using TAMS Analyzer (TAMS Analyzer 2012). The codes used were the same as for policy documents (see Table A1.1). This was in part to maintain consistency in analysis, and in part because the interviewees were from such different backgrounds, the identification of broad themes was identified as more practically appropriate than the development of a very long list of more specialised codes that may only apply to single participants.

A1.8 Systematic Review Process

The process of searching for literature is unavoidably subjective; the goal of a systematic review is to transparently communicate the process undertaken so as to avoid bias in the final review and enable replicability. This approach is not always possible (or desirable) where the topic is less well defined, as it may difficult to define the scope of the search, and be necessary to include more tangential literature. The review process undertaken here was informed by the guidance offered by Petticrew.
and Roberts (2006) on systematic reviewing in the social science, responding to the protocol, “what are the costs of delivering energy efficiency upgrades to the English housing stock?” Two main classes of databases were searched, as illustrated in Table A1.6: the online literature repositories of organisations specialising in fuel poverty research (all of whom are included in Table 2.2), and more generalised databases.

Table A1.6: Databases included within systematic review process

<table>
<thead>
<tr>
<th>Specialised Databases</th>
<th>Generalised Databases</th>
</tr>
</thead>
<tbody>
<tr>
<td>eaga-CT</td>
<td>Loughborough University’s Catalogue Plus</td>
</tr>
<tr>
<td></td>
<td>(incorporates a large number of academic literature</td>
</tr>
<tr>
<td></td>
<td>repositories, see Loughborough University 2014)</td>
</tr>
<tr>
<td>Centre for Sustainable Energy</td>
<td>Google</td>
</tr>
<tr>
<td>National Energy Action</td>
<td>National Archives</td>
</tr>
<tr>
<td>Association for the</td>
<td></td>
</tr>
<tr>
<td>Conservation of Energy</td>
<td></td>
</tr>
<tr>
<td>Consumer Futures*</td>
<td></td>
</tr>
<tr>
<td>Gov.uk</td>
<td></td>
</tr>
</tbody>
</table>

*Though consideration was limited to energy-related publications (CF holds responsibility for representing consumer interests within industries including the postal services and estate agents).

In the case of the specialised websites, it was possible to consider all documents held. A slightly different strategy was adopted for Gov.uk based on the search filters available there. It was possible to narrow down the search for publications by department or public body, so all documents were reviewed for the primary relevant agencies, i.e., DECC, the CCC, and FPAG. Additional searches limited by the keywords “energy” and “fuel poverty” were applied to publications by departments that had previously held some fuel poverty remit, i.e., BIS and DEFRA. It should be noted that Gov.uk is a new database that is in the process of being populated, and that many Governmental publications are currently only in the National Archives; this is why it was feasible to conduct complete searches on the held publications.

For generalised databases, it was not possible to consider every indexed item and so a search strategy was developed. Guidance from the University of Strathclyde (2014) refers to the need that systematic searches be “sensitive and specific”, i.e., that the
search should find as much of the relevant literature as possible, whilst keeping the irrelevant literature considered to a minimum. It is noted that there is always a trade-off between these two elements. To optimise the sensitivity and specificity of this search, a strategy was formulated that involved relating search terms from two groups with Boolean “AND” operators. The first group included words relating to financing, the second included words relating to fuel poverty and interventions. By coupling, the intention was to find relevant literature and avoid extraneous outputs. So, for example, searching “fuel poverty + energy efficiency” or “financing + funding” would likely turn up too many irrelevant results, whilst “fuel poverty + financing” or “energy efficiency + funding” would achieve the required overlap. Lists of words for each category were compiled based upon the policy literature and consideration of synonyms. Truncation was used to ensure all word variations were captured. Table A1.7 contains the included words; all seventeen ‘energy affordability’ words were paired with each of the six ‘financing’ words, to create a total of one hundred and two unique search terms.

Table A1.7: Table of search terms used for systematic review

<table>
<thead>
<tr>
<th>‘Energy affordability’ search terms</th>
<th>‘Financing’ search terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Poverty</td>
<td>Cost*</td>
</tr>
<tr>
<td>Energy Efficiency*</td>
<td>Fund*</td>
</tr>
<tr>
<td>Energy Poverty</td>
<td>Regress*</td>
</tr>
<tr>
<td>“Energy Company Obligation**”</td>
<td>Distr*</td>
</tr>
<tr>
<td>“Warm Home Discount Scheme”</td>
<td>Capital</td>
</tr>
<tr>
<td>Carbon Emissions Reduction Target</td>
<td>Financ*</td>
</tr>
<tr>
<td>Community Energy Saving Programme</td>
<td></td>
</tr>
<tr>
<td>EESoP</td>
<td></td>
</tr>
<tr>
<td>Winter Fuel Payment*</td>
<td></td>
</tr>
<tr>
<td>Cold Weather Payment*</td>
<td></td>
</tr>
<tr>
<td>HEES</td>
<td></td>
</tr>
<tr>
<td>EEC</td>
<td></td>
</tr>
<tr>
<td>Social Tariff*</td>
<td></td>
</tr>
<tr>
<td>Supplier Obligation*</td>
<td></td>
</tr>
<tr>
<td>Retrofit*</td>
<td></td>
</tr>
<tr>
<td>Warm Front</td>
<td></td>
</tr>
<tr>
<td>Green Deal</td>
<td></td>
</tr>
</tbody>
</table>
Searches on Google and Library Catalogue Plus also made use of the option to filter out non-English language material and material more than twenty years old. The Library Catalogue Plus search was further limited to items published in the last twenty years, and ‘Books’, ‘Journals’, ‘Articles’ and ‘Thes(es)’ (removing items likely to be unsuitable, e.g., ‘Audio Visual’. Where searches produced in excess of 500 results, searches were further limited to those that mentioned “United Kingdom” or “England” (using Boolean “OR” operators). In all cases, where the number of recovered items exceeded 500, pages of search results were reviewed until it became clear that all items were no longer relevant (i.e., search saturation, see Petticrew, Roberts 2006: 100-101).

Table A1.8 gives details of the number of documents originally accessed from each source via the aforementioned search strategy, as well as documents identified via review of bibliographies and via personal communication (Haines 2013). Where duplicates were found, they are attributed to the first method through which they were sourced. Google results are only counted where the result included a research report (else the numbers of results given would be unhelpfully large). Note also that Google was placed last in the search process, given that many documents found via the other search avenues would also be recovered via a Google search. Documents were included in the final review if they contained information on the costs of delivering a defined level of improvement to UK housing stock.

Table A1.8: Summary of systematic review screening process

<table>
<thead>
<tr>
<th>Search Order</th>
<th>Database Description</th>
<th>Reports Considered</th>
<th>Rejected Based on Abstract/Title/Duplicate</th>
<th>Rejected Based on Full Reading</th>
<th>Included in Final Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>eaga-CT</td>
<td>58</td>
<td>40</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Centre for Sustainable Energy</td>
<td>94</td>
<td>69</td>
<td>23</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>National Energy Action</td>
<td>138</td>
<td>130</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Association for the Conservation of Energy</td>
<td>57</td>
<td>38</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>---</td>
</tr>
<tr>
<td>5</td>
<td>Consumer Futures</td>
<td>65</td>
<td>49</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Library Catalogue Plus</td>
<td>936</td>
<td>838</td>
<td>94</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Gov.uk</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>National Archives</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>Google</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>-</td>
<td>Bibliographies of Sourced Literature</td>
<td>6°</td>
<td>-</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>-</td>
<td>Personal Communication</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------</td>
<td>----</td>
<td>----</td>
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<tr>
<td>Total</td>
<td></td>
<td>1355</td>
<td>1165</td>
<td>202</td>
<td>20</td>
</tr>
</tbody>
</table>

*For generalised databases, the process is slightly different as reports are only considered after looking at search results; including the entire set of search results adds little to the explanation.

°Again, not every item in every bibliography was considered, just those for which the title or context suggested the potential of relevance.
Appendix 2 | Dissemination

A2.1 Academic Presentations Given


A2.2 Academic Events Attended

• Midlands Energy Graduate School 4th Annual Conference. September 2013. Loughborough, UK.
• Fuel Poverty Related Illnesses: A Preventable Plague (part of ESRC Festival of the Social Sciences). November 2012. Sheffield, UK
• United Kingdom Energy Research Centre Summer School. June 2012. Warwick, UK
• Fuel Poverty, Energy Vulnerability and Social Justice: From Distribution to Capabilities. Centre for Regional Economic and Social Research. February 2012. Sheffield, UK
• Spotlight on the Energy Obligation. NEA. December 2011. Manchester, UK
• Mapping Vulnerability to Fuel Poverty. InCluESEV. February 2011. Birmingham, UK

A2.3 Policy Community Presentations Given

• The Role of the Energy Company in Fuel Poverty Alleviation. NEA East Midlands Fuel Poverty Forum. February 2012. Nottingham, UK

A2.4 Policy Community Events Attended

• Member of the NEA East Midlands Fuel Poverty Forum, 2011-13
• ECO Roadshow and Energy UK Question Time. April 2013. Sheffield, UK
• E.ON UK Reset Review Forum on Vulnerable Customers. February 2012. London, UK
• NEA Annual Conference. September 2011. Harrogate, UK

A2.5 Events Organised

**A2.6 Memberships and Affiliations**

- Energy Institute
- Friend of NEA
- Fuel Poverty Postgraduate Network (as founder)
- Midlands Energy Graduate School
- National Energy Research Network
- NEA East Midlands Fuel Poverty Forum
- Research Fellow at the Institute for Advanced Studies on Science, Technology and Society in Graz, Austria from September 2013 to March 2014
- Social Policy Association

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