

Fuel and poverty

A Rapid Evidence Assessment for the Joseph Rowntree Foundation

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June 2014



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1 Introduction

The Joseph Rowntree Foundation is funding a series of literature reviews to provide a comprehensive and robust evidence base that can be used to develop anti-poverty strategies in the UK. This evidence review explores factors associated with energy needs, fuel costs and poverty, in the context of Government policy and practice. Energy policy in the UK has undergone significant change over the last 18 months. There is no longer a UK-wide state-funded energy efficiency programme. Instead, support for measures now typically relies on energy supplier-based obligations (the Energy Company Obligation (ECO)) alongside a householder-based finance mechanism (the Green Deal). Beyond energy, in the broader poverty context, the Government's approach to poverty alleviation remains focused on welfare reform, with the introduction of Universal Credit in 2013.

The design and implementation of Government policy – both energy and more broadly – has fundamental implications for fuel costs experienced by consumers and the level and distribution of poverty in the UK.

1.1 Aims and objectives

The aim of this review is to produce a high quality synthesis of evidence on issues associated with fuel costs and poverty and identify effective solutions needed to address these issues. Where possible, the costs and benefits of policy options are quantified and recommendations for measures to be included in JRF's Anti-Poverty Strategy are highlighted.

To address this aim, the following key research questions have been considered:

1. Defining fuel poverty: who are the 'fuel poor'? (Chapter 2)
2. What factors affect consumer vulnerability to fuel poverty? (Chapter 3)
3. Low incomes and high fuel costs – the implications and impacts of living in fuel poverty (Chapter 4)
4. What makes up the household energy bill and what factors contribute to rising fuel prices? (Chapter 5)
5. How do environmental and social obligations placed on private companies by Government impact on fuel prices? (Chapter 6)
6. What strategies have been adopted by other countries to manage fuel costs and demand? (Chapter 7)
7. What approaches have been adopted across the UK to address fuel poverty? (Chapter 8)
8. Exploring the current UK policy and regulatory climate: what opportunities are there for developing policy and practice in fuel poverty alleviation? (Chapter 9)

The final chapter includes a set of recommendations drawing on evidence presented throughout the review and presents some practical examples of policies to address the issue of high energy costs and low incomes in the UK.

1.2 Project design and methods

The methodology applied in this evidence review adopts an ‘expert informed’ Rapid Evidence Assessment (REA) to provide a balanced evaluation of the available research. The *expert-informed* REA approach combines expert knowledge of relevant information sources with a focused search of peer-reviewed and grey literature, thus making best use of the available resources and expertise of the team. The initial search returned over 250 references. These were subject to two further rounds of rapid review to assess quality, relevance and coverage. A final list of 50 papers were selected for detailed review. Further details on the methodology applied in the REA are provided in the Annex.

1.3 Structure of this report

This evidence review addresses a broad research brief in seeking to present JRF with a comprehensive evidence base on factors affecting fuel costs and implications for low-income households. We have therefore covered a wide range of topics, starting with the fundamentals of how fuel poverty is defined in political terms to the realities for fuel poor households living on a low income in cold homes; through to a detailed review of the factors affecting the price we pay for fuel and past and present approaches to address these; to finally exploring opportunities and presenting proposals for developing strategies and programmes to alleviate the burden of fuel costs for low income households. The report is therefore structured as follows:

We begin with a discussion of how fuel poor households are identified in the UK and which household types are most likely to meet these criteria (Chapter 2). This includes a brief discussion of the official definition of fuel poverty, as this is what underpins Government fuel poverty targets and is therefore central to the policy debate.

Chapter 3 then explores in more detail the factors driving fuel poverty, and takes a broader look at the concept of energy vulnerability, before discussing the implications for households facing unaffordable energy bills and cold homes, including consideration of the impacts on health and wellbeing (Chapter 4).

Chapter 5 looks at the different components that make up the household energy bill, focusing principally on the price we pay for fuel and the factors driving up energy prices. This is then followed by a more detailed look at the impact of Government policies on household bills, which includes taking account of the benefits to households thus enabling analysis of the overall net impact (Chapter 6).

Chapter 7 looks briefly at evidence beyond the UK, to identify measures taken to address issues associated with high fuel costs, low incomes and cold homes in other countries, before moving on, in Chapter 8 to present a detailed look at Government policy and approaches adopted to address fuel poverty in the UK. This includes both past and present energy policies, including, where possible, quantification of the costs and benefits (uptake) of the policy.

Finally, we discuss the current regulatory and political climate in the context of opportunities arising to develop policies and programmes to address issues identified in the review, associated with the needs of low income households and rising energy prices. This section highlights some recommendations, before moving on, in Chapter 10, to set out some detailed policy proposals using our Policy Assessment Matrix.

2 Fuel poverty: the theory

2.1 Defining fuel poverty

Fuel poverty is a measure of a household's ability to pay for energy services in the home. The cost of energy in this context is based on a calculation of the energy *needed* to heat the home to a satisfactory level of warmth. Box 1 provides a more detailed description of this approach.

Box 1. Measuring fuel costs in the context of fuel poverty

Measuring household fuel costs

Before discussing the intricacies of the definitions of fuel poverty, it is important to understand how fuel costs are calculated and defined in this context. Rather than being based on actual household energy consumption, fuel poverty uses a measure of fuel costs calculated on a 'need to spend' basis. In turn, this need to spend is based on some standard assumptions about how dwellings are heated and occupied and information about the physical characteristics of the property, which determine how energy efficient it is.

Assessing the energy efficiency of a property

The Standard Assessment Procedure (SAP) is the Government's official standard used to calculate the energy performance and efficiency of a dwelling. The calculation takes into account the size, shape and physical characteristics of the house, including insulation levels, to estimate the rate of heat loss through walls, roofs, windows, doors and floors. It also uses information about a property's heating system, in particular its efficiency in converting a particular fuel into heat.

Standard heating regime

The SAP calculation makes a set of standard assumptions about the heating regime, hot water, lighting and appliances, and occupancy patterns of every dwelling. A standard heating regime is assumed, whereby the living space (usually defined as the living room) is heated to 21°C and the rest of the house to 18°C for 9 hours during weekdays and for 16 hours at the weekend. (This is defined by the Government as the amount of heating needed to maintain an adequate level of warmth in a home and stems from recommendations from the World Health Organisation).

Calculating required spend on fuel

Combining these assumptions about heating and occupancy with the physical characteristics of a property allows for a calculation of a household's fuel requirement, to which fuel costs are applied to calculate how much a household needs to spend on fuel to maintain standards for warmth in the home. It is this estimate of required spend on fuel that forms the basis of fuel poverty calculations.

The concept of 'affordable warmth' was placed firmly on the political agenda under the Warm Homes and Energy Conservation Act 2000 and the UK's first Fuel Poverty Strategy (2001) formally adopted a measure of fuel poverty, whereby a household is defined as 'fuel poor' if it **needs to spend more than 10% of its income on fuel to maintain a satisfactory heating regime** (see Box 1 for details on how heating regime is defined and fuel costs are calculated in this context).

In 2011, the Government commissioned a detailed, independent review of the definition of fuel poverty, to ascertain whether the existing '10%' definition remained fit for purpose, some 11 years after it was first adopted. The review (undertaken by Professor John Hills of London School of Economics, and hence often referred to as the 'Hills Fuel Poverty Review') highlighted a number of flaws with the original approach to measuring fuel poverty including its sensitivity to fuel price

fluctuations and the potential for higher-income households living in energy inefficient homes to be (misleadingly) classed as ‘fuel poor’.

Hills (2013) therefore proposed a new approach to measuring fuel poverty, encompassing a ‘low-income, high cost’ (LIHC) measure. Under this indicator, thresholds are applied to income and fuel costs such that a household is defined as fuel poor if its income is below the poverty line (taking into account energy costs) and its energy costs are higher than is typical for their household type.

In addition the new definition includes a measure of the ‘**fuel poverty gap**’, to provide a measure of the severity of fuel poverty. The ‘gap’ assesses the extent to which a household falls below the energy cost threshold or, rather, the reduction in fuel bill required to lift the household out of fuel poverty. Box 2 provides a more detailed description of the LIHC approach to defining fuel poverty.

Box 2. Low-income, high cost definition of fuel poverty

The new ‘low income, high cost’ (LIHC) definition of fuel poverty encompasses a measure of both household income and fuel costs as follows:

- A **households fuel costs** are based on the required spend on fuel (using the method described in Box 1) and are adjusted for household size (using an equivalisation factor based on the number of people in the household). Equivalising fuel costs in this way effectively increases the bills of single person households and decreases the bills of multiple person households, with the intention of making them comparable.
- **Household income** is calculated on an ‘after housing costs’ (AHC) basis (deducting mortgage, payments, rent) and is equivalised to account for the composition of the household (number of adults and children). Equivalising income in this way effectively increases the incomes of single person households and reduces incomes for larger households, again with the intention of making them comparable.

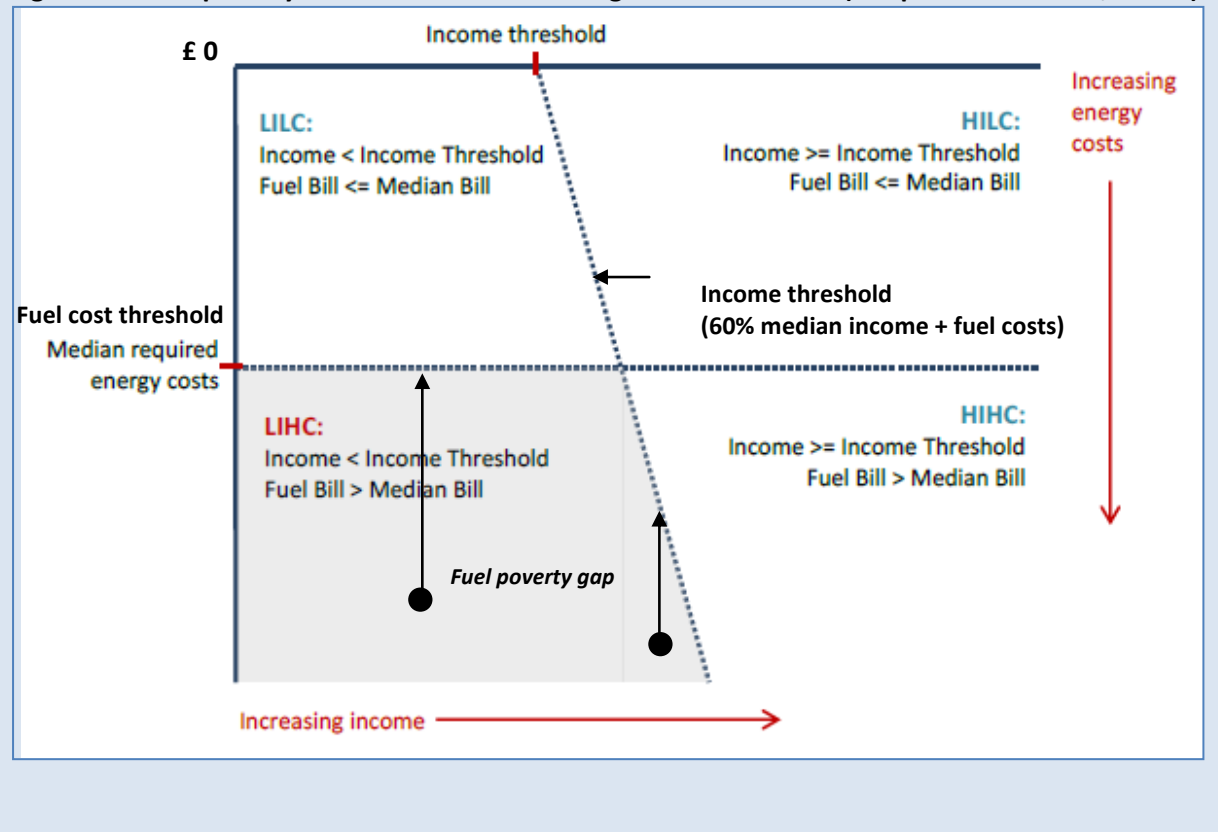
A threshold to define ‘reasonable’ fuel costs and ‘low income’ is the applied as follows:

- **Fuel cost threshold:** The national median of all households equivalised required fuel costs.
- **Income threshold:** 60% of the national median of AHC, equivalised incomes *plus* the equivalised required fuel costs for an individual household. Adding fuel costs to income has the effect of raising the income threshold for households with high fuel costs (or rather, households with higher fuel requirements also require a larger income to avoid being classed as ‘low income’ under this definition). This is why the income threshold on the figure below appears as a diagonal line).

Combining an income and fuel cost threshold gives four possible ‘quadrants’ for classifying the population as shown in **Figure 2.1**: ‘low-income, low energy costs’ (top left); ‘high-income, low energy costs’ (top right); ‘high-income, high energy costs’ (bottom right); and ‘low-income, high energy costs’ (bottom left). It is this latter group who are considered ‘fuel poor’ under this definition.

In addition, the LIHC definition includes a measure of the depth of fuel poverty, known as the ‘fuel poverty gap’. It assesses the extent to which the energy costs of a fuel poor household exceed the threshold for reasonable costs (i.e. the median).

Figure 2.1. Fuel poverty under the Low Income High Costs Measures (Adapted from: DECC, 2013d)



2.2 Fuel poverty in the UK

National housing surveys are used to model fuel poverty levels in England, Wales, Scotland and Northern Ireland. Whilst DECC draws on this suite of data to present figures for the UK as a whole, fuel poverty remains a partially devolved issue, with each Administration publishing reports independently and having its own targets. Furthermore, whilst the LIHC definition was adopted by DECC in 2013 for measuring fuel poverty in England, the Devolved Administrations continue to use the original 10% definition.

In 2011, there were an estimated 4.5 million households in fuel poverty in the UK under the 10% definition (Table 2.1). Of the four nations, Northern Ireland has the greatest proportion of fuel poor households, which reflects the high percentage of off-gas households who are therefore reliant on alternative, more expensive fuels to heat their homes (see Box 3 for key statistics on the nature of the housing stock and population in each country, based on the latest national housing surveys).

Table 2.1. Fuel poverty in the UK in 2011 (Source: DECC, 2013d)

	Number of fuel poor households (m)	% of fuel poor households
England	3.2	15%
Scotland	0.58	25%
Wales	0.37	29%
Northern Ireland	0.29	42%
Total	4.5	17%

Box 3. Key characteristics of the UK housing stock and population

England: • 22% of the housing stock built pre-1919; these properties are more likely to be solid walled without cavities and therefore harder to insulate. • 12% of the population is off the gas grid while 84% of the population use gas as their main source of heating. • 18% of the population live in rural areas	Scotland: • 18% of the housing stock built pre-1919. • 21% of the population is off to the gas grid. • 76% of dwellings are mains gas heated. • 18% of the population live in rural areas.
Wales – • Approximately a third of the housing stock is pre-1919. • 19% of the population are off the gas grid, with 79% heating their homes in this way. • Around one third of the population lives in rural areas.	Northern Ireland: • 11.5% of housing is pre-1919. • 80% of dwellings are off the gas grid. • 35% of the population are identified as living in rural areas.

The method applied in measuring fuel poverty affects the number of households classed as fuel poor. (Indeed the Government was criticised for adopting the new definition simply on the basis that it reduces the number of households classed as being in fuel poverty. See Box 4 for further discussion of the pros and cons of each definition).

In England, some 3.2 million households were classed as fuel poor under the 10% definition in 2011, whilst under the new LIHC definition the count is lower at 2.39 million. The aggregate fuel poverty gap was estimated to be £1.05 billion in 2011, with the average gap (total gap divided by the number of households in fuel poverty) at £438.

Box 4. Pros and cons of original and new approaches to defining fuel poverty

	Pros	Cons
Original 10% definition	• Simplicity (in calculating and communicating). • A fixed threshold and target. • Covered the four dimensions: income, energy efficiency, price and occupancy.	• Overly sensitive to fuel price changes • Potential for higher income households to be defined as fuel poor somewhat misleadingly.
New LIHC definition	• Less sensitive to fuel prices. • Focuses policy efforts on energy efficiency. • Prompted a new fuel poverty strategy and target for England. • 'Gap' provides measure of severity of fuel poverty.	• Complex to calculate and describe • Use of the median to set the fuel cost threshold - a benchmark considered too high by some • Moving (relative) measure – implications for political commitment • Inconsistency in approach to measuring fuel poverty throughout UK

2.3 Who is most likely to experience fuel poverty?

The approach to defining fuel poverty also has implications for the types of household classed as fuel poor (in addition to the overall number). This section provides a high level summary of the

characteristics of households most likely to be defined as fuel poor in the UK under the 10% definition, with additional analysis of the LIHC definition for England. Annex II provides a more detailed discussion of characteristics of the fuel poor in each country.

2.3.1 10% definition

Under the 10% definition, the following characteristics are dominant amongst fuel poor households in the UK: a low energy efficiency rating; non-mains gas heating; larger dwelling size; older property; end-terraced and converted flats; single person households (pensioners in particular); low-income; private sector housing (private rented in particular); unemployment; on a prepayment meter (PPM) and in a rural area. Many of these factors, both the physical property characteristics and the personal circumstances are interrelated. For example, private rented sector properties also typically have lower SAP ratings; converted flats are typically older buildings; rural areas are more likely to be off-gas; and on the socio-demographics, being retired or unemployed correlates with being on a low-income. Table 2.2 summarises some of the key characteristics of fuel poor households in each country (under the 10% definition).

2.3.2 Low-income, high cost definition (England only)

The main difference to note is that under the 10% definition single person households, and particularly single adults aged 60 or over are most likely to be classed as fuel poor, whereas under the LIHC definition, lone parent households represent the highest proportion of all household types classed as fuel poor (Figure 2.2).

In addition, the LIHC definition of fuel poverty reduces the proportion of households living in large properties (based on floor area) that are classed as fuel poor. This is a consequence of the low income threshold within the new measure: households living in larger properties tend to have higher incomes, which take them over the income threshold. The depth of fuel poverty in these larger homes (110m² or more) however, is the most severe, with an average fuel poverty gap almost three times the average of fuel poor households living in smaller properties (of less than 50m²) with average fuel poverty gaps of £825 and £280 respectively.

Figure 2.2. Percentage of fuel poor households in England in 2011, by household composition under both definitions of fuel poverty (Source: DECC, 2013)

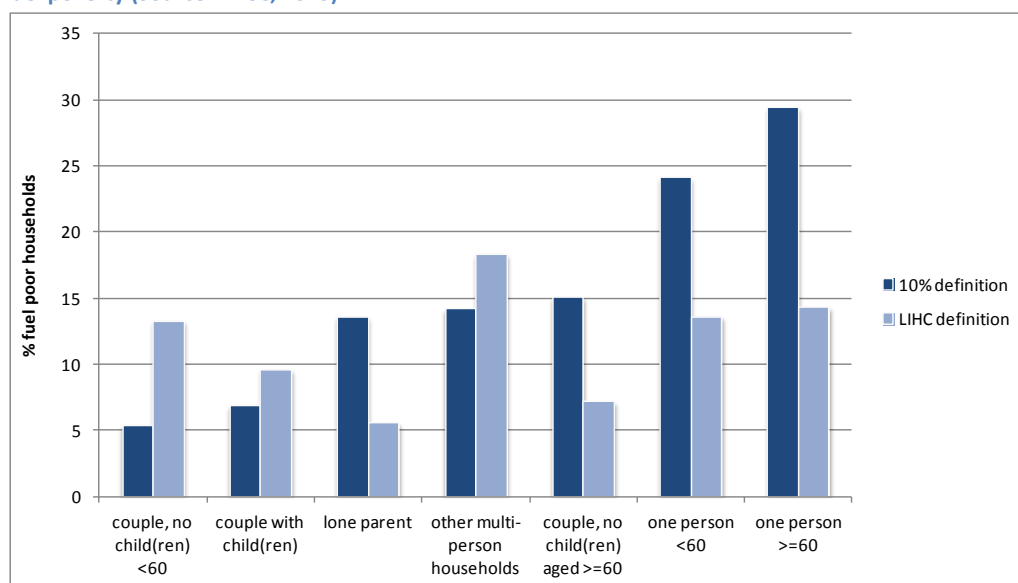


Table 2.2. Predominant characteristics of fuel poor households in the UK under the 10% definition

Characteristic of fuel poor		England (2011)	Wales (2008)	Scotland (2012)	Northern Ireland (2011)
Physical property characteristics					
Energy efficiency rating	Low	40% of SAP Band F and 70% of Band G properties fuel poor	58% of SAP <=35 properties are fuel poor (9% >=SAP 65 properties)	79% of NHER Band Poor households in fuel poverty	Not reported
Heating fuel	Solid fuel & oil	50% of solid fuel & 33% oil heated properties fuel poor (12% gas, 20% electric)	48% of solid fuel & 47% oil heated properties fuel poor (53% LPG, 37% electric, 21% gas)	45% of oil heated & 42% electric properties fuel poor (22% gas, 47% other)	59% solid fuel & 44% oil properties fuel poor (46% electric, 34% gas)
Dwelling size	Larger floor area	17% fuel poor in properties >=110m ² (11% for properties <50m ²)	35% fuel poor in properties >=150m ² (19% for properties <60m ²)	Not reported	Not reported
Dwelling age	Older properties	24% of pre-1919 properties fuel poor (6% post-1980)	47% of pre-1850 properties fuel poor (43% 1919 - 1944)	38% of pre-1919 properties fuel poor (15% post-1982)	69% of pre-1919 properties fuel poor (27% post-1980)
Dwelling type	End-terrace & converted flats	19% of end terraced; 18% converted flats; 17% detached fuel poor (9% purpose-built flats)	26% of end terraced; 52% converted flats; 26 % semi-detached; 29% detached fuel poor;	26% of terraced ; 27% converted flats; 33% detached fuel poor	51% of bungalows; 46% of terraced; 23% flats/apartments; 36% detached fuel poor
Socio-demographics					
Household composition	Single person households & pensioners	Single people over 60 account for 30% of fuel poor households	53% of single pensioner households are fuel poor (27% of married pensioners)	48% of single pensioner households fuel poor	52% of 60-74 & 66% of 75+ of households fuel poor
Income	Low	74% of income decile 1 fuel poor (2% in top 4 deciles)	94% of income decile 1 fuel poor (4% in top 4 deciles)	96% of lowest 10% fuel poor (3% of top 40%)	79% less than £10,000 income fuel poor (5.4% of £30,000 or more)
Tenure	Private rented	17% private rented fuel poor (13% LA/HA)	36% private rented fuel poor (24% HA, 28% LA)	22% private rented fuel poor (41% owned outright)	49% private rented fuel poor (41% owner occupied)
Working status	Unemployed	40% of unemployed households fuel poor (7% working)	58% of unemployed households in fuel poverty (13% working)	53% of unemployed households are fuel poor (13% working)	55% of unemployed households fuel poor (27% working)
Electricity method of payment	Pre-payment & standard credit	~20% of PPM & standard credit households fuel poor (12% direct debit)	32% of PPM and 34% of standard credit households fuel poor (21% direct debit)	18% of PPM households fuel poor	Not reported
Spatial/ geographic characteristics					
Rurality	Rural	25% rural dwellings fuel poor (13% urban)	42% rural dwellings fuel poor (22% urban)	40% rural dwelling fuel poor (24% urban)	44% of rural dwellings fuel poor (41% urban)
Region (England only)	North	19% fuel poor in North East (9% in London)	N/A	N/A	N/A

3 Factors affecting exposure and risk to fuel poverty

Understanding the characteristics of households at risk from fuel poverty is critical for ensuring policies and programmes are designed to effectively target and reach these households. The three main drivers of fuel poverty are: the cost of fuel; household income; and the energy efficiency of the property. However, there are a plethora of factors underlying each of these drivers and affect whether a household is at risk of facing unaffordable energy bills and living in a cold home. In this sense, it is useful to move beyond the definitional limits of fuel poverty, and instead consider the multiple dimensions of household vulnerability to fuel poverty.

The five factors below provide a broader understanding of the associated socio-technical risks that may result in a household experiencing fuel poverty (adapted from: Tirado-Herrero et al. (*in press*)):

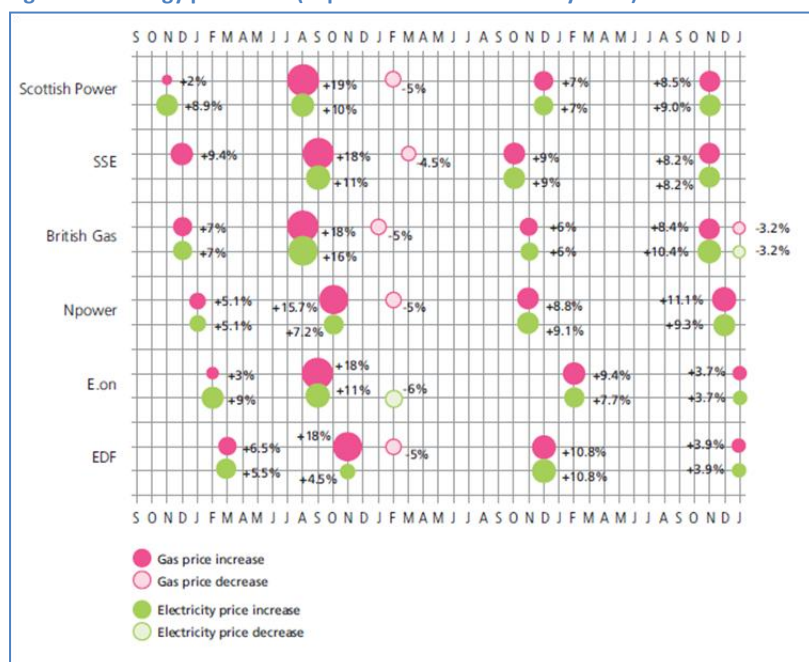
- 1) The impact of rising energy prices relative to income growth
- 2) Accessing cheaper fuel prices
- 3) Energy needs
- 4) Energy efficiency
- 5) Policy impacts

The first of these four factors are discussed in this section. Policy impacts are discussed in the next chapter.

3.1 Higher energy prices and lower incomes

The cost of living is increasing for many households in the UK. Rising prices for essential goods and services, combined with static or falling incomes, is putting increasing pressure on the household budget and the cost of energy is a key factor in this. Indeed, overall rises in consumer prices have been lower than the increases in fuel prices since 2000 (134% compared to 234%; Gordon, et al., 2013); and the end of 2013 saw all of the 'Big six' energy suppliers once again increase their prices (by no small margin of some 4-11% - see Figure 3.1).

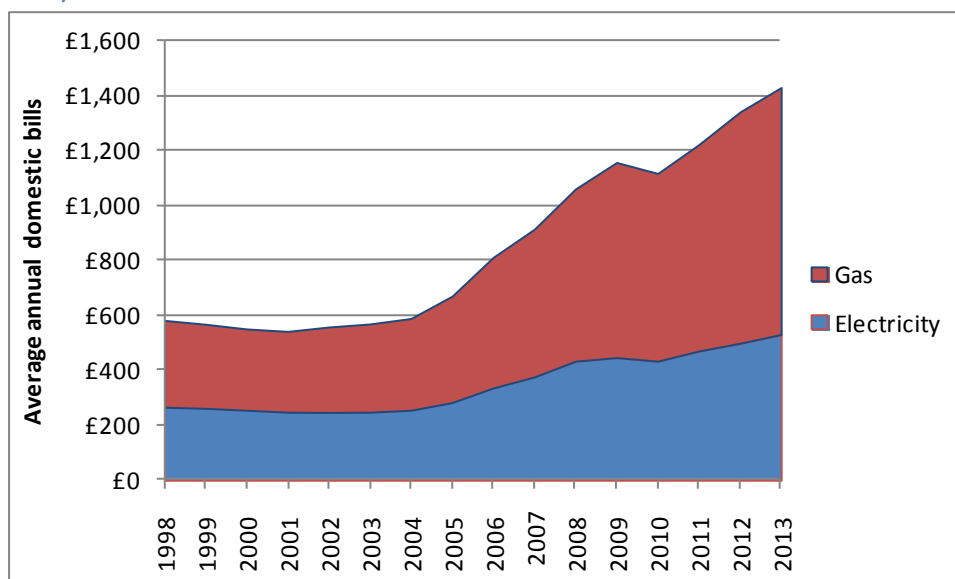
Figure 3.1. Energy price rises (September 2010 to January 2014)



Figures 3.2 show the long-term trend for gas and electricity bills between 1998 and 2013. This shows that for a customer paying by standard credit, the average combined gas and electricity bill has risen from £551 in 2003 to £1,367 in 2013.

The issue of rising energy prices is further exacerbated by income levels having not kept pace. Research published by uSwitch in January 2013 indicates that the average household annual energy bill rose by some 117% between 2005 and 2012 whilst average household income increased by 33% on average in that time (uswitch, 2013).

Figure 3.2. Average annual domestic electricity and gas bills for England and Wales from 1998 to 2013¹ (Source, DECC 2014c)

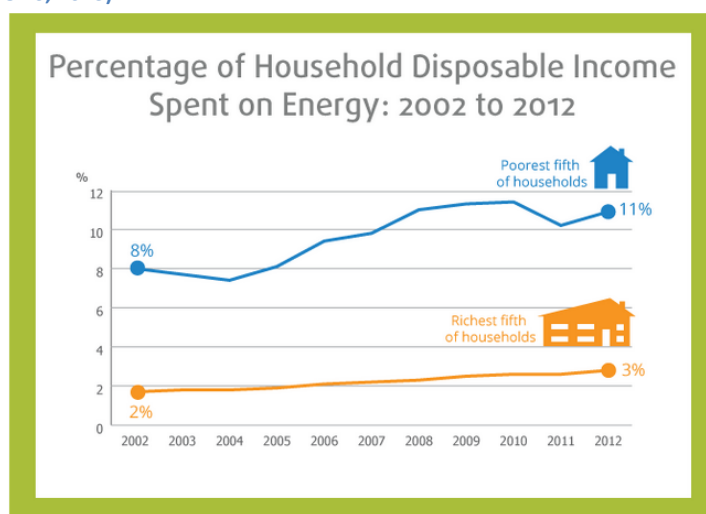


As discussed in the previous section, households living on a low income are at greater risk of fuel poverty and living in inadequately heated homes. The new ‘low-income, high cost’ definition makes the link between income and fuel poverty explicit. Part of the reason is that spending on fuel makes up a higher share of total expenditure for the poor than the rich, reflecting that much spending on fuel is a “necessity”. Similarly, Jamasb & Meier (2010), in their analysis of 17 years of British Household Panel Survey data (1991 to 2008) show that, controlling for other factors, actual spend on energy relative to income is likely to be significantly higher for low-income households

Figure 3.3 shows that the poorest fifth of households spent 11% of their income on household energy in 2012, up from 8% in 2002. The richest fifth spent just 3% in 2012 up from 2% in 2002 (ONS, 2013). Spending on energy for low income households therefore represents a far higher proportion their disposable income than richer households.

¹ Based on cash-terms rather than real prices. Bills based on consumption of 15,000kWh/year and inclusive of VAT. Bills expressed in cash terms.

Figure 3.3. Percentage of household disposable income spent on fuel² for the top and bottom income quintile (source: ONS, 2013)



Source: Office for National Statistics

Findings from the Poverty and Social Exclusion (PSE) surveys suggest one in three people could not afford to heat their home adequately in the winter of 2011 (survey carried out 2012) and 29% had to limit their use of heating, turning it down or off or only heating part of the home (Gordon, et al, 2013). The most recent findings from the PSE research³ show that over 90% of households consider: 'heating to warm living areas of the home' and a 'damp-free home' to be necessities. Yet some 9% (2.3 million) and 10% (2.7 million) households respectively, were unable to afford these two essentials and are therefore going without (Gordon, et al, 2013). In their study of the coping strategies of low-income households, Anderson et al. (2010) provide clear evidence of the relationship between income poverty and cold homes. Analysis of survey data of 699 low-income households (defined as having an equivalised household income of less than 60% of the national median and including all age groups) showed that those on the lowest incomes (of less than £6,000 per year) were especially likely to have found their fuel bills to be a 'heavy financial burden', to have cut back on heating in the previous year, and to have lived in homes that were colder than they wanted them to be during the previous winter.

3.2 Accessing cheaper fuel prices

There are three key points to consider in the context of a households ability to access the best prices for fuel:

- An ability (and willingness) to engage in the energy market (switch supplier/tariff)
- Fuels used for heating the home
- The method of payment for fuel

² Based on all households with non-zero expenditure on household energy in the Living Costs and Food Survey.

³ The Poverty and Social Exclusion (PSE) research measures the numbers of people who fall below what the population as a whole think should be a minimum standard of living. It includes: an attitudes survey, that identifies what the population as a whole think are 'necessities': things that everyone should be able to afford and which no one should have to go without; and a living standards survey to assess who has and who does not have each necessity.

The energy market

“A market that works well for consumers is accessible, inclusive, and responsive to the needs of consumers” (Smith, 2013).

Whilst research suggests that low-income households may cut back simultaneously on fuel and food expenditure, there is consistent evidence in the literature that methods for reducing spending on these two essential items are quite different. For example, whilst the food market appeared highly accessible to the low-income households in the study by Anderson et al. (2010), and represents a market in which they played an active role as savvy consumers, the energy market was presented as quite the opposite. Unlike food, with which interviewees' strategy for seeking out bargains, comparing prices and willingness to sacrifice quality over quantity enabled them to make cost savings, their approach to cutting back on spending on fuel was notably focused on the latter, compromising on quantity (turning the heating down, limiting heating to certain rooms, or turning it off altogether) rather than seeking the best price for their fuel. Hill et al. (2011) found similar examples amongst their study sample (over 65s) of extreme action to cope with the pressure of energy costs by making cutbacks, including going to bed early to save on power or heating the house for only a couple of hours a day, but again, whilst participants also reported cutting back on food costs, this did not translate into the same feeling of going without: participants did not report going hungry, but did feel they were cutting back on quality, being unable to afford healthy, fresh produce.

Not only is there evidence of limited engagement amongst low-income households with the energy market, but several studies report a distinct unwillingness and aversion to do so. This often stemmed from distrust in energy suppliers, a previous bad experience of switching, scepticism over any offer really being better than another, or concern over ending up with a worst deal, which is associated with an attitude of 'better the devil you know' (or status quo bias) (Gibbons & Singler, 2008; Ridge, 2009; Anderson et al., 2010; Hill et al., 2011).

Access to the energy market (comparing prices to identify the best deal and switching energy suppliers) is highly reliant on having access to, and an ability to use, the internet and having a bank account (since the cheapest prices are typically direct debit offers). Over 7 million adults and one third of disabled people have never used the internet and many more, the elderly in particular, remain reluctant to use the internet for transactions (Smith, 2013). One in ten low-income households do not have a bank account (Barnardo's, 2012) while those that do often take the view that direct debit payments represent a level of unacceptable 'risk'. This is because low income household usually budget weekly rather than monthly meaning that direct debits are unsuitable method as well as diminishing the level of control the individual has over when and how much money is deducted from their account (Hirsch, 2013).

The requirements for accessing the cheapest energy tariffs therefore exclude certain consumer groups and hence these households can end up paying the higher prices for the cost of fuel – a concept, when applied to low-income households, known as the 'poverty premium'.

Method of payment

“The poorest families are paying the highest costs for their energy bills” (Barnardo’s, 2012)

Prepayment meters are typically the most expensive method of payment (based on unit rate (p/kWh) and relative to other payment methods) and more common amongst low-income households (Smith, 2013a; Save the Children, 2011). In this sense PPM are characteristic of the ‘poverty premium’, which refers to the extra cost that low-income households pay for goods and services compared to the prices paid for the same goods and services by higher income households. Whilst there are some legitimate additional ‘supply costs’ associated with servicing prepayment customers compared to other payment types, in its Energy Supply Probe, Ofgem (2008) showed this difference to be only £88, whilst at the time those on PPMs paid on average £125 a year more than if they were on Direct Debit. In other words, in 2008 PPM customers were paying £37 more than the additional cost to supply the customer would suggest.

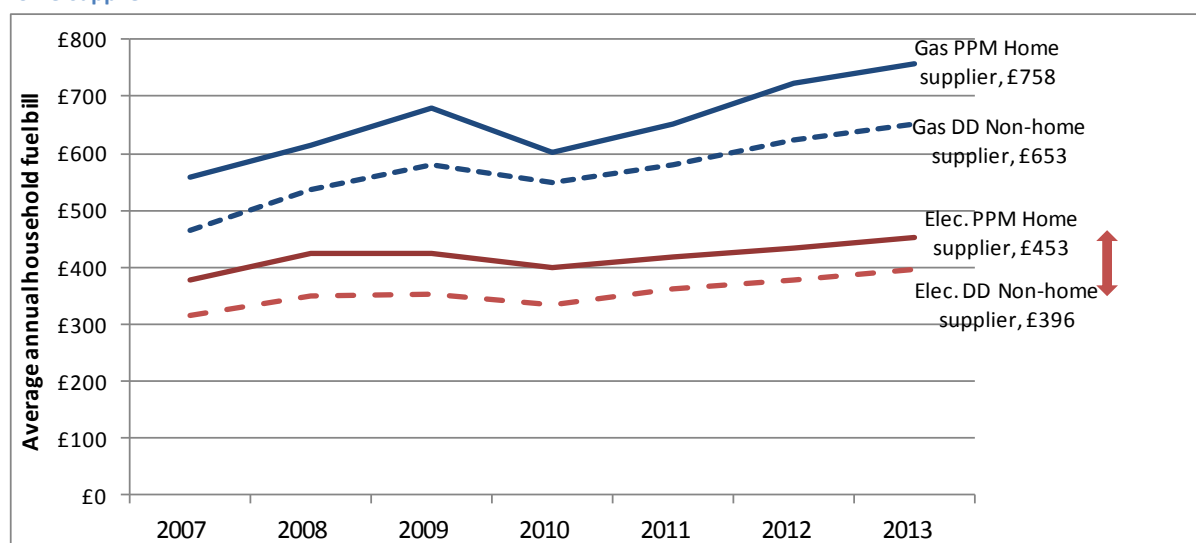
Intervention by Ofgem since the Supplier Probe has sought to reduce this differential, to ensure it more accurately reflects the true additional costs associated with prepayment meters (rather than an additional unjustified premium) and that suppliers demonstrate this. However, as noted by Hirsch (2013) calculating the price premium to accurately reflect legitimate additional supply costs can be complex and there thus remains scope for suppliers to over-charge in this regard. There is also a question regarding whether or not passing on the additional costs of prepayment meters to customers who use this method of payment (as opposed to spreading the cost to include all consumers) is a ‘fair’ approach. As succinctly put by Hirsch (2013): *“cost-reflectivity should not be a smokescreen for the exploitation of low income consumers”*.

The fact that there are still substantial savings to be made from switching supplier/tariff alludes to a continuing wide distribution of prices on offer. For example, the average estimated annual saving for customers who applied to switch suppliers through *Which?* in 2013 was just over £140⁴. The average differential in annual household fuel bills in 2013 between those on the cheapest and most expensive payment methods (i.e. prepayment meters home supplier vs. direct debit non-home (non-incumbent) supplier was £57 and £105 for electricity and gas respectively (see Figure 3.4 derived from DECC, 2013). Unfortunately, the cost of serving these customers in 2013 is unknown and we therefore cannot compare this to the Ofgem Energy Supply Probe discussed above.

Save the Children (2011) estimated that, overall, the annual ‘poverty premium’ can amount to more than £1,280 for a typical low-income family. The analysis showed the extra cost of gas and electricity bills to account for 20% of the premium, with low-income families estimated to pay an additional £250 for their gas and electricity compared to typical costs (Save the Children, 2011).

⁴ This figure is the average estimated annual saving for customers who applied to switch suppliers through Which? Switch between 1st February 2013 and 31st July 2013. <http://www.which.co.uk/switch/about-which-switch> accessed 3rd January 2014.

Figure 3.4. Average annual household electricity and gas bills for direct debit non-home supplier and prepayment meter home-supplier



Data source: DECC (2013c). Table 2.2.1 Average annual domestic electricity bills by home and non-home supplier; and Table 2.3.1 Average annual domestic gas bills by home and non-home supplier. Updated 19th December 2013. Accessed 3/1/2103. Available at: <https://www.gov.uk/government/statistical-data-sets/annual-domestic-energy-price-statistics>

However, whilst prepayment meters offer the least attractive option in terms of the unit cost of energy, this method of payment is often favoured by low-income households, due to the simplicity this approach offers for managing expenditure on a day-to-day basis and the avoidance of any risk of receiving an unexpected, large and unaffordable fuel bill. Thus prepayment meters present a favourable approach to managing household finances on a limited budget for some low-income households, but customers are penalised for adopting this method (Hirsch, 2013).

Whilst it is true to say that some households prefer to manage and pay for their fuel using prepayment meters (even in the knowledge that they are paying a higher unit cost in doing so) due to the higher level of control this method of payment offers (Gibbons & Singler, 2008) for others this is not a matter of choice. As noted above, financial (e.g. lack of bank account) and/or digital (e.g. lack of internet access) exclusion can prevent some households from accessing the best deals on energy prices and tariffs (Smith, 2013a; Save the Children, 2011; Barnardo's, 2012). Households that are in arrears are usually not given a choice regarding a prepayment meter and, even if they pay off their debts, they then have to pay to have the meter changed.

Direct debit, whilst typically offering the lowest unit cost of all energy tariffs, is not without its drawbacks for low-income households. Failure by energy suppliers to amend payments to accurately reflect the energy consumed can result in households being either 'overcharged' (paying for more than they are consuming, albeit it temporary, this will still place additional short-term strain on the household budget), or where payments are set insufficiently low, households can – unknowingly – get into arrears. Hill et al. (2011) found the latter could cause significant shock and distress, particularly as these people were often at pains to avoid getting into debt (Hill et al., 2011).

Section 5.2.3 of this report includes further discussion of the impact of energy pricing structures and market failures on the price low-income households pay for fuel. Section 5.5.6 further explores issues associated with tariff options, prepayment meters and switching.

Heating fuel

In addition to the method of payment, fuel type also has implications for the cost of energy in the home. Households living in more rural areas without mains gas are forced to use more expensive forms of heating such as oil and are excluded from dual fuel discounts. Similarly, rural dwellings are typically older, less energy efficient and therefore more difficult and more expensive to keep warm (see section 2.3 for a discussion of the characteristics of fuel poor households).

3.3 Energy needs

Income and the unit price of fuel are key drivers affecting a household's likelihood to experience difficulties paying for energy in the home. As well as having varying levels of ability to afford energy, different households have different energy needs.

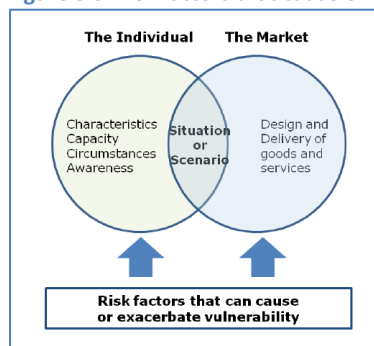
For example, older people, those with disabilities and families with very young children are more likely to have greater heating needs due to their specific lifestyles which further exacerbate the risks to health and well being and put significant additional pressure on their already limited finances (George et al., 2013).

Analysis of English Housing Survey data (2010-11) shows a greater proportion of households containing disabled people are fuel poor (under the original definition) compared with households that do not contain someone who is disabled (Thomson et al., 2013).

In developing its Consumer Vulnerability Strategy, Ofgem adopted a 'risk-factor' approach to understanding and defining 'vulnerability' (Figure 3.5). The definition combines consumer's personal circumstances and characteristics with aspects of the energy market (Smith, 2013). It identifies situations in the energy market that could harmfully impact upon an individual's ability to pay, quality of life, and/or their physical or mental well-being, including: struggling to afford bills, living in a cold inefficient home, facing pressure sales tactics, struggling to understand and act upon information or choices (such as getting the best deal), or lacking the confidence or ability to pursue a query or complaint (Smith, 2013).

It identifies five key characteristics that it considers central to a consumer being 'at risk' of being vulnerable, namely: consumers of pensionable age; have a disability; chronically sick; on a low income; or live in rural areas (Smith, 2013). In addition to these characteristics of the individual, Ofgem notes the role of the market in potentially exacerbating vulnerability and indeed the transitory nature of vulnerability: consumers may be considered vulnerable in different situations at different times in their life (Smith, 2013).

Figure 3.5 Risk factors that cause or exacerbate vulnerability (Source: Smith, 2013)



3.4 Energy efficiency

The energy efficiency of a property is intrinsically linked to the likelihood that a household will experience fuel poverty (by definition), with a lower SAP rating being associated with higher incidence of fuel poverty (as discussed previously in section 2.3). As noted earlier, a damp-free home and heating living areas to adequate warmth are considered two of the top necessities by households in the UK (based on the Poverty and Social Exclusion Survey) but an increasing proportion of households are unable to afford these two basic needs (Table 3.1).

Table 3.1. How many households can't afford a warm, damp-free home? (Source: Poverty and Social Exclusion survey; Gordon et al., 2013)

Housing standards	1983	1990	1999	2012
Heating to keep home adequately warm	5%	3%	3%	9%
Damp-free home	6%	2%	7%	10%

Gibbons & Singler (2008) note evidence of the potential positive impacts of installing energy efficiency measures in fuel poor households, including a reduction in fuel use; a reduction in expenditure; and a warmer home, and that these effects are not mutually exclusive.

Evidence from the Warm Front Health Impact Evaluation showed that grant recipients reported an increased use of the domestic space used during cold months as a result of improved insulation measures. In addition, as a by-product of cost savings on energy and having a more comfortable environment in the kitchen in particular, participants reported nutritional benefits: a fifth of participants reported improved cooking, as previously cold kitchens were now comfortable to work in and a tenth of cases felt they could purchase more and better quality food because of cost savings (Green & Gilbertson, 2008).

A thermally-efficient dwelling does not necessarily however eliminate the risk of its occupants facing unaffordable energy costs and experiencing a cold home (Anderson et al., 2010). Where income is so highly constrained, any level of heating can represent an unmanageable cost and therefore an area of household expenditure within which cutbacks may be made. The extent to which cutting back on heating results in experiencing a cold home is related to the building fabric, individual circumstances and strategies for keeping warm in the absence of heating. Whilst Anderson et al. (2010) found many of the low-income households interviewed in their study to be highly adept and practised at managing to keep warm in the absence of heating; others reported a grim existence and adverse impacts on mental, physical and social wellbeing of living in a cold home.

There are a number of serious flaws in past, present and proposed energy efficiency policies in the UK which act as barriers to take-up by low-income, vulnerable households. For example, whilst the support of, and ability to access, grants to fund home improvement measures – including energy efficiency measures – was noted as highly beneficial by some participants in the study by Hill et al. (2011, a study of low income over 65's), their report also notes the importance of ensuring such services and offers are widely known about. This extends to ensuring the full range of benefits to which a household is entitled being claimed. Section 5.2 of this report provides a more detailed discussion of UK policies to address issues of high fuel costs and cold homes.

4 Low income and high energy costs: impacts experienced by fuel poor households

“The reality of living in poverty is about families having to make hard choices between eating and heating their homes” (Barnardo’s, 2012).

Households on a low income face difficult choices in managing everyday living costs. There is a growing body of literature that explores the strategies of low-income households (across all age groups) to managing living costs, with specific reference to fuel bills and coping with cold homes (e.g. see Hill et al., 2011; Gibbons & Singler 2008; Anderson et al., 2010; Radcliff, 2010;). Whilst articulated slightly differently, there are clear synergies between the studies, not least in highlighting the complex mix of factors associated with how households approach managing fuel costs and heating the home.

In a qualitative study of people aged over 65 living on a low income, Hill et al. (2011) identified a complex mix of factors that contribute to the experience of living on a low income. Through a combination of 25 individual in-depth interviews with people aged 65-87 and 5 focus groups of 6-8 people, the research presents a detailed picture of the hardship and challenges for older people living on a constrained income. Whilst not fuel poor by definition, households in this study noted the increasing pressure of rising energy costs, but prioritised keeping on top of bills and avoiding debt, even if this meant drastic action to limit their heating.

Radcliff (2010) and Anderson et al. (2010) present similar discussions of the trade-offs associated with managing fuel costs and coping with cold weather (based on interviews with 120 low-income households in Wales and a 50 households throughout the UK (respectively). Decisions as to whether to maintain adequate warmth and potentially suffer the consequences of high and unaffordable bills (thus potentially resulting in arrears or borrowing); or limit heating to avoid the risk of high bills but risk suffering the consequences of a cold home (and associated impacts on physical and mental health and social well-being) are neither mutually exclusive nor clear cut. Households may be simultaneously rationing fuel use, cutting back on spending elsewhere, getting into arrears or using savings to cover their living costs.

Tod et al. (2012) identified a complex interaction of factors that explained whether people in their study sample (50 people aged over 55) were able to or chose to keep warm. Factors they identify as ‘attitudes and values’ show clear overlaps with those discussed in the study by Anderson et al. (2010), referencing attitudes reflective of: ‘making ends meet’ (e.g. being thrifty, proud, maintain independence); ‘managing’ (attitudes of hardiness and stoicism) and a reluctance to change suppliers (e.g. due to mistrust of energy companies, fear of getting a worse deal).

However, a self-reported ability and stoic determination to keep up with bills and other essential spending may mask what is in fact a very difficult and harsh existence. Whilst avoiding debt, borrowing or getting into arrears was important to the dignity and self-esteem of many low-income households interviewed in the study by Anderson et al. (2010), this was often only achievable through very tight budgeting and cost-cutting. The latter was not limited to discretionary items: for around one third of study participants cut backs included (and concurrently) food and heating.

Both Radcliffe (2010) and Anderson et al. (2010) also note a circumstance where such decisions to managing costs and heating the home may no longer be considered as 'coping': interviewees in both studies describe rationing fuel use due to an inability to pay the cost to the extent that they are living miserably in a cold home, suffering physical, mental and social consequences (Anderson et al., 2010; Radcliff, 2010).

4.1 Impacts of fuel poverty and cold homes

As noted above, the experience of unaffordable energy bills and/or living in cold home can impact adversely on physical and mental health and social well-being. These effects vary depending on the severity and coping strategies adopted by households. For example, those rationing fuel use and living in under-heated homes are more likely to suffer physical health impacts (e.g. asthmatic symptoms), but the nature and severity of these impacts will vary with the individual. Households seeking financial savings through cut backs on food expenditure (quantity and/or quality) may suffer longer term health impacts associated with a poor diet with low nutritional value. Mental health problems and stress may occur in any household struggling to live on a constrained income and faced with unaffordable energy bills (Gibbons & Singler, 2008). A stressful home environment has implications for relationships and general emotional well-being of those subjected to it. A lack of ability to heat the home can affect social relationships external to the household, as households may feel less able to invite people into their home. This can further exacerbate mental health effects (e.g. feelings of social isolation, low self-esteem and depression) (Gibbons & Singler, 2008).

The effects of living in a cold home are therefore complex, multi-faceted and not fully understood. Excess Winter Deaths (EWD) and Excess Winter Admissions (EWA) are often discussed in the context of fuel poverty and cold homes. In 2008-2009, over 26,000 Excess Winter Deaths were reported in England, with the majority occurring in those older than 65 years (Tod et al., 2012). Whilst it is difficult to ascertain the extent to which EWDs are due to cold indoor living temperatures, it has been estimated that 30-50% of EWDs can be attributed to cold housing (Braubach et al., 2011).

This figure compares unfavourably with other northern European countries, such as Finland, which, despite having a colder climate, experienced half this rate of Excess Winter Deaths (Tod et al., 2012). Better standards of insulation are recognised as a key factor in the observation of fewer excess winter deaths and lower rates of fuel poverty in colder European countries (Liddell & Morris, 2010).

Long-term exposure to a cold home has been shown to impact on weight gain in young children and babies, increase hospital admission rates for children and increase the severity and frequency of asthmatic symptoms (Marmot Review 2011). Children living in cold housing are more than twice as likely to suffer from breathing problems, including asthma and bronchitis and children living in damp and mouldy homes are up to three times more likely to suffer from coughing, wheezing and respiratory illness as their peers who live in dry homes (Marmot Review 2011).

The stress and worry of high energy bills can impact on mental health and social relationships in the home. Barnardo's survey of its services (a survey of 80 of its services across England that deliver direct support to vulnerable children, young people and families who have experienced fuel poverty) showed a strong relationship between fuel debt and mental health problems, with 94% of respondents reporting that high energy bills were impacting on the mental health of the families they work with (Barnardo's, 2012).

Improvements to a household's thermal comfort and a reduction in the stress associated with energy debt can yield significant mental health benefits (Harris et al., 2010). This finding was supported by the Warm Front Study Group, operating from 2001-2006, who revealed that better living conditions and lower energy costs can have a significant impact on mental health (Green & Gilbertson, 2008). Higher temperatures, satisfaction with the heating system, greater thermal comfort, reductions in fuel poverty and lower stress were found to be significantly correlated with improved health (Gilbertson et al. 2012). Statistical analysis of the results from a cross-sectional survey of 2,685 low income householders participating in the Warm Front scheme before and after intervention showed, of all the dimensions of health examined, only self reported mental health to be *directly* associated with the installation of Warm Front measures. In particular, levels of anxiety and depression reduced by almost 50% following Warm Front improvements (Gilbertson et al., 2012).

5 What makes up the household energy bill?

This report has so far explored the underlying drivers of fuel poverty (in both the definitional sense and wider context) and has considered the implications for low income households facing the prospect of a cold home and/or unaffordable energy bills.

We have shown how energy prices have risen dramatically and the cost of fuel is putting increasing pressure on the household budget. A detailed and in-depth understanding of the underlying drivers for these changes in energy bills is central to identifying the potential for policy and practice to influence. This chapter therefore takes a detailed look at the factors affecting the household energy bill. This includes both the unit price we pay for fuel (which in turn depends on a number of factors) and how much energy we consume. The latter is explored in the context of Government energy and climate policies aimed at reducing household energy demand.

5.1 Factors underlying the price of fuel

A combination of factors contributes to the unit price that we, as energy consumers pay for the fuel we use in our homes. These can broadly be broken down into ‘non-policy’ and ‘policy’ costs⁵.

5.1.1 Non-policy costs and fuel prices

Non-policy costs associated with domestic energy prices consist of the following main components:

- Wholesale cost of energy: the amount paid by energy suppliers in purchasing gas and electricity that they then supply to customers.
- Network costs: the charge paid by suppliers for using the networks to transmit gas and electricity from where it is generated to homes and businesses.
- Supplier operating costs, metering and ‘other’ costs: transactional costs associated with, for example, billing customers, sales etc and costs associated with metering energy consumed in homes and businesses.
- Supplier margins or ‘profit’

Understanding how changes in the costs associated with each of these components impacts on the price we pay for fuel is highly complex.

Network prices are subject to price controls by Ofgem and their impact is therefore known and more easily quantifiable. The amount of profit made by energy suppliers on the other hand is far more opaque and harder to quantify, yet is central to understanding the factors driving up the price of fuel.

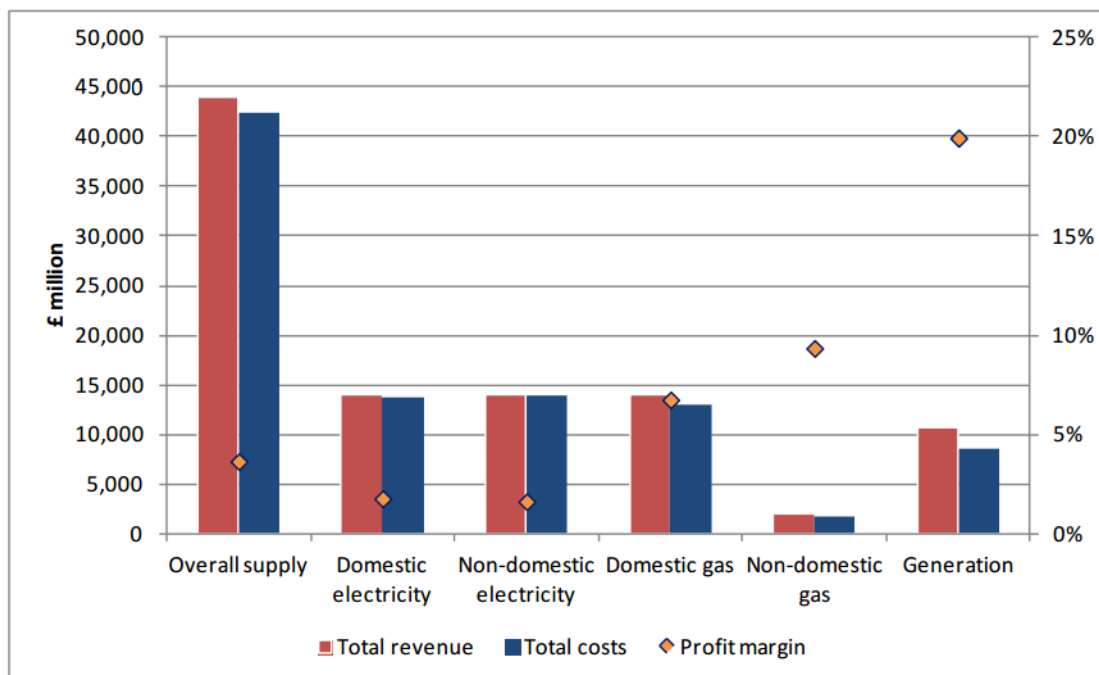
The most recent estimate from Ofgem on the net profit margin made by suppliers on their retail business is £65 or 5% (Ofgem, 2013b). This figure of 5% profit from the retail arm has been supported by the ‘Big six’ publically, most recently during the Energy and Climate Change Select Committee Oral Enquiry (House of Commons, 2013c). Ofgem (2012) calculated supplier profit on domestic supply at 4.3%. Whilst 4-5% profit may be an entirely justifiable level of profit for a business with shareholders, this is complicated by the ‘vertically integrated’ nature of the UK energy market.

⁵ Plus VAT which is charged at fixed rate of 5% for domestic energy.

Vertical integration describes the structure whereby energy companies generate energy; trade on the wholesale market; and supply energy to consumers. In the UK this phenomenon is prevalent: the 'Big six' generate 70% of the energy on the market and they supply around 98% of the energy we consume. As traders on the wholesale market, these vertically integrated companies can effectively buy energy from themselves, which means that there is potential to make unknown profits and losses in different areas. For example, this potentially means that while an increase in the wholesale cost might dent their supply profit margins (as they have to pay more to purchase the energy for supply), it could boost generation profits (they get paid more for the energy they have generated).

Ofgem (2012) examined the average industry revenues and profit margins by business segment across the 'big six'. Its findings (illustrated in Figure 5.1) show that generation profits were 19.9% in 2012 (far right on the graph below), with overall supply profits of 3.2% (far left). As discussed above, domestic supply profits in 2012 were 4.3% on average, but this average masks a differential between electricity and gas, with the latter having a higher profit margin (as shown in the graph below). This reflects the required large sums of capital investment needed in the electricity generation business to build power plants and replace infrastructure. The profit margin for the generation business of 19.9% (calculated as profit divided by revenue) does not take into account capital employed. It is therefore difficult to judge the economic profitability of this aspect of a suppliers business. However, the main point to note here is the differing levels of profit within the business segments which will ultimately impact upon the unit cost paid by the consumer.

Figure 5.1. Aggregate industry revenues, costs and margins for each segment (Ofgem, 2012)



In addition to the complication of vertical integration, suppliers have different (and undisclosed) approaches to buying energy on the open market which affects the wholesale price they pay and therefore the margin of profit made in their trading arm of the business. Suppliers typically have a 'hedging strategy' where they buy some energy for the next day, some for the next few months and

some for a year or more in advance⁶. If companies can buy energy more cheaply than their competitors it gives them a big advantage. As a result, suppliers tend to resist disclosing exactly how they go about buying wholesale energy. This is a significant limiting factor in the availability of precise wholesale price data and implementation of policy in this area.

5.1.2 Policy costs and fuel prices

The cost of environmental and social obligations placed on private companies represents a further component of the costs underlying domestic energy prices. However, in addition to representing a cost to consumers, some energy and climate policies are designed to benefit households directly, by supporting the installation of energy efficiency or low carbon measures, or providing financial support.

To understand the likely net impact on consumer bills of these policies, analysis needs to take account of both the costs and benefits. The next section explores this in detail, including analysis of individual policies. Here we continue on the theme of exploring the cost aspect of policies that affect the unit price of fuel.

Where the delivery of an obligated Government scheme represents a cost to the energy supplier (as opposed to the tax payer) it is assumed that these costs are passed on in full to consumers. Depending on the design and nature of the scheme, these costs may be passed on through electricity and/or gas bills; and recovered on a per unit (£ per kWh) or per customer basis. Box 5 discusses some of the implications of the different approaches. Whilst at this level, the approach to policy cost pass-through is understood, the reality of how suppliers go about recovering these costs – that is, how costs are shared between the domestic and non-domestic market, and across different customers – is a commercial decision and remains highly opaque.

Table 5.1 shows the total estimated costs of current energy and climate change policies, the method applied in recovering these costs from domestic consumers and what the cost represents (in £ per kWh or per customer account). This does not show the overall net impact of the policies on household energy bills. Quantifying the overall impact requires analysis to take account of both the costs and benefits of the individual policy. This is covered in detail in the next chapter, whilst here we are focused only on factors contributing to the price we pay for fuel.

Box 5. Policy cost recovery through customer energy bills

Whilst the true approach to policy cost recovery adopted by energy suppliers is opaque, it is widely assumed that the method they employ reflects the nature of the costs obligated to them (Preston, et al., 2011). It is therefore assumed that suppliers currently pass on policy costs to consumers' bills in two ways, each of which has implications for the overall fairness of policy deliver. (A third approach sees policy costs recovered via general taxation, rather than energy bills.)

Per customer account basis

It is assumed that costs that fall upon suppliers according to the number of customer accounts they hold are passed on to customers on this basis (total cost / total number of accounts). It is therefore assumed that suppliers treat these as fixed costs passed (passed through in the standing charge or

⁶ This 'hedging strategy' approach is an attempt to help manage the risk associated with volatility in short term energy prices.

‘tier 1’ unit price (an initial (low) set of units consumed charged at a higher rate). Customers effectively pay the same costs towards these policies, regardless of how much they consume. (Policies: Carbon Emissions Reduction Target (CERT) and (prior to recent changes announced by Government) – Warm Homes Discount (WHD) and Energy Company Obligation (ECO)).

Whilst offering a relatively simple and transparent (i.e. all customers theoretically pay the same), this approach is on the whole more regressive in nature, as lower income households on average have lower consumption, yet pay the same towards policy costs. The costs therefore represent a higher proportion of bills for low consumers than (richer) higher consumers. This approach does also not align with the ‘polluter pays’ principle (more energy you used ≠ higher unit price).

Per unit consumed basis

It is assumed that where policy costs relate to the number of units of energy supplied, suppliers treat these as variable costs and pass them through in the unit price they offer (the second tier price where suppliers have adopted this tariff structure). The amount customers pay towards the policy costs are therefore dependent on how much they consume. (Policies: Renewables Obligation, EU Emissions Trading Scheme, Feed-in Tariffs).

This on the whole represents a fairer, more progressive approach as on average low income households consume less. However, research has identified a group of low-income high use consumers who are vulnerable to bearing disproportionate share of policy costs under this approach (White et al., 2010).

Table 5.1. Policy costs and pass-through to domestic energy bills

Policy	Estimated policy cost to domestic consumers	Fuel type subject to costs	Approach to cost pass-through	Average cost to consumer (2020)
Renewables Obligation	£932.4m	Electricity	Per unit	£ 0.015 / kWh
EU Emissions Trading Scheme & Carbon Price Floor	£686.7m	Electricity	Per unit	£0.011 / kWh
Electricity Market Reform	£579.6m	Electricity	Per unit	£0.0092 / kWh
CERT	N/A	Electricity & gas	Per customer	£18.52 / account/yr
ECO	£1,092.6m	Electricity & gas	Per customer*	£27.58 / account/yr*
Smart meters	£36.95m	Electricity & gas	Per unit	Elect: £0.0003 / kWh Gas: £0.0001 / kWh
Feed-in Tariff	£157.5m	Electricity	Per unit	£0.0025 / kWh
Warm Home Discount	£226.8m	Electricity & gas^	Per customer^	£5.73 / account/yr^
Renewable Heat Incentive	Taxation	Taxation		
<i>All policies</i>	<i>£ 3,712.7m</i>			

* The ECO was previously funded through electricity and gas bills on a per customer account basis. The Government has recently announced this will be moved to a per unit charge.

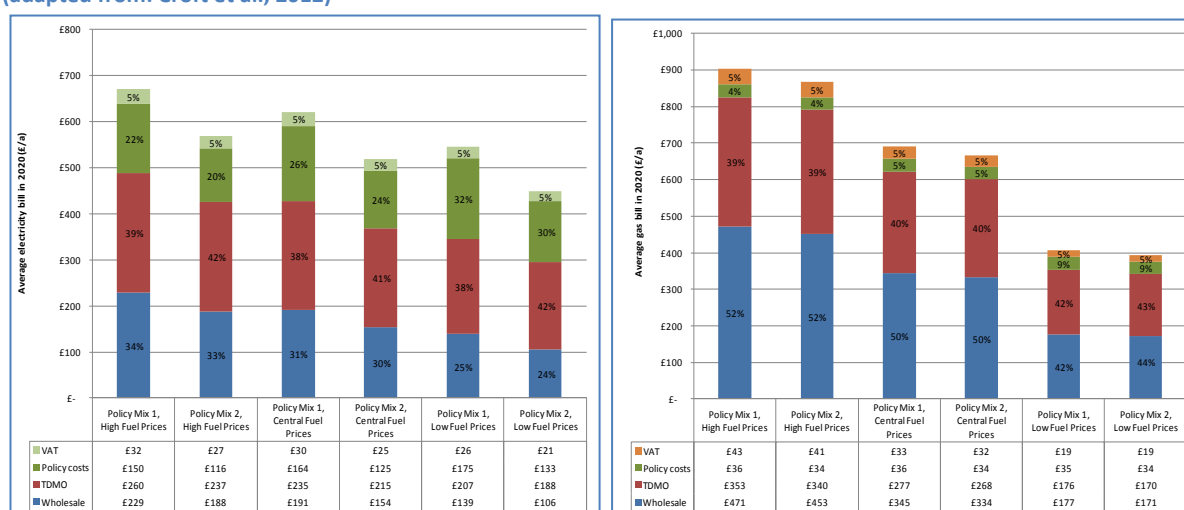
^ The WHD was previously funded through electricity and gas bills on a per customer account basis. The Government has recently announced this policy will now be funded through taxation

5.2 What is driving up energy prices? Non-policy vs. policy costs

The household energy bill is made up of a number of components namely: the wholesale cost of energy; network costs; supplier operating costs; supplier margins or ‘profit’; environmental and social levies (policy costs); and VAT.

To understand the relative contribution of each of the components making up the household energy bill and the sensitivity to different assumptions about the costs, Croft et al. (2012) undertook some detailed modelling and analysis. Combining three ‘fuel price’ scenarios to account for all non-policy costs (with low, central, high price assumptions) with two ‘policy mix’ scenarios, to account for policy costs (with different assumptions about delivery costs and approaches⁷), a total of six different scenarios were modelled Figure 5.2. (By necessity, this analysis also accounted for the benefits of energy policies (a reduction in energy demand), to show the overall net impact).

Figure 5.2. The average electricity and gas bill in 2020 across all six scenarios, broken down into constituent parts⁸ (adapted from: Croft et al., 2012)



The results showed that across all of these scenarios (and fuel types) the most influential factor affecting the predicted household fuel bill in 2020 is the cost of wholesale energy and the networks. This is particularly the case for gas prices with wholesale and network costs explaining 99.8% of the variance in final bills.

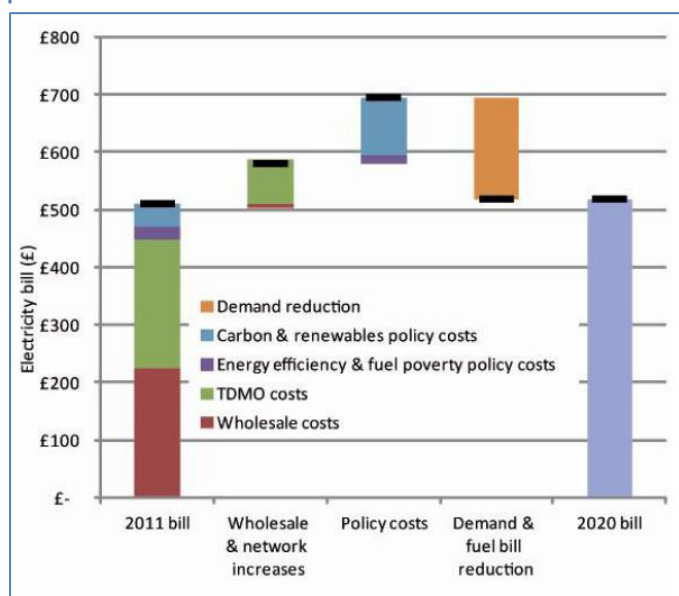
Furthermore, accounting for the benefits offered in terms of demand reduction, the overall net impact of policies (as a whole) is a reduction in bills. Figure 5.3. Illustration breaking down the electricity bill changes from 2011 to 2020 for the Policy Mix 2, central fuel price scenario below illustrates this, showing the changes in an average household electricity bill between 2011 and 2020 under the ‘central fuel price’ and ‘policy mix 2’ scenario (the low policy cost and/or enhanced delivery of measures). Under this scenario, we see the additional charges for energy and carbon

⁷ Policy mix 1: A combination of higher policy costs and/or reduced delivery of demand reduction measures. Policy mix 2: A ‘low policy cost, enhanced delivery of measures’ scenario – i.e. a ‘better case’ scenario where the more cost-effective solutions are delivered to consumers (e.g. more lofts, cavities and boilers; fewer solid wall and PV).

⁸ TDMO = Transmission, Distribution, Metering and ‘Other’

policy costs in 2020 (third bar, blue and purple block) are less than reduction in bills associated with policy benefits (measures lowering demand) (orange block). The report concludes therefore that it is not true to say that policy costs are driving up the cost of energy bills (Croft et al., 2012). This is a particularly pertinent conclusion in light of the recent debate following the latest round of fuel price rises in 2013 (see Box 6).

Figure 5.3. Illustration breaking down the electricity bill changes from 2011 to 2020 for the Policy Mix 2, central fuel price scenario



Accounting for the changes to wholesale costs and network costs (second bar, red and green block on the graph above) and policy costs and benefits shows the average bill in 2020 is expected to change little from the 2011 bill. This suggests therefore that the benefits of policies are sufficiently large to outweigh both expected fuel price rises resulting from both the costs of policies and expected increases in wholesale and TDMO costs. However, this outcome is reliant on the successful delivery of policy at the scale assumed by the Government.

The next chapter provides a more detailed look at the impact of Government policies (environmental and social obligations), including the benefits of policies, distributional impacts and impacts of individual policies.

Box 6. Fuel price rises: the political debate

Understanding the relative influence of different factors on energy prices is particularly pertinent given the recent (2012 and 2013 in particular) fuel price rises which have faced increasing scrutiny from the press and Government in the last 18 months.

The latest round of fuel price rises (at the end of 2013) sparked much debate amongst Government and suppliers.

The energy suppliers explicitly blamed wholesale costs and 'Green Taxes'. However, analysis by Ofgem at the time showed that wholesale costs had only increased by 1.7% in the last year. British Gas's response to this criticised Ofgem for being over simplistic in its analysis, thereby providing a good illustration of the complexity of the energy system in terms of how suppliers go about

purchasing energy on the open market:

“The prices that individual suppliers pay depend on their own hedging strategies, and the Ofgem methodology is, at best, an approximation of what those hedging profiles are. We buy a certain amount of gas more than two years in advance, and if you look at the 24 month figure to October 2013, there has been an 18% increase in the wholesale cost” (British Gas, 2013).

In parallel, the political debate heated up with Ed Milliband (Milliband, 2013) pledging to freeze energy prices until the start of 2017 whilst the energy market is restructured (in a bid to redress the balance between profiteering energy companies and consumers facing unaffordable bills); Ed Davey (Davey, 2013) subsequently calling for energy companies to be more transparent over the costs of the Energy Company Obligation (ECO⁹); and the Chancellor of the Exchequer (Osborne, 2013) calling for the ECO to be scrapped altogether.

Subsequent to this political debate EDF promised to review its proposed price rise (i.e. raise their prices by a lower amount) if the Government cut “Green Taxes”. Following an internal review, the Government announced a number of changes to the ECO and Warm Homes Discount in December 2013, which are expected to reduce bills by £50 (DECC, 2013b). These reductions will only be realised however if suppliers pass on the reduced policy cost to consumers.

⁹ The ECO is current obligation on suppliers to deliver carbon and energy saving measures to low-income households.

6 Distributional impacts of Government energy and climate policies

This chapter explores the impact of climate change and energy policies on domestic energy bills. While certain policies will reduce household energy bills in the long term (up to 2020) others lead to an overall increase.

It is vital to look beyond the average impact across the population as a whole as there is a stark difference between how low-income and high-income households are affected. Policies that impact disproportionately negatively on low-income households are deemed regressive. Any increase in energy bills for this income group may deepen the fuel poverty of those already experiencing excessive fuel costs relative to income or cause others to be pushed into the fuel poor group.

Designing policies to address the issues of both climate change and fuel poverty poses a significant challenge. On the one hand, households may benefit from energy efficiency improvements, low-carbon measures and/or financial help with energy bills. On the other hand, consumers bear some proportion of the cost of policies. The net impact of policies on household bills is therefore by no means uniform. It is essential that we understand these distributional impacts and the implications for fuel poverty. This understanding can then be fed back into the policy design process, which is a fundamental requirement if we are to implement policies that:

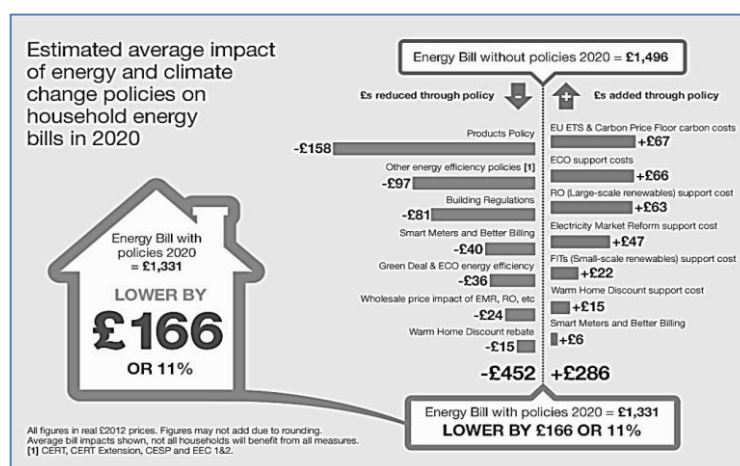
- reduce (or at the very least, avoid exacerbating) the hardship faced by fuel-poor households;
- are fair, and are seen to be fair, which is a likely precondition for successful carbon reduction policies.

6.1 Policy costs and the need for success

As we saw in Chapter 5, the cost of environmental and social obligations placed on private companies is one component of the factors affecting (driving up) the price of fuel. However, this is by no means the dominant force and some policies actually offer a potential overall net saving to the household.

Since 2011 DECC has routinely produced a report examining the distributional impacts of energy policy. It presents analysis to show the expected household energy bill in future years (typically up to 2020) in the absence of any further policy intervention (what DECC refers to as the 'counterfactual' bill) and compares this to the expected bill with policy assumptions applied. This approach enables the impact of policies to be isolated from other factors (such as changes in wholesale costs).

DECC's most recent analysis (DECC, 2013a) shows the impact of policies to be a net reduction (of £166 (or 11%) on the average bill in 2020). This reduction suggests that on average the energy savings from the implementation of policies outweighs the cost of these policies to households (although the proportion of the bill that relates to energy policy is set to increase to 33% for electricity bills in 2020 (Table 6.1), this assessment ignores



any higher cost of domestic appliances arising by making them more energy efficient).

Whilst energy policies appear to result in a net reduction on the average household bill in 2020, this overall reduction is dependent on the successful deployment of policy, in particular products policy (Preston et al., 2013a). Products policy relates to an EU policy driving improvements in the energy efficiency of new appliances (white goods, consumer electronics etc). Consistent with the overall pattern reported by DECC, Preston et al. (2013a) also found that Government energy policies are expected to reduce the average household energy bill in 2020, but that this decrease assumes all consumers will benefit substantially from EU products policy. If products policy fails to deliver the savings at the scale assumed by Government, then household energy bills could potentially increase, by an average £93 or 7% above the 'no policy' 2020 scenario (Preston et al, 2013).

Table 6.1. Estimated average impact of energy and climate change policies on household energy bills in 2020 (adapted from: DECC, 2013a).

	2013	2020	2030
Price impacts (real 2012 £/MWh and % change)			
Average gas price without policies	44	50	51
Average gas price with policies	47	52	51
Impact of policies on average gas price	2 (5%)	3 (5%)	0 (0%)
Average electricity price without policies	130	150	149
Average electricity price with policies	152	198	210
Impact of policies on average electricity price	22 (17%)	49 (33%)	61 (41%)
Bill impacts (real 2012 £ and % change)			
Average energy bill without policies	£1,319	£1,496	£1,516
Average energy bill with policies	£1,255	£1,331	£1,476
Impact of policies on average energy (gas plus electricity) bill	-£65 (-5%)	-£166 (-11%)	-£41 (-3%)

6.1.1 Policy costs and those that pay a disproportionate amount

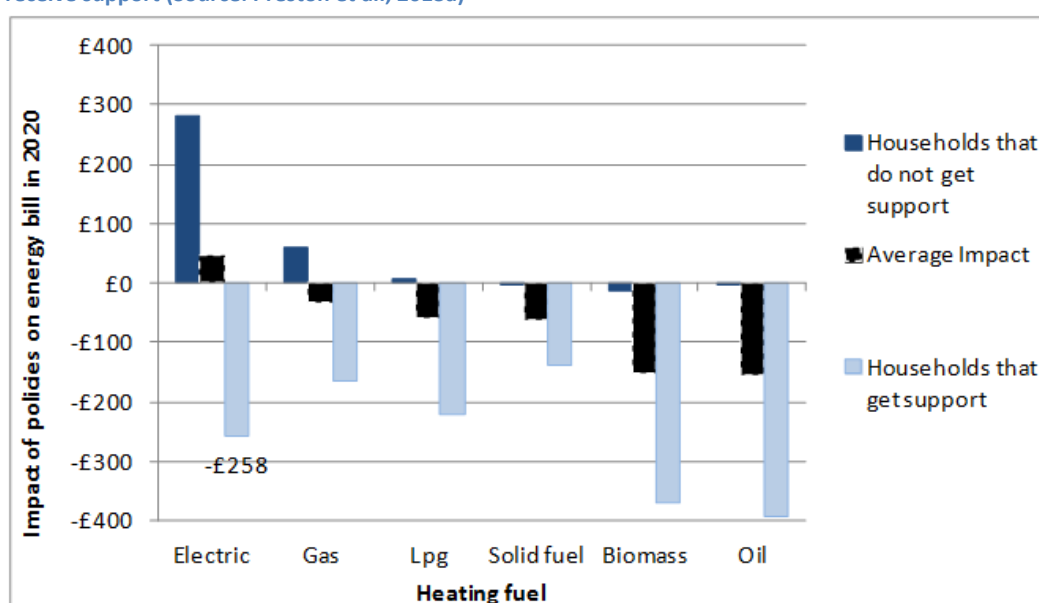
The average net decrease in bills as a result of policy masks a wide distributional impact at the individual household level, governed by the extent to which the household benefits directly from a policy (through financial support or installation of measures) and/or pays towards the cost.

In terms of the latter, electricity is subject to the majority of policy costs as the major policies focus on decarbonising electricity supply (see Table 5.1, p.23). This places a disproportionate burden on households reliant on electricity for heating, who are likely to have higher than average levels of electricity consumption compared to the rest of the population (Preston et al, 2013b). On average, electrically-heated households experience an increase in household energy bill in 2020 as a result of policy, whilst all other households (all other heating fuel types) see a net decrease on average (Figure 6.1). This impact – whereby a particular consumer group is bearing a disproportionate share of policy costs - could justifiably be considered unfair. This unfairness is further exacerbated

however, and can be considered highly regressive, when considering that electric heating is more prevalent in low-income households: 35% of the bottom three income deciles have electric heating systems, compared to 11% of the population as a whole (White, et al., 2010)).

These households might expect to receive measures or support to offset the particularly high policy costs they face, but this does not appear to be the case. Research has shown the opposite in fact: a lower proportion of electrically-heated households (27%) benefit from policies when compared to all households (40%). Across all households that do not benefit from energy policy, electrically-heated homes are predicted to be subject to the largest energy bill increase of around £280 in the 2020, while households using non-metered fuels (non-mains gas and electricity, e.g. oil, solid fuels) experience a decrease (regardless of whether or not they benefit from policy¹⁰, Figure 6.1).

Figure 6.1. Impact of policies without product policy on 2020 energy bill by heating fuel and those who do and do not receive support (Source: Preston et al., 2013a)



To summarise, therefore, in 2020, electrically-heated households:

- represent 11% of the total share of heating fuels by household
- pay 19% of the total cost of domestic energy policy
- receive 7% of all measures deployed (Preston et al., 2013b).

The overall picture of policy impacts on domestic energy consumers can be – and has been – described as both ‘progressive’ and ‘regressive’, in that on the one hand the average household stands to benefit with a lower energy bill in 2020 compared to the expected bill in the absence of Government policies; but the poor stand to benefit disproportionately less (Preston et al. 2013b).

Acknowledging the existing gaps in policy provision is an important aspect of JRF’s anti-poverty strategy. Low income households that use electricity to heat their homes are at particular risk to the

¹⁰ This is because the benefits of products policy (a reduction in electricity demand due to improvements in appliance efficiency) outweigh the total policy costs for this latter group of consumers. This finding again highlights the extent to which reductions in bills hinge on product policy delivering savings on the scale assumed.

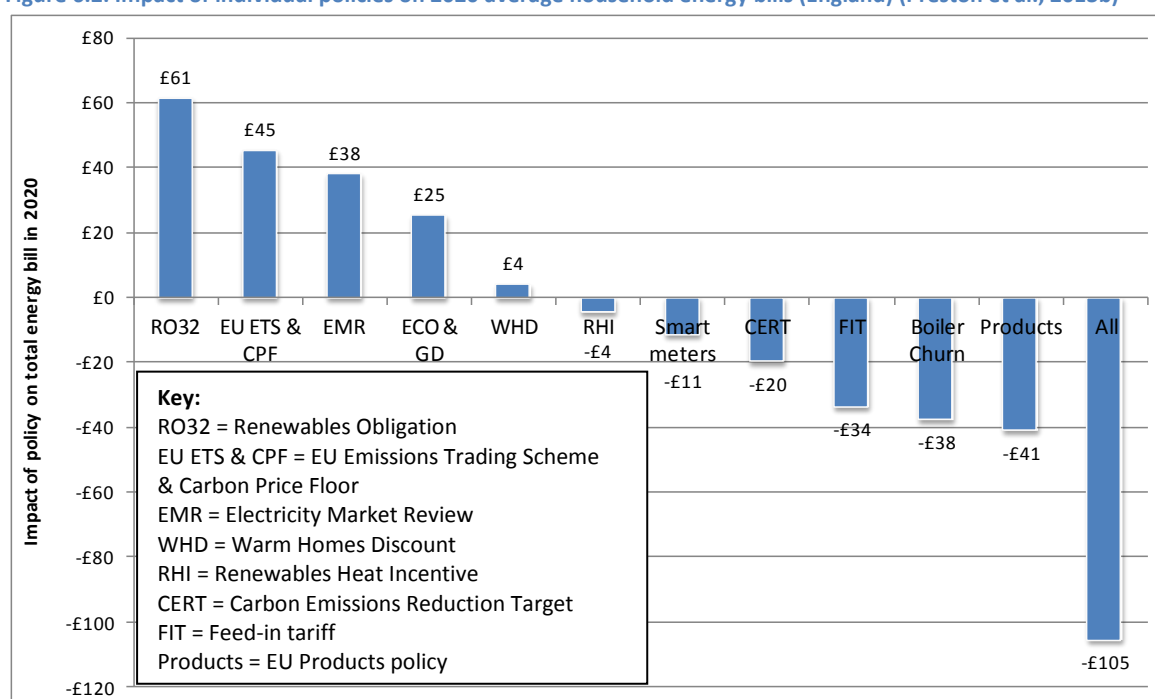
future policy costs. There therefore needs to be an energy efficiency based safeguard policy which ensures they can access the most efficient technologies required to deliver heat, light and energy services in the home.

6.1.2 Differential impacts of individual policies

The JRF study examining the distribution of UK carbon emissions and the implications for domestic energy policy (Preston et al., 2013b) provides a detailed examination of the impacts of environmental and social obligations relating to energy at the individual policy level. Although some of the policy assumptions and inputs used in this study have since been revised (e.g. based on the latest Government policy impact assessments) the analysis provides useful context for understanding the drivers of distributional impacts and equity of energy policy as a whole.

The isolated net impact (average across all households) of each policy is shown in Figure 6.2 (taken from Preston et al., 2013b). This analysis, whilst detailed, is important as it highlights the fact that so-called “Green Taxes”¹¹ have varying outcomes for households. (It should also be noted that the sum of these individual policy impacts does not equate to the overall impact due to interaction effects between policies¹²).

Figure 6.2. Impact of individual policies on 2020 average household energy bills (England) (Preston et al., 2013b)



¹¹ Green taxes have been a politically sensitive issue with the Prime Minister calling for a review of them in 2013 <http://www.telegraph.co.uk/news/politics/conservative/10399287/David-Cameron-pledges-to-cut-green-taxes-next-year-despite-Lib-Dem-objections.html>

¹² The model (CSE's DIMPSA model) that underpins this analysis is designed to model the impact of Government policies on consumer bills when applied in combination. This is an important feature of the model that ensures it captures and allows for interacting/counteracting impacts, heat-replacement effects and loan repayments of different policies.

Figure 6.2 shows that on average, across all consumers, the Renewables Obligation¹³ appears to be adding the most to energy bills in 2020, whilst Products Policy contributes the greatest savings. This reflects the fact that the former policy only has costs associated with it (for the householder) whilst the latter, by definition can only reduce bills (although households pay end up paying more for appliances than they would otherwise have done so). The Green Deal and Energy Company Obligation are expected to add around £25 to the average energy bill in 2020, whilst the Feed-in Tariff appears to offer a net saving of over £30 (Preston et al, 2013b).

The impact of individual policies split by households that do (receive a measure or tariff payment) and do not benefit directly from each individual policy is shown in Table 6.2 (based on the analysis by Preston et al., 2013b).

Table 6.2. Impact of individual policies on actual household energy bill in 2020 for households that do and do not receive support/measures under that policy (England) (Preston et al., 2013b)

Policy	HHs do not benefit directly from policy		HHs benefit directly from policy		Average bill impact
	Impact of policy	% of HHs	Impact of policy	% of HHs	
Policies with <u>no direct householder benefits</u>					
Renewables Obligation	£61	100%	£0	0%	£61
EU Emissions Trading Scheme & Carbon Price Floor	£45	100%	£0	0%	£45
Electricity Market Reform	£38	100%	£0	0%	£38
Policies which offer householder's sustainable energy measures <u>with costs recovered from bills</u>					
CERT	£0	77%	-£86	23%	-£20
Green Deal & ECO	£51	86%	-£136	14%	£25
Smart meters	£0	0%	-£11	100%	-£11
Feed-in Tariff	£10	88%	-£359	12%	-£34
Policies which offer householder's <u>a reduction in energy costs</u>					
Warm Home Discount	£11	97%	-£236	3%	£4
Policies which offer householder's <u>sustainable energy measures without cost recovery from bills</u>					
Boiler Churn	£0	77%	-£164	23%	-£38
Renewable Heat Incentive	£0	99.50%	-£959	0.50%	-£4
All policies*	£47	55%	-£290	45%	-£105

* NB this does not include households benefiting from smart metering as this represents the whole population. Some households may benefit from more than one policy.

There are some key points to bear in mind when interpreting the above results:

- Some policies represent a cost on household energy bills in 2020 but offer no direct benefit to householders, hence 100% of households fall into the “do not benefit directly” column:

¹³ The Renewables Obligation (RO) is the UK Governments current main financial mechanism for incentivising the deployment of large-scale renewable electricity generation. Introduced in 2002, the RO places a mandatory requirement on licensed UK electricity suppliers to source a specified and annually increasing proportion of electricity they supply to customers from eligible renewable sources or pay a penalty.

Renewables Obligation (RO), EU Emissions Trading Scheme (EU ETS) & Carbon Price Floor (CPF), Electricity Market Review (EMR) (the figures shown below therefore replicate those shown in Figure 6.2).

- Policies that offer direct benefit to householders but are funded through general taxation appear as no cost on household energy bills in 2020, for example the Renewable Heat Incentive (RHI).

Some policies will be (near) complete by 2020 and therefore represent no (or negligible) cost on energy bills in that year, but may still represent a benefit to householders: CERT, smart metering. (The latter also represents a 'universal' policy – all householders stand to benefit).

Table 6.2 shows that the impact on an individual household can vary significantly, depending on whether or not they benefit from a policy (e.g. -£359 versus +£10 for the Feed-in tariff). There are also further distributional effects masked by these average figures. A policy that offers a net reduction on bills overall may impact negatively on some household types, and vice versa.

This again comes down to the overall design of the policy: what is it offering, to whom and how is it paid for?

Hills (2012) analysed policies in the context of fuel poverty, with consideration to how policies are funded. In doing so, Hills (2012) cautions that funding fuel poverty alleviation schemes through energy bills will usually be regressive and result in either pushing those it is meant to be helping further into fuel poverty and may tip those on the edge into fuel poverty. In the case of the former this is possible if they do not claim the benefits and support to which they are entitled and the latter because they do not qualify for the schemes. This phenomenon is explored further below, using two policies that help illustrate the potential to be progressive or regressive, namely FIT and Warm Homes Discount (taken from Preston et al, 2013b).

Impact of the Feed-In Tariff (FIT)

The FIT is the Government's policy to provide a financial incentive for the installation of small-scale (less than 5MW) low-carbon electricity generation. Introduced in April 2010, the FIT aims to encourage investment by offering a guaranteed payment from an electricity supplier for the electricity generated and used, as well as a guaranteed payment for unused surplus electricity exported back to the grid. Any householder is (in theory) able to take advantage of this offer. The cost of the policy is passed on to consumers through a per unit (£/kWh) charge on electricity.

Figure 6.3 shows that on average the FIT represents a saving on the 2020 household energy bill for higher income households in England, but represents a small cost on bills in 2020 for the lower income deciles (represented by the dashed line). There is however significant divergence in the impact depending on whether or not a household benefits directly from the policy. Based on assumptions (which align with DECC's own modelling of policy impacts, related to households most likely to be suitable for FIT measures and able to take advantage of the offer) appears to be skewed towards the upper income deciles, with some 36% of the top decile benefiting from FIT compared to 1% in the bottom income decile (pale blue bars, right hand axis). In the analysis by Preston et al.

(2013b) overall some 12% of households benefit from FIT and these households have an average income of just under £62,400 (Table 6.3). The policy can therefore be described as a regressive¹⁴.

Figure 6.3. Impact of FIT on household energy bills in 2020 for those that do and do not take up the policy, by disposable income decile (England) (Preston et al., 2013b)

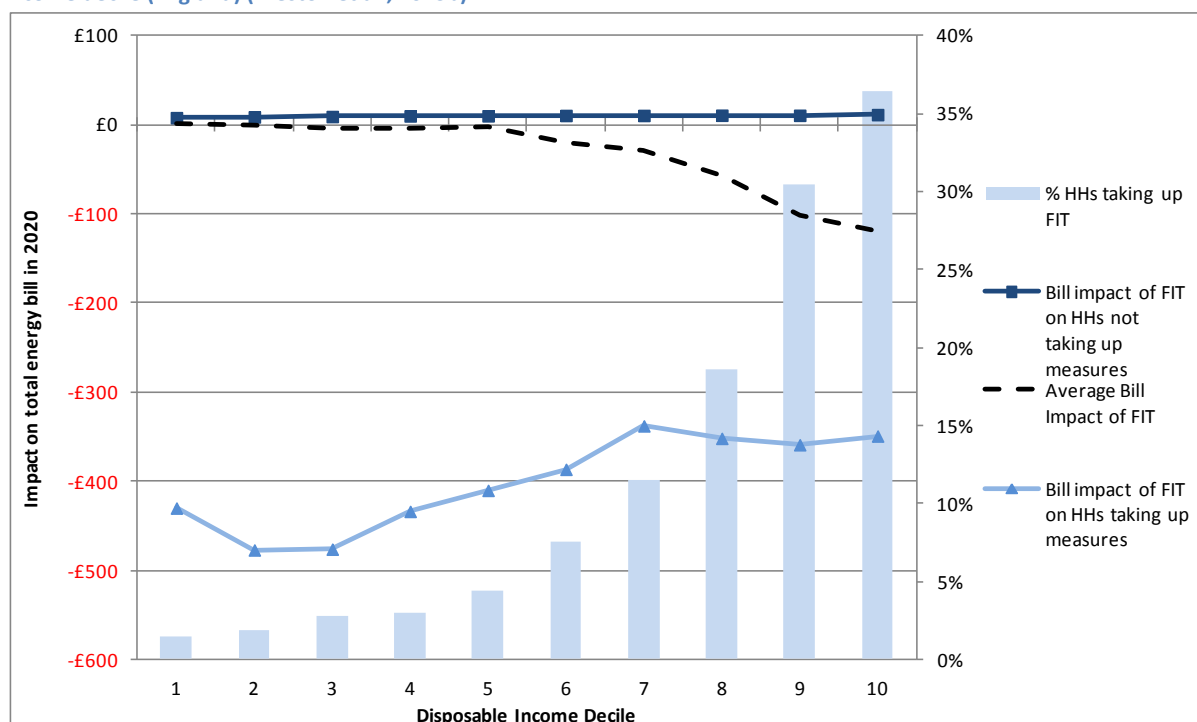


Table 6.3. Impact of FIT by winners and losers in lower and higher income households (Preston et al., 2013b)

	losers	winners
Count	18,852,878	2,527,199
Percentage	88%	12%
Mean household income	£32,728	£62,389
Average household energy bill 2020	£1,260	£1,187
Average bill impact as a result of the FIT	£10	-£359
Household energy bill 2020 in the absence of Government policies	£1,250	£1,546
Policy impact as % of the 2020 bill in the absence of government policies	1%	-23%

Impact of the Warm Homes Discount

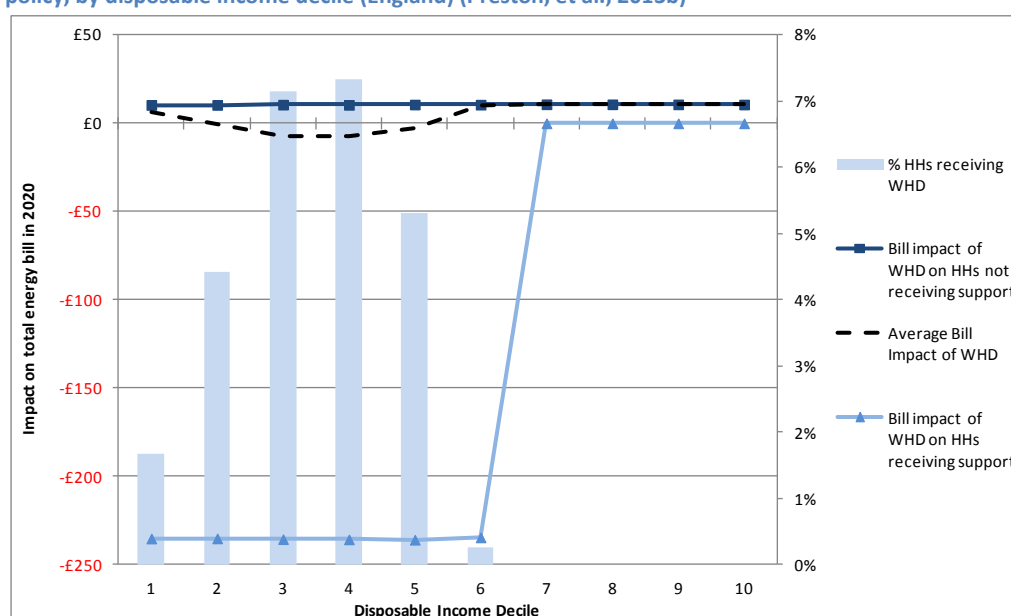
The WHD provides financial assistance to help low-income and vulnerable households with energy costs. The scheme is expected to assist around 2 million low-income and vulnerable households annually, in the form of a discount on the energy bill for eligible households (of £135 in 2013/14). Figure 6.4 shows that only households in the lowest 6 income deciles benefit from the Warm Homes

¹⁴ The distributional issues associated with the feed-in tariff – that is, the increase in electricity prices which impact disproportionately on low-income groups (Schiellerup et al., 2010) - are not exclusive to the UK. A simple extrapolation by Lagniß et al. (2009) shows that domestic electricity and heating costs for a three-person household in Germany will increase by €36 per year on average, which compares to £10 for the UK as shown below.

Discount and this represents a saving (in financial terms) on their 2020 energy bill of around £235 (pale blue line, triangular markers). This is consistent with the policy criteria and expected value of WHD in 2020.

At the time of the analysis upon which Figure 6.4 is based (Preston et al., 2013b) the WHD was funded through participating energy suppliers with costs passed on to consumers through gas and electricity bills, hence the graph below shows all other households paying for the cost of the policy at an average rate of around £10 on their energy bill in 2020. The Government has since amended its approach to delivering the WHD, which is now to be funded through taxation. However, as the figure below illustrates, it was (and remains) a highly progressive policy overall, as would be expected from one targeted specifically at low income households (Preston, et al., 2013b).

Figure 6.4. Impact of WHD on average household energy bills in 2020 for households that do and do not benefit from the policy, by disposable income decile (England) (Preston, et al., 2013b)



6.1.3 Considering fairness in policy design

As discussed in section 8, the end of Warm Front in 2013 means that there is no longer a UK wide state funded policy for tackling fuel poverty. Our energy policy is now entirely privatised with the cost of policy being collected from energy bills by suppliers who are typically heavily involved with their delivery.

The fairness of energy policy can therefore be questioned on a broader basis. Those policies that deliver environmental objectives should be funded from bills as this fits with the polluter pays principle, whereas policies that deliver social objectives should arguably be funded by the exchequer.

In the Hills Review of Fuel Poverty (2012), DECC officials concluded supplier-funded policies had the highest economic benefit (because they would deliver the most cost-effective package of measures). Narrowly targeted supplier-driven policies (such as Affordable Warmth within ECO) have the largest effects on fuel poverty based on the assumption that suppliers do react to their incentive to maximise cost-effectiveness. However, purely focussing on the economic gain as a framework for policy design fails to address the wider social impacts of cold homes in practice.

By reintroducing an exchequer funded scheme for energy efficiency that spans the UK the Government would re-establish some ownership of energy policy and establish a commitment to the forthcoming fuel poverty strategy. Government would reclaim the ability to control policy which isn't framed in purely economic terms and instead build links with other Government departments (see recommendations in section 11).

6.1.4 Considering anti-poverty measures in policy design

The analysis of the impact on consumer bills of two UK policies – the FIT and the WHD – highlights the potential for policies to be either highly regressive or progressive. The WHD falls into the latter, due to its effective targeting of low-income households. In this context, the recent decision by Government to shift the costs of this policy to taxation seems misguided: the policy was among the few that benefit the poor whilst being paid for by all energy consumers.

A review of the social justice aspects of energy policies across the EU shows similarities to the UK situation. Many policies focus on restructuring the electricity supply industry and some energy intensive technologies at cost to the consumer rather than the state, with companies passing the costs onto their customers (Schiellerup et al., 2009). This pass-through of costs tends to be socially regressive (Rosenow et al., 2013) unless it is offset by measures to counter fuel poverty impacts, for example by targeting support at vulnerable households or low-income groups.

The design of policies that impact on consumers bills should therefore be subject to an evaluation framework for energy justice to assess the extent to which their design is 'fair'. If the policy is shown to be regressive then a safeguard element should be added to protect these unfairly impaired households. The next chapter of this review looks at evidence from abroad of approaches taken to address issues of high energy bills and poor standards of energy efficiency.

7 Strategies adopted by other countries to manage fuel costs and demand

This chapter explores energy efficiency schemes that have been applied outside of the UK and considers the similarities between the UK fuel poor and those in other countries. It is important to note that the analysis focuses on the findings of those texts included in the research review and is therefore not intended to be an exhaustive list of international fuel poverty related policies.

It is also important to consider the different political, social and cultural settings of particular countries that contribute to the status quo and partially explain why citizens of some nations continue to suffer while others find their situation improving. In this way, valuable lessons on the effectiveness (or otherwise) of different approaches can be assessed in the context of the potential applicability to the UK. We begin however, with a brief discussion of how fuel poverty is defined (or not) outside of the UK.

7.1.1 Definitions of fuel poverty outside of the UK

France and Ireland are the only other (in addition to the UK) EU nation states to have an official fuel poverty definition, albeit somewhat loosely defined (Thomson et al., 2013):

- The French Government states that someone is fuel poor if they experience difficulty in meeting 'elementary needs' due to an "inadequacy of financial resources or housing conditions".
- The Irish government defines fuel poverty as an inability "to achieve adequate warmth because of the energy inefficiency of the home" (Thomson et al., 2013, p.564).

Elsewhere fuel poverty is described using different terms and measures. '*Lacking affordable warmth*' is a term used in 20 different countries coordinated by the Organization for Economic Co operation and Development. In most regions of the world, affordability of warmth is measured through household surveys including how often households go without heating on cold days, whether other needs are left unfulfilled in order to heat the home, and whether the home energy supply has been disconnected because of debt (Liddell & Morris, 2010).

Figure 7.1 and Figure 7.2 below show the distribution of households facing two issues related to affordable warmth in EU countries: an inability to afford to keep the home adequately warm and arrears on utility bills (note different sources for these two figures, as referenced below). The former appears most severe in: Portugal, Bulgaria, Cyprus, Romania, Lithuania and Poland (all over 20%; Thomson & Snell, 2013). Countries with the highest proportions of households in arrears on utility bills include: Latvia, Slovenia, Croatia, Hungary, Romania, Bulgaria and Greece (EU Fuel Poverty Network, 2013). By comparison, the UK has a relatively low proportion of households on both measures.

Figure 7.1. Percentage of households unable to afford to keep their home adequately warm by country (Source: Thomson & Snell, 2013)

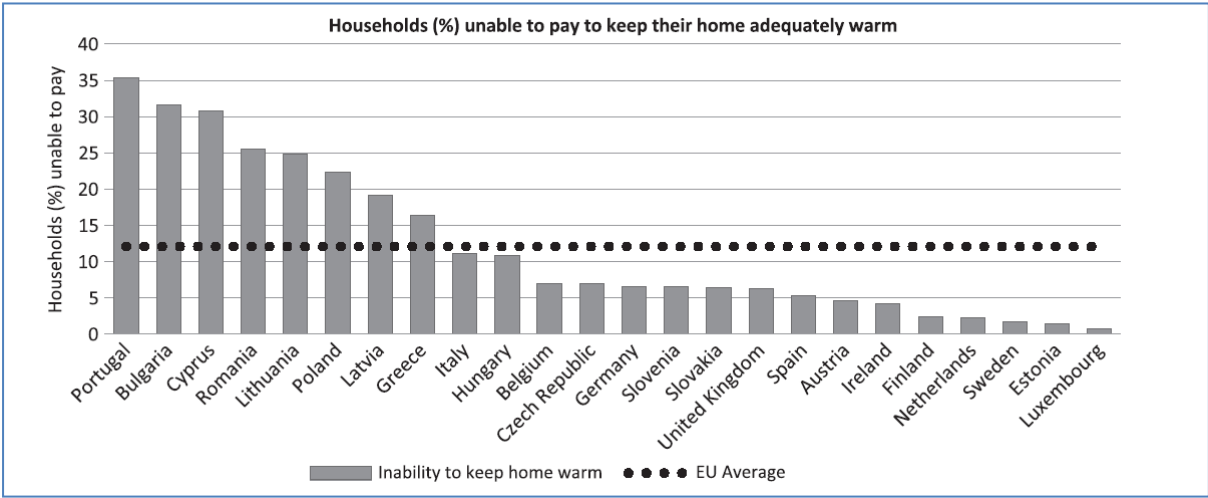
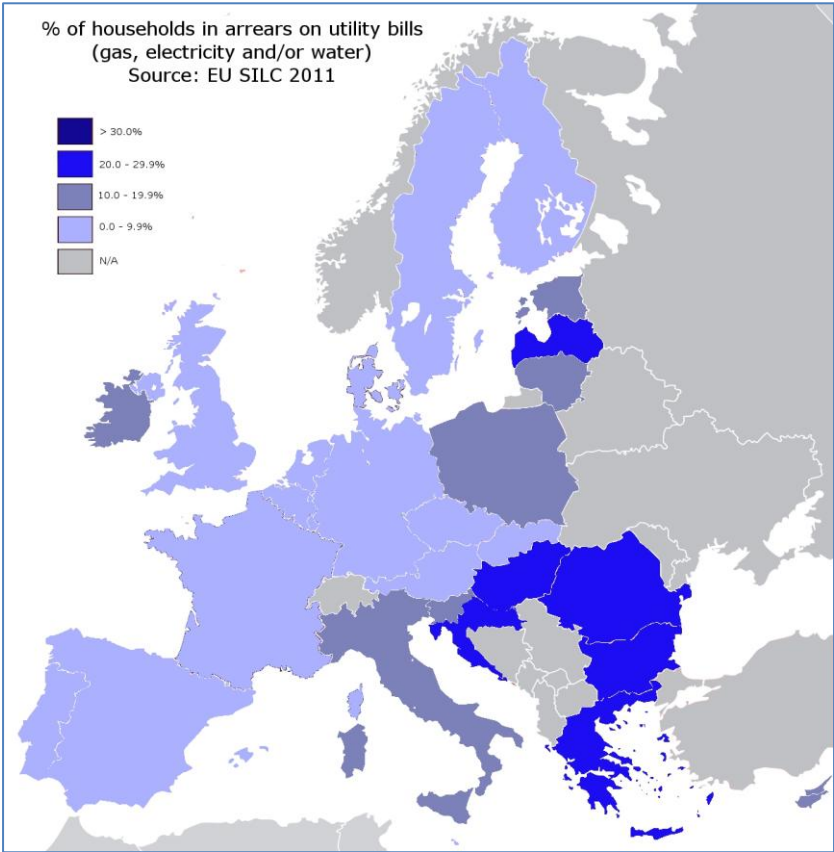


Figure 7.2. Percentage of households in arrears on utility bill by country (Source: EU Fuel Poverty Network, 2013)



7.1.2 Tackling fuel poverty and climate change in the EU

The majority of literature referencing the EU and energy efficiency is concerned with carbon emissions reduction as part of efforts to tackle climate change, as opposed to addressing fuel poverty per se. There is increasing recognition that both the EU as an organisation and individual nation states need to develop policies that address these two issues jointly rather than separately to create more win-win solutions (Hamilton, 2010; Schiellerup, 2009). And, as we have seen from the analysis of policy impacts in the UK, there are legitimate concerns that future climate change policy may inadvertently create socially regressive outcomes by passing policy costs on to (low-income) consumers. Although this is not currently a pressing issue in Europe (as the majority of energy efficiency strategies are not paid for through energy bills as they are in the UK), as more European nations begin to tackle fuel poverty the potential for this to escalate should not be underestimated (Schiellerup, 2009).

So far the EU has produced little real guidance for nation states on addressing fuel poverty. The lack of a common definition of fuel poverty or who constitutes a ‘vulnerable’ customer (Bouzarovski, 2012; Thomson et al., 2013) prevents meaningful targets from being set. In the absence of targets, there is limited impetus for developing fuel poverty alleviation policies, despite it being a pressing social problem in many EU countries. In the absence of an agreed definition and targets, the issue of fuel poverty risk remaining somewhat off the EU political agenda and future comparisons (both within and between countries) will continue to be problematic. This is in somewhat stark contrast with the current binding carbon targets that have gained increasing momentum but which will not alone deliver on fuel poverty alleviation.

Box 7. Bulgaria: A ‘low energy prices, high energy-poverty’ conundrum (and the importance of energy efficiency)

Case Study: Bulgaria

Policy name: Winter Supplement Programme

Fuel poverty remit: Social support (help energy costs)

Provision: Financial support to ~360,000 low-income households

Pros: Recognition of the problem; state funded programme

Cons: Meeting basic housing needs outweigh achieving thermal comfort; disjointed and split responsibilities for housing and energy across departments limit progress on improving the energy efficiency of the housing stock

Despite having some of lowest energy prices in the EU (Bouzarovski, et al., 2012), fuel poverty (even though not defined as such) is a significant problem in Bulgaria. An inability to maintain adequate warmth in the home and keep up with bill payments is an issue affecting roughly 30% of the population (Thomson et al., 2013; and see Figure 7.1 and Figure 7.2). Some 360,000 households (out of a total of 2.9 million) rely on social support, provided by the Ministry of Labour and Social Policy under the Winter Supplement Programme, to help meet their energy needs during the five months of winter (Bouzarovski, et al., 2012). However, as a large proportion of households are without the most basic housing standards, for many the support is more about surviving the winter rather than achieving real thermal comfort (ibid).

Whilst the provision of the Winter Supplement Programme demonstrates an acknowledgement of the need to support energy-poor households, Bulgaria lacks targeted residential energy efficiency programmes for vulnerable households. Identifying and targeting households in need remains a

significant barrier to action. Division in responsibility for refurbishment and energy between different departments also hinders progress: new legislation passed in 2005 aimed at promoting refurbishment is managed by the Ministry of Regional Development and Public Works, whilst energy is the responsibility of the Ministry of Economy, Energy and Tourism. With multiple government departments involved there is a pressing need for increased awareness and co-operation to ensure coherent solutions. At present, housing policy remains underdeveloped: instead provision of income support remains the focus, with disregard for addressing long-term energy efficiency issues.

7.2 Achieving high uptake of measures: lessons from EU countries

Fuel poverty is a little known concept outside the UK (Hamilton, 2010; Thomson et al., 2013).

Although the three main factors - low incomes, high energy prices, energy inefficient homes – are generally recognised as the underlying drivers.

Many developed countries have schemes in place to increase the energy efficiency of residential buildings that are of a lower standard, but carbon mitigation is a common driver for these programmes, with success frequently measured in terms of carbon saved (Hamilton, 2010). However, as noted already, successfully implementing carbon reduction policies will not necessarily equate to a reduction in fuel poverty (due, for example, to types of measures and households targeted for carbon reduction purposes and the fact these policies can represent a cost on bills for consumers). For this reason our focus here is on schemes that demonstrate innovative approaches and lessons for ensuring high uptake of measures (Heffner et al., 2011). Although such strategies are only one component of fuel poverty, thermal insulation measures are the cornerstone of tackling fuel poverty in the UK and targeting households, achieving uptake remains a significant challenge and unsolved problem.

The value of community-based approaches in delivering fuel poverty alleviation: A Case Study from Ireland

20% (of 1.8 million) Irish households are in fuel poverty based on the 10% definition (Heffner & Campbell, 2011). Fuel poverty is now recognised as national priority and measures and support have been put in place to address each of the three main drivers of fuel poverty:

- Fuel assistance: over €350 million in 2009, split between Fuel Allowances and free gas and electricity (the latter as part of the Household Benefits Package). The Fuel Allowance is paid to people who are dependent on long-term social welfare and unable to provide for their own heating needs. Paid under the National Fuel Scheme, eligible households can receive €20 per week to help with the cost of heating the home. In 2010, 370,000 households received fuel allowances or energy entitlements at an average of €1,000 per recipient.
- Thermal efficiency measures: the Better Energy Warmer Homes Scheme offers fully funded energy efficiency measures to eligible (low-income) private sector households.

The Warm Project is one of several community-based, low-income energy-efficiency activities funded by Sustainable Energy Authority Ireland's Better Energy Warmer Homes programme. Delivered in collaboration with various community-based organisations, it aims to reduce stigma of accepting help whilst at the same time creating better communities, with, for example,

improvements to the housing stock and reduced pressure on local health services through improved health of participants (Heffner & Campbell, 2011). Making energy efficiency part of a holistic community improvement has generated a positive response from residents and utilising local knowledge and understanding facilitates effective targeting and engagement with fuel-poor households. Since 2001, some 61,412 homes have been upgraded under the Warmer Homes programme, at cumulative cost of €60 million (an average of €1,000 per recipient) (Heffner & Campbell, 2011).

Providing a long-term attractive financial offer: lessons from Germany's KfW programme

The German state bank KfW offers long term, fixed rate low interest loans to support energy efficiency work during general refurbishment of existing buildings and encourages energy efficiency standards in new builds that are higher than the legally required minimum. The loans are supported by subsidies linked to the achievement of higher energy efficiency levels, together with general promotional activity. The current scheme was launched in 2008, but this built on similar programmes that had operated since 1996. To date, over 3 million German homes have improved energy efficiency as a result of the scheme (Guertler 2013).

In Germany's KfW-led programmes the level of subsidy is linked to a series of levels of energy efficiency achieved, with the most efficient properties able to get up to 17.5% of the loan subsidised. Once the energy savings have been verified by an approved energy assessor by delivering an Energy Performance Certificate, the funding can be drawn from KfW. The German model provides more flexibility as it is adapted to the householders needs (Hamilton, 2010).

For KfW, Germany's banks, building societies and credit unions market the scheme to property owners, often when the latter are seeking finance for general property refurbishment. Supporting this are energy efficiency campaigns run by DENA (the German Energy Agency), and a range of KfW promotional activities including KfW awards, information campaigns and a KfW academy to train business partners. The success of this activity is reflected by the high rates of take-up (Guertler 2013).

Providing finance to low income households: lessons from Belgium

Belgium operates a similar scheme to that discussed in Germany above. In Belgium, low interest finance is provided specifically to all householders with areas that provide specific support for low-income households towards low cost energy efficiency measures (max €10,000) (Schiellerup et al., 2009). A key difference with Germany is that the scheme is administered through local authorities, which are set targets (ibid) meaning the responsibility for the scheme being successful rests with local government organisations rather than the national administration or the individual i.e. relying on customer appetite for demand alone.

In Brussels, where the loan is most explicitly earmarked for low incomes, the result is mixed: only 160 credits were granted in 2 years. Low income households are often reluctant to take on the burden of a new loan – albeit intended for an investment that would be profitable in the medium term – when their financial concerns focus on satisfying short-term basic needs. In practice, the average repayment on a “social green loan” is €150/month which is more than energy bills (Grevisse 2011).

Reaching the hard-to-reach: lessons from Austria

In Austria, there is little recognition of or assistance for those in fuel poverty. Research exploring the response of households experiencing various levels of fuel poverty reveals some key differences, with some being proactive in their approach, while others consider themselves largely powerless (Brunner, 2012). In reviewing the coping strategies of low-income households in Vienna, Austria, Brunner et al. (2012) highlight the importance of developing measures that recognise the nuances of these different groups rather than blanket approaches. Research examining the experience of eleven countries substantiates this and concludes that in order to obtain maximum reach, a scheme should include a wide range of retrofit measures (Hamilton, 2010).

7.3 Lessons for UK Policy from other nations

The case for the health sector providing funding for improvements in energy efficiency has been made in Ireland (see above case study) and Northern Ireland. In Northern Ireland the case has primarily been made based on the impact of cold homes on quality-adjusted life-years (QALYs). Research to examine the potential impact of a fuel poverty social impact bond (SIB) found that to secure funding for energy efficiency measures more research was required to identify avoided cost to the NHS in service delivery (Preston 2013c).

As discussed in the previous sections there is a clear rationale for implementing a new Government programme to provide support for both energy efficiency and income maximisation to those most vulnerable to the health impacts of cold, damp homes. Frontline staff and health professionals would be able to prescribe a minimum package of support to those householders with a medical need or health issue (e.g. a cold related illness and / or a disability). There would be stronger a rationale for the use of public expenditure to fund this as it is primarily a health targeted programme i.e. as the National Health Service and its interventions are state funded. The policy could be viewed as an invest to save measure; though in practice any savings are likely to be consumed by the £20Bn worth of efficiency savings that the NHS is required to make by 2015.

There are parallels between the situation in the UK and Bulgaria, where many different government departments have a remit in managing fuel costs/energy demand and there is therefore a pressing need for increased awareness and co-operation between departments to ensure coherent solutions. The Hills Fuel Poverty Review (Hills, 2013) called for a co-ordinated cross-department strategy to address the issue of fuel poverty in the UK: *“Recommendation 7: The Government – not just DECC but also other Departments – should set out a renewed and ambitious strategy for tackling fuel poverty, reflecting the challenges we lay out in this report and the framework we have developed for understanding them”*.

8 Fuel poverty alleviation in the UK

The Select Committee on Energy, Prices and Poverty states clearly that energy efficiency schemes are the most effective way of addressing fuel poverty and that this should be the Government's long term strategy (House of Commons, 2012). The Committee critiques current Government fuel poverty policy for being centred on providing short-term help with bills, when instead improving the thermal efficiency of the housing stock should be the priority (a learning from the situation in Bulgaria – see Box 7). This chapter summarises the main energy efficiency policies in the UK in the last three years, presenting evidence on costs and uptake, where this information is available.

8.1 Energy Efficiency Schemes – Past

A UK wide initiative, launched in 2000, provided grant funding for energy efficiency measures to low-income households in a bid to meet the UK targets for fuel poverty alleviation. The programme operated in each nation as follows:

- England: Warm Front (funded by the Department of Environment, Food and Rural Affairs originally, and latterly DECC).
- Wales: Home Energy Efficiency Scheme (HEES) (funded by the Welsh Assembly Government).
- Scotland: Warm Deal originally, replaced by the Energy Assistance Package (funded by the Scottish Government).
- Warm Homes, Northern Ireland, funded by the Department of Social Development in Northern Ireland (scheme still in existence).

Each of these schemes is discussed further below.

8.1.1 Warm Front, England

Facts and figures: Warm Front			
Countries	England		
Timescales	2000 to March 2013		
Remit	Fuel poverty alleviation		
Support offered	Grant funding for energy efficiency and heating measures in low-income households		
Costs and uptake*	Total estimated cost	Uptake (number of households / measures)	Costs to date (end March 2012)
	£2.91 billion	2.32 million households	£2.84 billion

*Source: Watson, C. and Bolton, P. (2013)

Up until the end of March 2012, the Warm Front had resulted in £2.8 billion of expenditure supporting 2.3 million households, with an average spend of £1,200 per household. According to the 2010/11 Warm Front Annual Report assistance through the scheme resulted in an average SAP improvement of 27 points, from 32 to 59 (Hills, 2012). The scheme was perceived a success because it:

- Focused on low cost insulation and gas heating
- Targeted those on low incomes in low SAP rating homes
- Was funded by taxation i.e. not impacting on energy bills
- Has been linked to improving mental health (see section 5.1 for further discussion).

The scheme received criticism from the National Audit Office (NAO) for use of benefits as a qualifier, stating this resulted in providing assistance to those who were not fuel poor. The use of benefits as a targeting proxy for fuel poverty has been criticised by numerous commentators previously. The Hills Review (2012) concludes that any fuel poverty proxy will have this problem.

Warm Front came to an end in 2013 and, unlike in each of the Devolved Administrations, there has been no continuation of state-funded energy efficiency measures in England. This means that England is now the only country in the UK without a dedicated fuel poverty programme funded by taxation.

8.1.2 Home Energy Efficiency Scheme, Wales

Facts and figures: Home Energy Efficiency Scheme (HEES) and HEES Plus			
Countries	Wales		
Timescales	2000 to April 2011 (replaced by Nest – see below)		
Remit	Fuel poverty alleviation		
Support offered	Grant funding for energy efficiency and heating measures in low-income households		
Costs and uptake	Total estimated cost	Uptake (number of households / measures)	Costs to date
	Not available	~92,000 households in first 6 years* ~ 13,739 households in 2006-07 [^]	~£18 million per year in first 6 years* ~ £19.6 million in 2006-07 [^]

* Clevett, 2008.

[^] National Assembly for Wales, 2008.

The Home Energy Efficiency Scheme (HEES) operated in Wales from 2000 to April 2011 (when it was replaced by Nest – see below). An evaluation (Burholt & Windle, 2006) of HEES found that it lacked appropriate targeting of fuel poor and low-income households that are unable to heat their homes to an adequate temperature. In addition, the research showed that HEES did not prioritise the least energy efficient homes, instead operating on a first-come-first-served basis, which undermined the schemes capacity to help low-income families and older people (typically the most in need). This partly explains why HEES has not made a ‘major impact in North Wales’, with the authors calling for more effective energy efficiency advice for older people, increased awareness of the scheme and improving the access to funding (Burholt & Windle, 2006). Additional suggestions include a proper assessment of residents’ health and well-being before and after any improvements that could *“provide a valuable contribution to the current (limited) evidence base for healthy housing policy”* (Burholt & Windle, 2006).

8.1.3 Energy Assistance Package, Scotland

Facts and figures: Energy Assistance Package (EAP)			
Countries	Scotland		
Timescales	2009 to 2013 (replaced by HEEP – see below)		
Remit	Fuel poverty alleviation		
Support offered	Grant funding for energy efficiency and heating measures in low-income households		
Costs and uptake*	Total estimated cost	Uptake (number of households / measures)	Costs to date
	£141m (for all years)	46,603 (scheme also delivered energy efficiency advice 286,715 households)	Estimate Only

* Source: Scottish Government, 2013. www.energysavingtrust.org.uk/scotland/Publications2/Take-action/Home-Energy-Programmes-Summary-Report-2009-2013-PDF

The Energy Assistance Package (EAP) was a programme introduced by the Scottish Government in April 2009 in response to recommendations from the Scottish Fuel Poverty Forum. The EAP replaced two pre-existing schemes (the Central Heating Programme and the Warm Deal) to offer packages of measures aimed at maximising incomes, reducing fuel bills and improving the energy efficiency of homes. EAP finished in April 2013 and has effectively been replaced by the new Home Energy Efficiency Programmes (HEEP) for Scotland.

8.2 Energy Efficiency Schemes – Present

8.2.1 Nest, Wales

Facts and figures: Nest			
Countries	Wales		
Timescales	2011-Ongoing		
Remit	Fuel poverty alleviation		
Support offered	Grant funding for energy efficiency and heating measures in low-income households		
Costs and uptake*	Total estimated cost/ budget	Uptake (number of households / measures)	Costs to date
	Unavailable	4,900 by March 2013 (scheme also delivered energy efficiency advice to 21,500 households)	£19.5m (2012-13)

*Source: Welsh Government (2013) <http://www.nestwales.org.uk/Resources>

The Welsh Assembly Government has maintained state-funded support for energy efficiency measures through its “Nest” scheme. Nest is a fuel poverty alleviation programme targeted at energy inefficient (SAP band F or G) private sector housing, for people on means-tested benefits. The focus on the least efficient houses, in combination with income related benefits provides a tighter focus on greatest need.

8.2.2 Home Energy Efficiency Programme, Scotland (HEEPS)

Facts and figures: HEEPS			
Countries	Scotland		
Timescales	April 2013-Ongoing		
Remit	Fuel poverty alleviation		
Support offered	Grant funding for energy efficiency and heating measures in low-income households		
Costs and uptake*	Total estimated cost/budget	Uptake (number of households / measures)	Costs to date
	£46 million (plus approx £125 million from utility companies)	Unknown (too early to say)	Unknown (too early to say)

* Source: Scottish Government, (2013b).

The Home Energy Efficiency Programmes (HEEPS) for Scotland are national schemes providing measures to support those likely to have difficulty paying their fuel bills or keeping their home sufficiently warm. It offers free expert energy advice, benefits and tax credit checks and information on low cost energy tariffs to all households, with additional support for energy efficiency and heating measures to eligible households through an 'affordable warmth' programme and the Energy Assistance Scheme (with additional area-based schemes in place at local authority level).

8.2.3 Warm Homes Scheme, Northern Ireland

Facts and figures: Warm Homes Scheme			
Countries	Northern Ireland		
Timescales	2001-Ongoing		
Remit	Fuel poverty alleviation		
Support offered	Grant funding for energy efficiency and heating measures in low-income households		
Costs and uptake	Annual budget	Uptake (number of households / measures)	Costs to date
	£20m (for 2008)	60,000 homes (as of 2008)	Unknown

The Warm Homes Scheme is funded by the Department for Social Development in Northern Ireland and offers support for people who receive certain qualifying benefits and own or rent their home from a private landlord. Measures offered include cavity wall insulation; loft insulation; hot water tank jacket; benefit entitlement check and energy advice; plus heating improvements (under 'Warm Homes Plus').

8.2.4 Green Deal and the Energy Company Obligation (ECO)

The Green Deal and Energy Company Obligation (ECO) launched in January 2013 to replace CERT and Warm Front as the Government's new flagship energy efficiency initiative.

The Green Deal aims to increase uptake of energy efficiency and low-carbon measures in homes, community spaces and businesses by reducing the upfront cost through the provision of Green Deal finance. Finance is offered for improvements recommended through a Green Deal assessment. The amount of finance awarded is based on the expected energy bill savings as a result of making the improvements (the interest rate is also not set, but determined by the amount offered through the finance plan).

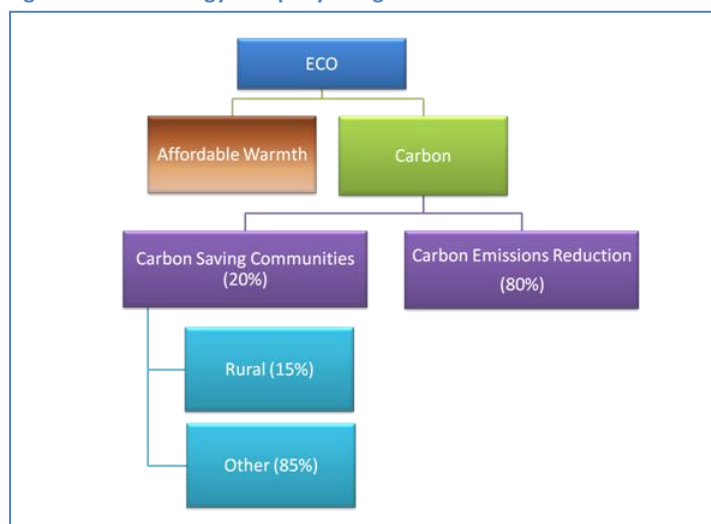
Facts and figures: Green Deal and Energy Company Obligation			
Countries	Great Britain (England, Wales and Scotland)		
Timescales	January 2013 – 2033		
Remit	Support installation of energy efficiency measures through finance (Green Deal) and grants (ECO)		
Support offered	Finance Grants for low-income and hard-to-treat households (fuel poverty alleviation) Cash back incentive (initial phase)		
Costs and uptake	Total estimated cost/ budget	Uptake	Costs to date
Cash back phase	£40m	9,290 vouchers paid 9,700 measures	£2.6m
Green Deal (end Jan 2014)		114,110 Green Deal assessments 1,721 Green Deal plans	
ECO (end Dec 2013)		447,583 households 528,886 measures	£361.9m from brokerage. The remainder from bilateral agreements is unpublished.
Other costs: Marketing	£2.9m		

Two key principles underpin the Green Deal: repayments on the finance are recovered through a charge in instalments on the energy bill (tied to the property not the individual); and the expected financial savings resulting from the measures installed must be equal to or greater than the costs attached to the energy bill to ensure the consumer is no worse off financially (the ‘Golden Rule’). The former is an attempt to remove the barrier to installing energy efficiency improvements associated with moving house (so pay-back period is no longer an issue) and the latter endeavours to ensure no household is financially worse off.

The ECO runs alongside the Green Deal and places three obligations (Figure 8.1) on energy suppliers:

- Carbon Emissions Reduction obligation (CERO) covers the installation of more expensive measures such as solid wall and hard-to-treat cavity wall insulation, which can’t be financed solely through the Green Deal.
- Carbon Saving Communities obligation (CSCo) provides insulation measures to households in specified areas of low income. It includes a minimum ‘Rural Safeguard’ target to ensure that 15% of each supplier’s obligation goes to rural areas.
- Home Heating Cost Reduction Obligation (HHCRo, or the ‘Affordable Warmth’ group) provides heating and insulation measures to consumers living in private tenure properties that receive particular means-tested benefits. This obligation supports low-income consumers that are vulnerable to the impact of living in cold homes, including the elderly, disabled and families.

Figure 8.1. The Energy Company Obligation



The ECO is intrinsically linked to the Green Deal to provide financial support where the Golden Rule cannot be met for households who install measures through CERO. These obligations can be met by suppliers promoting and subsidising the installation of measures which reduce carbon emissions or energy bills, respectively, in the domestic sector.

The Green Deal has been criticised as it fails to provide an opportunity for low-income households to insulate their homes. A recent report by IPPR (Platt, 2013) is highly critical of the current Green Deal and ECO government strategy calling it “*not fit for purpose*”. In particular, the report raises concerns about accessibility for low-income households (due to upfront fees for example) and the overall interest rate. The report suggests an alternative for how funding currently used for these two schemes could be utilised, namely reducing the interest rate from 8% to 5-6% to make it attractive to consumers. Any additional lowering would require a public subsidy. The report also makes clear the current government policy to get all houses to an energy efficiency rating of E is insufficient, proposing a D rating should be the minimum.

Whilst written prior to the launch of the Green Deal and ECO, the Hills Fuel Poverty Review (2012) concludes that the policies will lead to an increase in bills for households at the bottom end of the income range whilst richer households see little change. The emerging evidence suggests that the ECO CERO heavily focussing on fully subsidised hard-to-treat cavities which has fundamentally undermined the need to develop a supply chain for solid wall in the owner occupier sector. Clearly a supplier will attempt to discharge its obligation at least cost and a hard-to-treat cavity is a lower cost primary measure.

The UK’s Green Deal programme has been seen as a relative failure to date. The current landscape for Green Deal finance is dramatically different from that envisaged at the launch of the scheme with Greg Barker stating a desire for 10,000 Green Deal plans¹⁵ by the end of the year. Whilst measures are being installed these are almost entirely funded by the ECO. The most recent statistics (January 2014) show there are some 1,189 Green Deal plans in place compared to 461,726 ECO

¹⁵ In March, Greg Barker told BBC Radio 4: “I wouldn’t be sleeping if we didn’t have 10,000 [signed up to the Green Deal] at the end of the year.”

funded measures (DECC, 2014a). The Green Deal has not been designed to target low income households unlike the scheme in Belgium discussed previously.

The Government has recently introduced an attractive Green Deal cash-back offer designed to support £50 million of measures (predominantly focussed on solid wall insulation where a householder can receive up to £7,600 or three quarters of the cost of the measure). The exchequer funded policy represents a significant level of investment that's designed to support approximately 5-6,000 measures in households. A similar level of funds could have been used to install 17,000 replacement boilers in the homes of the fuel poor. A more sensible approach may be structuring the finance offer so that a low interest loan is provided that offers the optimal market rate i.e. similar to the German KfW approach.

In terms of the distributional impacts associated with the ECO, a high proportion of activity (to date) has been performed in lower income areas, primarily due to the CScO part of ECO focussing on low income areas and ECO HHCRO activity outstripping the other obligations (Preston et al., 2014).

Figure 8.2. Cumulative number of ECO measures installed, by obligation, at end of each month (Source: DECC, 2014a)

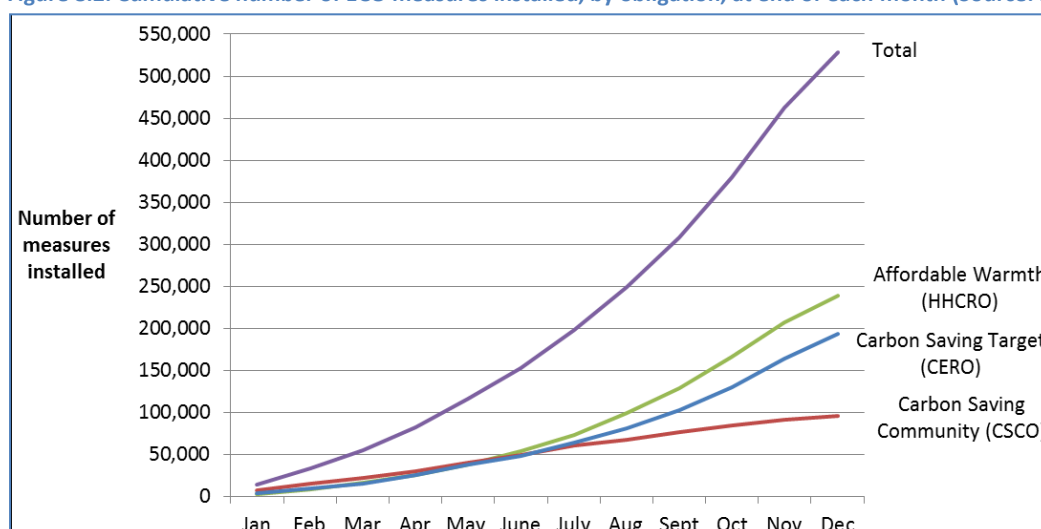
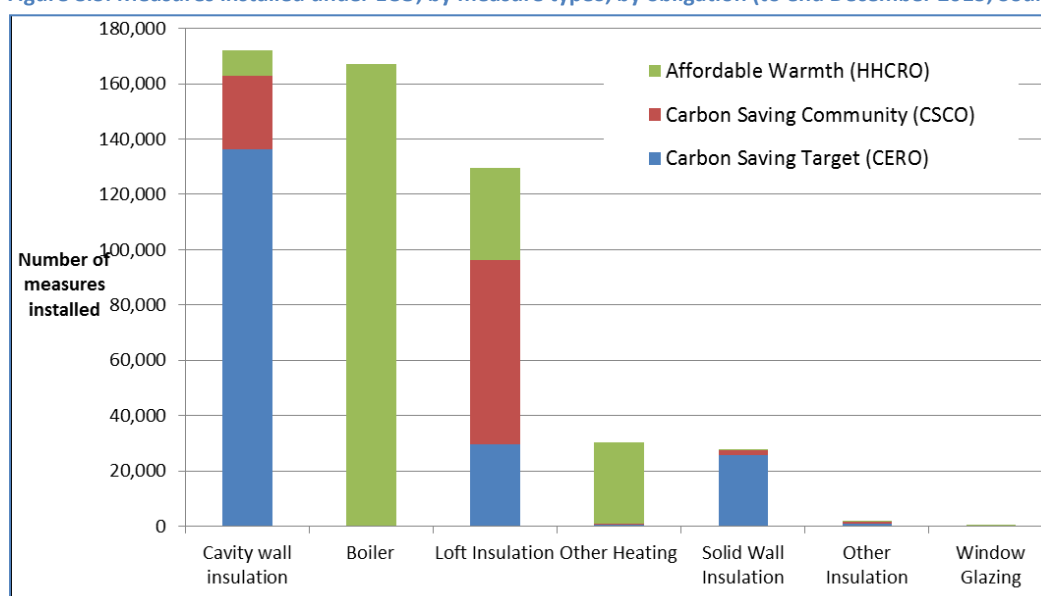


Figure 8.3. Measures installed under ECO, by measure type3, by obligation (to end December 2013; Source: DECC, 2014a)



8.3 Financial assistance: increasing incomes and reducing energy costs

8.3.1 Winter Fuel Payment

Facts and figures: Winter Fuel Payment			
Countries	UK (including expats)		
Timescales	Introduced 1997		
Remit	Financial assistance with energy costs for pensioners		
Support offered	Between £100 and £300 (depending on age and occupancy) tax-free paid directly into a bank account		
Costs and uptake*	Total estimated cost/ budget (2013)	Uptake	Paid out in Winter 2013-14 (estimated)
		12.5 million people (9 million households) 2012-13	£2,165 million

* Source: House of Commons (2013d)

The Winter Fuel Payment offers an annual, tax-free payment of between £100 and £300 (depending on occupancy and age) to households in receipt of the State Pension (or another social security benefit, not Housing Benefit, Council Tax Reduction or Child Benefit). Whilst the payment is intended to assist with paying for heating bills, as it is paid directly into the householders' bank account (as opposed to deducted from energy bills) it is up to the individual how this money is spent.

Expenditure on the Winter Fuel Payment (WFP) far exceeds spend on any other fuel poverty policy, costing an estimated £1.723 billion in 2013 and has been criticised for being poorly targeting and an ineffective use of funds (House of Commons, 2013b). Hills (2012) found that only 26% of WFP recipients are fuel poor on the basis of the original 10 per cent definition (falling to 10% under the LIHC definition).

The cost of this policy and its ineffective targeting of low-income and fuel poor households raises the question as to whether it should be means-tested to reduce the number of wealthier beneficiaries. Analysis by the Institute for Fiscal Studies (2013) suggests that means-testing the WFP, by linking it to those claiming Pension Credit, would save the treasury in excess of £1 billion per year.

However, with the Government's pledge to protect universal benefits for pensioners until the next election and the WFP being viewed by many as a pension supplement rather than an energy-related measure¹⁶, there are inherent tensions in considering a reduction or refocusing of these funds.

Whilst the WFP may be poorly targeted and considered by some simply as a pension 'top-up', there is evidence to suggest that its name does influence how the monies are spent. An empirical study using data from the Living Costs and Food Survey (2000 to 2008) looking specifically at the effect of the naming of the Winter Fuel Payment on how it is spent concludes that the labelling (i.e. to include the word 'fuel') does affect how it is spent (Beatty et al., 2011).

¹⁶ The National Pensioners' Convention supported the continuation of the policy on these grounds, referencing the risk of excess winter deaths amongst older people and the expected increases in fuel bills (House of Commons, 2013).

8.3.2 Cold Weather Payment

Facts and figures: Cold Weather Payment			
Countries	Great Britain (a similar scheme exists in N. Ireland)		
Timescales	Introduced 1995		
Remit	Financial assistance with energy costs for low-income households		
Support offered	£25 for each 7 day period between 1 November and 31 March of very cold weather (originally £8.50, increased to £25 per week in 2008)		
Costs and uptake*	Total estimated cost/budget (since 2008)	Uptake (number of households / measures)	Paid out in Winter 2012-13
	£1.2 billion	5.8 million payments (2012-13)	£146 million

* Source: <http://www.parliament.uk/business/publications/research/briefing-papers/SN06748/cold-weather-payments-for-winter-20132014>

The Cold Weather Payment (CWP) is funded by taxation and offers financial assistance with energy costs to low-income households at times of extreme low temperatures¹⁷. The CWP is paid to individuals who receive one of a number of means-tested benefits (with additional criteria for ages of householders and children). The policy is, therefore, relatively well targeted at low-income households (Hills Review, 2012). However, at the same time it takes no account of the required energy costs and is paid to households with ‘high’ and ‘low’ fuel costs alike, which is inconsistent with the new approach to defining fuel poverty. The Hills Fuel Poverty Review (2012) concludes that it is likely to be better targeted as a measure to alleviate fuel poverty than the Winter Fuel Payment. Numerous policy makers have called for a refocusing of the Winter Fuel Payment by instead using the spending for this measure on energy efficiency or increasing the CWP; however, this must be taken in the context of UK pensions that are currently too low (see comment above).

8.3.3 Warm Homes Discount

Facts and figures: Warm Homes Discount			
Countries	UK		
Timescales	Introduced April 2011(due to run for 5 years)		
Remit	Financial assistance with energy costs for low-income households		
Support offered	A discount of £135 (2012/13) on household electricity bill		
Costs and uptake	Total estimated cost/budget	Uptake (number of customers)	Paid out in Winter 2012-13
	£1.13 billion	1.16m	£290.3m

The Warm Homes Discount (WHD) is a direct payment towards the cost of energy. Eligible households receive a fixed amount (£135 in 2013-14) taken directly off the household electricity bill (usually applied in October-November). The measure was funded by all customers’ through their gas and electricity bills until the end of 2013. The 2013 Autumn Statement pledged to move this to general taxation

All households in receipt of Pension Credit are guaranteed to receive the discount (known as the ‘core group’). In addition, some suppliers offer the discount to a ‘broader group’ (eligibility

¹⁷ Eligible households are paid £25 for each 7 day period between 1 November and 31 March where the local temperature is recorded, or forecast to be, an average of 0°C.

determined by individual energy supplier criteria and discretion based on broad guidance from Ofgem).

Energy suppliers supply data on their customers to the Department of Work and Pensions (DWP) who match those households that they know are eligible for the WHD (i.e. they claim the passport benefit). The data matching process has proved to be a useful process for identifying vulnerable customers and the WHD is considered relatively well targeted at fuel poor households (Hills, 2012). For example, in the first year of the policy, around 70% of core group households were fuel poor based on the original 10% indicator (but only around 25% based on the LIHC indicator). Its effective targeting and the approach to policy cost recovery (previously as a per unit rate on gas and electricity bills, now to be funded through taxation) make this a highly progressive policy. However, the effects are temporary (a one off discount offering no long term protection from rising costs or cold homes).

Further, offer of the WHD to the broader group is up to the individual supplier and may be poorly targeted and ineffective at reaching those most in need. In examining the plight of low income families and young people Barnardo's (2012) called for further provision from both the Warm Homes Discount and the Cold Weather Payment, stating that: *"Ofgem should take steps to ensure that the information and eligibility criteria for the Warm Home Discount is simplified and uniform across energy suppliers so that all families can understand and access the same levels of support"*; and: *"Save the Children's call that energy companies should ensure that all families eligible for Cold Weather Payments, (predominantly made up of low income families with children under five or a disabled child) receive the Warm Home Discount"* (Barnardo's, 2012).

8.4 Local area approaches

Despite the national funding regime for energy efficiency measures tending to focus on particular measures and eligibility criteria, there have been a number of examples of attempts to coordinate these locally to provide a more strategic level of delivery. The IPPR report (Platt, 2013) provides two examples where an area-based approach has been adopted.

Birmingham Energy Savers is an example of a local authority delivery through a partnership between Birmingham City Council and Carillion Energy Services. The scheme incorporates national policy into a local scheme by assisting households through the multiple phases of the Green Deal from the initial home assessment to the installation of efficiency measures. Residents readily trusted in the initiative due to easy recognition of the Birmingham City Council logo which in turn increased demand from householders, including vulnerable groups who are often difficult to reach. The involvement of an experienced contractor helps ensure the highest standards are adhered to for all improvements installed.

Warm Zones is an example of a third-sector scheme operated by an independent community interest company owned by National Energy Action. The scheme operates at the national level through a multi-stakeholder approach by working with local authorities as well as energy companies and local organisations to install energy efficiency measures on a street-by-street basis. Starting with just five pilot projects the project has been extended to over 20 areas. Warm Zones has become a household name in its own right and by engaging whole communities has completed over one million assessments and 386,000 insulation measures. By incorporating a range of government

policies, different programmes and funding options it offers residents multiple options via one trusted organisation in a way that is simple and straightforward.

The use of an area-based approach to target and support the deployment of measures to fuel poor / low-income households has been supported by many commentators (e.g. see Heffner & Campbell, 2001). However, it does not lend itself to the current 'obligated supplier' delivery model where suppliers (understandably) attempt to discharge their obligation at least cost. The transition to a more locally-focussed delivery model will therefore require a change to the way that these schemes are obligated and / or funded.

8.5 Energy efficiency and health schemes

In November 2011, the Department of Health and Health Protection Agency released the first Cold Weather Plan for England. The Cold Weather Plan is one of a suite of measures the Department of Health has implemented aimed at reducing mortality and morbidity due to cold weather and reduce (the avoidable) pressure on the NHS (Tod et al., 2012).

To date, policy interventions to address fuel poverty and reduce the negative health impact of cold weather have focused on:

- increasing household income to assist with paying for fuel (e.g. cold weather and winter fuel payments, accessing benefits for those eligible);
- reducing fuel costs (e.g. introducing social tariffs for fuel, reduced direct debit/ online payment rates, warm home discount); and
- increasing the energy efficiency of the property (e.g. Warm Front and the planned Green Deal and Energy Company Obligation).

However, there is concern that those most susceptible to the negative health impacts of cold weather are not always in a position to access such initiatives, or the interventions are insufficiently targeted at those most in need (Tod et al., 2012). For example, whilst the Warm Front programme was found to improve the mental health of recipients, the scheme was not targeted at people with cold related illnesses (perhaps explaining the lack of correlation with improvements in conditions such as asthma and Chronic Obstructive Pulmonary Disease (COPD) (Preston et al., 2013c)).

Uptake and use of affordable warmth and heating installations by older people is also compromised by perceptions of central heating being unhealthy and the complex nature of attitudes to comfort. In an evaluation of the Warm Front affordable warmth installation scheme in England, preferences for low temperatures and a belief these make you hardy accounted for persistent lower temperatures after installation in some households (Tod et al., 2012). This raises additional challenges for policy to address the needs of a population with diverse needs and preferences for warmth in the home, and misguided perceptions as to what constitutes a healthy living environment.

There are few studies examining the direct health impacts of energy efficiency improvements, not least because this is an incredibly complex area of research and one that cannot easily be quantified. However, a study in a rural farming community in Northern Ireland exploring conditions before and after energy efficiency improvements showed a decrease in the amount of condensation, mould and damp in most properties which in turn created positive health impacts (including households reporting fewer colds, reduced problems with arthritis/rheumatism and stress) due to higher, more

consistent room temperatures (Shortt & Morrison, 2008). The authors note that several households would still be classed as fuel poor even after the installation of a new heating system, as this does not guarantee an ability to afford using it, but in the benefits in improved quality of life should not be underestimated (even though these cannot be valued in financial terms).

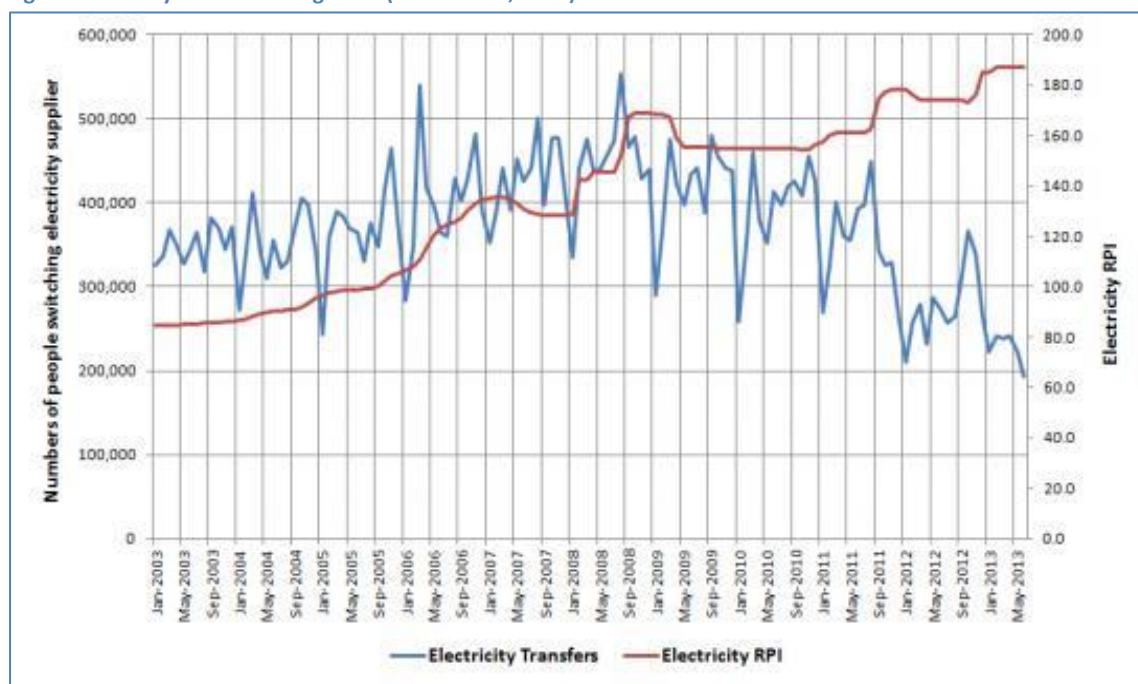
9 Opportunities for change in the current regulatory and policy climate

Ofgem launched the Retail Market Review (RMR) in late 2010 due to concerns that the market was not working effectively for consumers. The RMR recognised that whilst there had been some improvements in the market in certain areas since the 2008 Energy Supply Probe, many of the problems with consumer engagement remained. Ofgem developed a range of proposals to place specific and binding requirements on suppliers to make the market simpler, clearer and fairer for consumers. The key publications arising from the RMR are the final proposals and the new Standards of Conduct. The regulator has now implemented a significant number of its RMR reforms (see Ofgem's factsheet for a useful summary¹⁸).

9.1 Transparency and profitability

The Energy and Climate Change Select Committee (House of Commons, 2013b) has called for urgent greater transparency to reassure consumers that high energy prices are not fuelling excessive profits. The Committee identified a clear need to improve the way that energy companies communicate with their customers. Confusing bills, complex tariffs and a lack of transparency around profit margins were identified as key factors behind consumers' mistrust of suppliers; a finding consistent with the evidence presented in this review. Consumer concerns over profitability and, by implication, the extent to which they believe the energy market is competitive, have significantly contributed to the low levels of consumer engagement with the market, as evidenced by declining levels of switching (see Figure 9.1) and the large cohort of 'sticky' customers i.e. those who are very unlikely to switch. Poor consumer engagement with the energy market has been rightly identified by Ofgem as a major barrier towards effective and efficient market operation (Consumer Futures, 2013).

Figure 9.1. Analysis of switching rates (Source: CSE, 2013)



¹⁸ <https://www.ofgem.gov.uk/ofgem-publications/85375/simplerclearerfairerfactsheet.pdf>

The level of transparency on bills has been improving in recent years, in part due to Ofgem's RMR. For example, the recent Select Committee report asserts that *"some energy companies deserve praise for the recent improvements they have made to simplify bills, but we remain concerned that efforts are falling far short of what is required to improve transparency, increase competition and enhance consumer trust"* (House of Commons, 2013b). The main area for improvement seems to be in transparency on the underlying drivers for increases in energy prices. However, some stakeholders are still calling for further regulatory intervention to deliver meaningful change.

Since 2009 Ofgem has required that large vertically integrated energy companies that self supply the energy they sell to consumers to publish Consolidated Segmental Statements (CSS) to improve transparency of company profits and business models. CSS present the profitability of generation and different supply activities separately. As part of the March 2011 RMR, Ofgem appointed the accountancy firm BDO to review how the companies are producing the statements. Their aim was to make it easier for stakeholders (including consumers themselves) to understand the profitability of the different components of the Great Britain gas and electricity markets.

In response to Ofgem's consultation on 'Improving Reporting Transparency' (Ofgem, 2013) both the Select Committee (House of Commons, 2013b) and Consumer Futures (2013) note Ofgem's failure to implement a number of BDO's recommendations (in particular recommendations 4 and 5: to require the reporting of trading function results, including disclosure of the risk each trading function assumes (4); and performing further work to assess current transfer pricing policy (5)) as a significant oversight in the plight to increase transparency in the energy market.

The following summarises the key policy recommendations to Ofgem to increase transparency on supplier profits (House of Commons, 2013b):

- Require the six largest vertically integrated companies to publish statements to the same year-end;
- Financial statements should be independently audited; and
- There should be separate reporting of trading function results.

Ofgem justifies its decision not to implement all recommendations on the basis that the method of financial reporting could impact adversely upon a company's ability to decide its own business model and that there could be disproportionate costs involved in doing so. The Select Committee rejected Ofgem's assertion that the majority of BDO's recommendations would put unnecessary burdens on the 'big six', stating that the recommendations should be implemented as a complete, well functioning package. The cost of making information available is justifiable and needs to be made public in order to enable other stakeholders to comment fairly.

In terms of powers to enforce these recommendations, the EU regulation No 1227/2011 on wholesale energy market integrity and transparency (REMIT) came into force in December 2011. The regulation aims to prevent market abuse in wholesale energy markets. It does this by introducing explicit prohibitions of market manipulation and insider trading. It requires public disclosure of insider information by market participants and introduces an obligation to report suspicious transactions. Importantly it provides Ofgem with enforcement and investigatory powers. It was hoped that the regulations would provide Ofgem with greater powers to disclose energy companies' actual traded cost of energy and therefore allow it to verify suppliers' wholesale costs.

This review therefore recommends that the Government ensure Ofgem takes full advantage of these REMIT powers.

9.2 Ensuring competitiveness in the energy market

The following section discusses the potential options to increase the competitiveness of the energy market based on the reviewed evidence within the status quo. The review is not advocating an overhaul of the current situation and therefore does not attempt to evaluate the advantages or disadvantages of re-introducing price controls, renationalising the energy supply sector or disaggregating vertically integrated businesses.

As discussed above there is a general lack of engagement and inertia in the energy market that many equate to a lack of competition (House of Commons, 2013b). Ensuring that householders, particularly those on low incomes, play a more active role in the energy market is a key consideration for JRF's anti-poverty strategy. Engaging these households would require a fundamental change in their attitude to and relationship with the market, in particular: developing a sense of trust between householders and suppliers; simplifying the process of switching; and increasing market competition. There is, however, insufficient data to determine accurately the actual level of competition in the retail energy market.

To enable commentators to understand the state of market competitiveness, it's important for Ofgem to publish targets for improvements in the market as a result of the implementation of the Retail Market Review recommendations. Going forward, Ofgem should also publish an annual assessment of the effect those measures are having on competition and consumer engagement.

Increasing competition between energy suppliers will put downward pressure on energy prices. In the last year, several of the smaller energy suppliers have experienced strong growth, with companies such as Ovo and Co-op participating in collective switching campaigns. However, more needs to be done to enable smaller suppliers to compete effectively (in a potentially non-competitive market).

Drawing on a number of different texts, this review has identified key areas for policy intervention in delivering a competitive and accessible energy market, including:

- **Tariff simplification;**
- **Entry point to environmental and social obligations;**
- **Market liquidity;**
- **Customer acquisition (loss leading tariffs); and**
- **Developing a fair set of tariff offerings (in PPM customers) and supporting switching.**

9.2.1 Simplifying tariffs

The reform of the retail market will play a central role in **simplifying tariffs** and helping consumers engage in the market more easily. There is a clear role for regulatory intervention to secure consistency across the market in the way energy companies communicate with their customers. The RMR is providing this with a step change in the levels of transparency and standardisation and by introducing new cross industry tools for communicating information such as the Tariff Comparison

Rate, Personal Projections, the suppliers' cheapest tariff message on bills and other communications. The new Standards of Conduct licence conditions set out requirements for suppliers to carry out their actions in an honest, transparent, appropriate and professional manner; and that suppliers provide accurate information and ensure customer service arrangements and processes are fit for purpose (House of Commons, 2013b).

The Select Committee report did commend British Gas and EDF Energy for developing innovative new ways of communicating complex information to their customers. However the report highlights disappointment at the regulator's slow progress on requiring energy companies to improve their transparency and communication with their customers. If improvements are not forthcoming, it encourages Ofgem to use its powers to compel greater transparency from energy companies early in 2014.

This review supports the following recommendations:

- a) Standardise the presentation of bills to make them easier to understand so that customers can compare prices both on and offline (House of Commons, 2013b);**
- b) Identify the various components which make up the costs of the bill (i.e. wholesale price of fuel, costs of supply (i.e. transmission, distribution and metering), the costs of UK/EU policy (including support for low-carbon/renewables and energy efficiency schemes) and company margins (i.e. operating costs and profit) (House of Commons, 2013b);**
- c) Express price changes in pounds and pence as well as percentages (House of Commons, 2013b);**
- d) A set standing charge that applies to all tariffs regardless of tariff or supplier to create greater simplicity when comparing prices per unit of energy (Ovo Energy, 2013); and**
- e) Tariff information needs to be officially audited and managed by Ofgem. This should include a randomised selection of each supplier's customers to ensure the audit provides a fair representation of the supplier's customer base and an accurate understanding of what their customers think (Ovo Energy, 2013).**

9.2.2 Social tariffs

Energy companies began to offer social tariffs in 2009 for customers who were likely to have difficulty paying their bills. In 2011 the Government introduced the Warm Home Discount to ensure that social tariffs were routinely offered to customers. As a result energy suppliers closed their tariffs to new customers and began to phase them out.

Social tariffs have been suggested as a core component of a future fuel poverty alleviation strategy. Whilst they provide short term relief to householders from the pressures of increasing fuel costs, they do not address the long-term issue of energy demand reduction and as such act only as a stop gap. Further to this, expanding social tariffs to other vulnerable groups increases the cost to the whole customer base, thus resulting in some distributional impacts for low income households. That aside, there is a roll for social tariffs where groups of customers who are unfairly burdened by the cost of energy policies are waiting to get the support they need to lower their energy demand.

9.2.3 Entry point to environmental and social obligations

DECC and Ofgem have reduced barriers to market entry by increasing the customer number threshold at which small suppliers are required to participate in certain **environmental and social**

obligations. Both British Gas and nPower have both previously lobbied for a cut in the exemptions for small suppliers, claiming they distort the market (providing them with a reduction in operating costs). First Utility (currently obligated to deliver the ECO) and Ovo Energy, have both publically stated that they are willing to pay these levies if ministers create a level playing field by tackling other advantages enjoyed by the ‘big six’. This includes their stronger financial position which enables them to offer loss leading tariffs to maintain a large share of the market, this is discussed further below. The smaller suppliers have criticised the manner in which the obligation (ECO) is placed on new entrants, in particular the tapering of obligation for new entrants gives very steep entry into a costly obligation. In other words: **the level of the obligation for new entrants needs to be staggered to enable them to develop the management systems required to deliver these obligations.**

9.2.4 Market liquidity

In order to support competition and efficiency in a market, **liquidity** is vital. Liquidity is a measure of the ability to buy or sell a product – such as electricity - without causing a major change in its price and without incurring significant transaction costs. An important feature of a liquid market is the presence of a large number of buyers and sellers willing to transact at all times.

Ofgem is currently consulting on proposals to improve liquidity (and therefore competition which is essential for new market entrants) in the energy market (Ofgem, 2013b). Ofgem is proposing to introduce a new special licence condition within the generation licences of the eight largest electricity generating companies, namely Centrica, Drax, EDF Energy, E.On, GDF Suez, RWE npower, SSE, and Scottish Power. The licence condition aims to improve access to the wholesale electricity market by requiring these companies to follow a set of ‘Supplier Market Access’ rules when trading with small independent suppliers. It also aims to ensure that the market provides the products and price signals needed to compete effectively through a market making obligation on the six largest vertically integrated companies, namely Centrica, EDF Energy, E.On, RWE npower, SSE and Scottish Power. The Select Committee report makes specific reference for the need to implement Ofgem’s proposals to *“improve liquidity as soon as possible taking a more assertive approach than it has in the past”* (House of Commons, 2013b).

9.2.5 Loss leading tariffs

Several of the larger suppliers have admitted to ‘predatory pricing’ or the introduction of **‘loss leading’ tariffs**, which involves fixing customers at a rate that is unprofitable to the company to ensure they do not switch to a different supplier. Despite the way this behaviour clearly infringes on the proper workings of a competitive market this behaviour is not mentioned within the RMR review. This is an issue as customers who are vulnerable to fuel poverty are more likely to discount the future and take the short term option by signing up to a loss leading tariff only to be moved to a more expensive tariff when this expires, meaning they pay more in the long term unless they actively continue to switch. Significant questions must be asked as to why there are no proposals to eradicate this type of behaviour. Predatory pricing and loss leading tariffs act to prohibit smaller suppliers from taking a greater market share and will only act as a further barrier to entry and to reduce overall competition within the supply market. Ofgem has retained the option to refer the supply market to the Competition Commission for a market investigation. **In finding a lack of evidence of action around this aspect of competition, there is therefore a case for commissioning**

such an investigation. Again, this is an issue that needs addressing to ensure a competitive and accessible energy market in which consumers are offered a fair price.

9.2.6 Tariffs and switching

The current **tariff market** is not functioning for prepayment meter customers, many of whom are on low income and particularly vulnerable (as discussed above). The method of payment is a key factor in the price that householders currently pay for fuel. Consumer Futures recently reviewed the landscape for PPM customers: in 2013 there were 11 prepayment offers available in the British market. These include standard prepay offers, affinity products with organisations such as Age UK, programmes for supermarket reward points or free carbon monoxide detectors, and advanced meters with separate keypad displays. By contrast, there were 63 monthly direct debit deals and 39 quarterly cash/cheque tariffs currently available (Consumer Futures, 2013). By increasing the number of energy suppliers and the available tariffs, it is hoped that the differential in costs discussed below will reduce.

As discussed previously, prepayment remains one of the most expensive payment methods along with cash and cheque. If a consumer is unable or unwilling to pay by direct debit or via the internet, this drastically reduces the range and variety of tariffs available. It also reduces the savings that can be made. For example, out of the 283 fixed, capped or discounted tariffs released by suppliers between January 2009 and February 2012, 100% were available to direct debit customers and 38% to people paying by quarterly cash or cheque (i.e. pay on receipt of bill) (Consumer Futures, 2013).

Currently the level of switching between energy suppliers is low (12% electricity and 10% gas¹⁹) and confined to a relatively small set of customers. The majority of switching takes place online. Ofgem's RMR measures (outlined above) are designed to help tackle the problem of lack of access to (or unwillingness/inability to access) the internet by ensuring that customers have adequate access to written information, by enforcing suppliers to inform their customers of their cheapest tariff in writing. Suppliers will have to provide customers with personalised savings messages on bills, annual statements and other communications. This will provide easy access to key information which will be especially useful for those without access to online comparison sites (Smith, 2013). However, it does not provide the customer with information on tariffs supplied by other energy suppliers, suggesting there is a clear space for a more enhanced switching service.

DECC Cheaper Energy Together programme has recently funded a number of collective switching campaigns. The scheme was well received by local authorities with the number applying exceeding the amount of funding available i.e. 132 schemes²⁰. CSE delivered 'Bristol Switch & Save' in 2013 - a campaign which was specifically targeted at low income households. The lessons learned present a continuing bleak and desolate picture for PPM customers. All of the suppliers who made offers for 'Bristol Switch & Save' based them on cash-backs or credits on existing tariffs. No supplier made a special offer for PPM customers (Michael, 2013), again highlighting that the current market for this group of customers is even less competitive than that available to others. Collective switching schemes are still in their infancy and while the current situation is unlikely to improve the circumstances of PPM customers it is too early to determine whether or not other vulnerable groups will make significant savings.

¹⁹ DECC, Quarterly domestic energy switching statistics (QEP 2.7.1), figures shown for 2012

²⁰ <https://www.gov.uk/government/news/46million-boost-for-132-local-energy-schemes>

In addition to the lack of provision for PPM customers, the experience of delivering 'Bristol Switch and Save' showed that vulnerable customers need additional motivation to engage with offers (Michael, 2013). The general low cost email and social media marketing routes used in the campaign did not reach some of the vulnerable groups that were the primary target. Hence specific marketing efforts were needed to reach these customers (the biggest success in reaching prepayment customers was through a text sent by the council). Older people responded particularly to coverage and adverts in the local press and radio. The provision of a free telephone helpline staffed by friendly local advisors was particularly important in signing up both of these groups.

Next Generation Intermediaries (NGIs) have been proposed as a potential way of enabling consumers to do better by doing less in the energy market. It envisages a world where any consumer who lacks the time or inclination to trawl around for a better energy, financial services, or mobile phone package can instruct a new kind of intermediary service to 'do it for me'. What's more, once that service identifies the offer that best meets a consumer's declared criteria, the consumer can again say 'do it for me' and have the service instigate and oversee the switch to the provider of that offer. And the consumer can then keep saying 'do it for me' in relation to related services that require decision support.

NGIs would manage a customer's utilities by searching for the best deals and promotions on their behalf. This effectively transform's their inertia to a force that works against them to one that NGIs can leverage in their favour (Bates, 2013). There are examples of this type of service beginning to emerge. For example, Money Saving Expert's (MSE) Cheap Energy Club is establishing a system of parameter-driven delegation, where the service is given powers to act for the consumer within certain agreed limits. The consumer registers for Cheap Energy Club using details of their current energy tariffs and usage. They then declare their 'strike price' in terms of how much they'd expect to save in order to consider switching.

For vulnerable householders there are clear advantages to enabling their access to better tariffs and services, particularly those that do not have access to the internet or a high degree of financial literacy. However, there would also need to be safeguards to protect them from profiteering on the part of the delivery service.

9.3 Market reform – protecting vulnerable customers

Ofgem's Consumer Vulnerability Strategy is designed to help shape its work programme to deliver improvements for vulnerable consumers over the medium term (the next 5 years). Ofgem's work on vulnerability is shaped by their remit and powers as a regulator (noting that there are areas that are an issue for Government policy). In particular, Ofgem's work focuses on making the energy market work effectively for consumers, in terms of access to services, choice, debt and affordability. As part of its work on consumer vulnerability, Ofgem has established an initial programme of work which includes a range of activities presenting opportunities to help reduce fuel costs for those on low incomes (noting that the overlap between vulnerability and income is not absolute). These include:

- Establishing a Consumer Vulnerability Network to identify and work with charities and organisations that support vulnerable consumers at a grass root level.
- Collecting data from every domestic supplier regarding debt, disconnection rates and practices.

- Targeted and effective support to help consumers in vulnerable situations access the market, with greater targeting of such support and increased awareness of the Priority Service Register (PSR)²¹.

A common problem for fuel poverty initiatives is that before appropriate assistance can be delivered, vulnerable groups need to be identified. Closer working with charities and suppliers, in addition to increasing awareness of the PSR is a positive step towards better targeting by Ofgem for all current and future fuel poverty schemes. Other features of the vulnerability strategy include:

- A mechanism that enables network companies to offer customers in fuel poverty the opportunity to connect to the gas grid (i.e. bringing the mains gas pipe to their home so they can switch heating fuel to gas) without paying an upfront connection charge and thereby heat their homes using the cheapest fuel option.
- Provision of support services by suppliers and network operators to consumers who are elderly, sick or disabled, including consumers who have hearing or sight impediments and those who consumers who rely on electricity.
- Incentives on electricity distribution companies to identify and work with stakeholders to help support their customers in vulnerable situations and maximise their role in addressing vulnerability.
- Developing a smart metering Consumer Empowerment and Protection Strategy.

9.4 Equitable funding and fairness

The use of energy bills to fund policies to reduce energy demand and tackle fuel poverty is problematic as there are inherent distributional impacts for those that do not receive support (as discussed in section 5.3). There are two very different possible funding options to address this issue. The first option would involve, where appropriate collecting funds from those that directly benefit i.e. via a Green Deal charge. In cases of fuel poverty this would almost certainly be highly regressive; an alternative option would be for costs to be collected from those that emit the most i.e. typically with above average consumption and charging them a higher rate. Although as discussed previously this poses issues for those householders on low incomes with high energy costs (White et al., 2011).

In addition to restructuring the approach to funding these policies, DECC should review the design of all its policies to ensure that they do not unduly burden any low income households. If they are deemed to have unjust distributional impacts then the policy should contain strategic support for these households (see discussion below on safeguard policies) (Preston et al., 2013c).

Taxation provides an alternative method of funding energy policy. Taxation is inherently more progressive because as income increases, the proportion of total income spent on energy bills decreases; whilst the proportion of income going to direct taxation increases as income increases. If income taxation were used as a funding source then this would naturally raise more funds from wealthier householders. The Select Committee's review of the evidence found that the majority of

²¹ Energy suppliers are obliged to offer a range of free services, known as the Priority Services Register, to their most vulnerable customers. These services are free to join and are available from all mains gas and electricity suppliers to people who are of pensionable age, registered disabled, have a hearing or visual impairment, or long term ill-health.

witnesses expressed a great preference for using taxation to fund energy efficiency schemes as opposed to bill levies (House of Commons, 2013b).

The issue with a taxation funded scheme is that this goes against the current economic convention of reducing social spending on the welfare state. At a time of fiscal austerity, increasing taxation spending represents a significant change in strategy, that would require an alternative driver for Government i.e. a plan for 'green growth' or a 'low carbon industrial revolution' (Gough, 2013). The challenges of identifying additional funding through taxation are discussed further below.

9.4.1 Future energy efficiency schemes – delivery model

As discussed in section 5.5, the majority of UK energy policy is now privatised and delivered predominantly through the energy suppliers. Stockton and Campbell (2011) describe how advocates of fuel poverty define energy as a social necessity, in other words as a social need which includes protection for the most vulnerable of society. However, energy suppliers are likely to frame energy as a commodity, with generating a profit at the core of its identity. Energy suppliers are therefore naturally seeking to recover their costs fully whilst delivering policies as cheaply as possible (Stockton & Campbell, 2011). The least cost delivery model is not best suited to a service designed to deliver the necessary measures required to tackle the issue of fuel poverty. The Select Committee acknowledges this stating that *“energy companies may in fact not be best placed to deliver energy efficiency strategies due to a lack of understanding of the housing sector and a conflict of interest regarding the promotion of energy efficiency”* (House of Commons, 2013b).

The Select Committee review of evidence highlights community-based schemes as an alternative route to tackling fuel poverty. Suggestions involved the following elements as a way to deliver a more holistic approach:

1. Installation of heating and insulation improvements
2. Advice on money management with a focus on energy and fuel debt
3. Benefit entitlement checks
4. Community-based collective switching
5. Involving local authorities to integrate schemes with other services

The IPPR 'Help to Heat' report examines the potential for area-based approaches in more detail. The report recognises a number of issues as to why people do not adopt energy efficiency schemes such as concern regarding upfront costs, a lack of trust and/or awareness of what is on offer and the perception that making the change is a hassle which causes disruption are just a few. To address these and other barriers the report makes it clear an effective strategy must adopt “the ‘4E’s’ approach” when designing policy so that schemes: Encourage; Enable; Engage; and Exemplify (Platt, 2013).

Targeting is a key issue for fuel poverty alleviation schemes with benefits typically used as proxies to determine which households receive support (as discussed previously this gives an imperfect match with many people being given assistance who are not actually fuel poor). The 'Help to Heat' report identifies local authorities and third sector groups as effective intermediaries to identify low income, low efficiency households, supporting those findings of the Select Committee shown above.

This review has identified a number of reports which advocate a restructuring of the approach to targeting and delivering energy efficiency schemes focused on fuel poverty. In particular adopting an area based approach in areas of high social deprivation may help yield economies of scale i.e. fewer resources are required to address a greater number of the fuel poor properties (Baker et al., 2003; Boardman, 2010; Platt, 2013). As discussed in section 5.5, area-based schemes (such as Warm Zones) have been shown to be highly effective in targeting high numbers of fuel poor. Area based schemes typically seek to tackle all the housing in an area by coordinating a range of funding sources and resources. The schemes do not wait for households to self-refer, but proactively visit every household in a known high-risk area (Sefton, 2004).

Platt (2013) links this idea to the current Green Deal suggesting that by offering free energy assessments on a house-by-house basis, even when households do not qualify for free measures, once provided with the assessment they are more likely to engage with the Green Deal and pay for measures themselves. In addition to achieving economies of scale, a street-by-street method, will create employment in the local economy meaning it would better stimulate the market than the current cash-back scheme and would be a better use of these funds (ibid). Mallaburn et al. (2013) in their examination of 40 years of government energy efficiency schemes similarly note that local delivery has become the preferred delivery mechanism in part because: *“Local businesses, government and community groups are more widely trusted than national government and trans-national energy companies, who are seen as remote, inflexible and, in the latter case, part of the problem especially when energy prices are rising.”*

9.4.2 Future energy efficiency schemes – low interest loans

Gough (2013) acknowledges that to date EU and UK regulations regarding the energy efficiency of buildings appear to have made a significant contribution in lowering carbon emissions. Energy efficiency schemes frequently form part of climate mitigation efforts which then lead to unfair financial burden being placed on the fuel poor (ibid). The focus on carbon measuring stems from the 1990s and subsequent governments have persisted with this method as it provides an effective monitoring system (Mallaburn et al., 2013). Gough (2013) notes the Green Deal potentially faces this problem and will likely increase fuel poverty, “unless subsidies through the ECO mechanism or from elsewhere are improved”. This is in stark contrast with the German KfW programme (discussed in section 7.2) which offers low interest loans universally through commercial high street banks for anyone wishing to make energy efficiency improvements to their home. This option is much more attractive to consumers than the current Green Deal and makes the argument for policies that seriously consider carbon and social goals equally and in a way that is complementary rather than conflicting. Currently the Green Deal does not fully consider “any of the key dimensions: the regulatory framework, the level of financial incentive, or the clarity of the message about integrating home energy efficiency and micro-generation” (ibid).

9.4.3 Future energy efficiency schemes – hypothecation

Hypothecation' means earmarking tax revenues for specific, identified purposes. 'Pure hypothecation' would see spending on a particular programme linked directly to the revenue raised by a particular tax or set of taxes: the licence fund used to finance the BBC is perhaps the best example of this. HM Treasury has traditionally been firmly opposed to any hypothecation of taxes which contrasts with the funding of all government expenditure from a consolidated fund. Governments have opposed its adoption on the grounds that spending priorities should not be

determined by the way in which money is raised e.g. taxation from tobacco is not ring fenced for treatment for smoking related illnesses.

The use of taxation poses issues for Government as this reduces spending elsewhere. The Energy Bill Revolution campaign is calling on the Government to use the money it gets from carbon taxes to make our homes super-energy efficient. Over the next 15 years £63 billion will be raised through 'carbon taxes' (through the Carbon Price Floor and EU Emissions Trading Scheme). If this was recycled into fuel poverty schemes it could help insulate millions of homes and lower energy bills (EBR, 2013). This argument was made to the Select Committee with specific reference to revenue generated by the Carbon Price Floor. NEA stated that by reinvesting the funds into energy efficiency measures would not only help reduce carbon emissions but could potentially "take nine out of 10 homes out of fuel poverty" (EBR, 2013; House of Commons, 2013a). The Secretary of state responded:

"While I have great sympathy with the way the Energy Bill Revolution make their arguments and one can understand the power of their argument, they are up against decades, if not centuries, of Treasury orthodoxy on hypothecation. (House of Commons, 2013a)"

Fuel poverty campaign groups may well feel particularly frustrated with this response given that both the Australian and French Governments have used carbon tax revenues in exactly this way (ibid).

The Government should consider the hypothecation of carbon tax revenues as part of a programme to develop a 'green' economy. Research for the EBR campaign (Cambridge Econometrics & Verco 2013) shows that an energy efficiency programme is also a more effective way to stimulate the economy – compared to likely alternatives like cutting VAT, reducing fuel duty or investing in capital infrastructure projects such as building roads. It shows that such a programme would also have substantial economic benefits. It would create 71,000 jobs by 2015 and boost gross domestic product (GDP) by 0.20 per cent.

Safeguarding policies

Research to identify those on low-incomes that are hardest hit by the impacts of energy policy identified two key potential target groups: households in purpose-built flats with electric heating and all properties with electric heating containing at least one pensioner (Preston et al., 2013a). The final stage of this research explored options for 'compensating' these households who appear significantly worse off as a result of Government energy policy in 2020. The results suggest that reducing household energy costs through the provision of basic energy efficiency measures could be the most successful and progressive approach (in terms of distributional impact) to protecting these households (Preston et al., 2013a).

In the future, policies should be designed to provide strategic support to specific types of household. In other words strategies should be tailored to delivering technologies to those most in need. The Select Committee recognises that an increase in the price of wholesale electricity, which is currently predicted, will negatively impact households that use electric only heating. It also acknowledged that the continued use of *"levies on bills to fund energy and climate policies is problematic since it is likely to hit hardest those least able to pay."* To safeguard these households it recommends that

Government consider introducing a 'protected block of consumption' on bills exempt from levies, as proposed by the Fuel Poverty Advisory Group and Consumer Futures (House of Commons, 2013a).

Rural households are another group that are known to be particularly vulnerable to fuel poverty. This is due to rural areas being more likely to experience the following factors: no connection to the gas grid, a disproportion number of older, often solid-walled properties and wages that are below the national average (House of Commons, 2013a). An additional concern is the price of the LPG fuel which many people living in rural areas are reliant on. The Committee therefore *"urges Government to review regulation of the domestic heating oil and LPG market, as well as extending support for fuel-poor households reliant on these fuels"* (ibid). The review of the literature for this report has highlighted a lack of focus on non metered fuels with the majority of studies focussing on the gas and electricity markets and customers.

DECC and Ofgem should develop a framework for analysing the justice implications of future energy policies. This work should form part of the standard impact assessment process, providing an analysis of the possibilities for distributional and procedural justice. This should be based on a defined set of criteria that included all of the different vulnerable groups discussed above and how any new policy would affect members of each of these groups. The policy would then be reviewed and any deficiencies be addressed by an appropriate safeguarding policy i.e. protecting the hardest hit.

9.4.4 Ensuring Uptake of Schemes

Leading on from the importance of ensuring that schemes are designed in a way that targets particular social groups, e.g. rural areas, prepayment customers, etc, it will still be necessary to actively encourage uptake. As noted previously there are a number of reasons why people may decide not to go through with an installation. Lomax et al. (2009) advocate a target system to drive promotion of schemes acknowledging that different groups will require differing levels of support which *"could take many forms: assurance that the schemes and contractors are bona fide, help with accessing proof of benefit, structural help (loft clearance, etc.)"* (Lomax et al., 2009).

Mallaburn et al. (2013) also recognise this point, stating how early energy efficiency schemes in the 1970s and 1980s focused on the technology as it was assumed that this would be sufficient to drive demand. However, there are many physical reasons (e.g. tenure) and psychological reasons (e.g. inertia) why people do not embrace energy efficiency measures, even when financial assistance is on offer. More recent schemes have begun to consider this human behaviour element as equally important as the technological solutions in order to bring about necessary change (Mallaburn et al., 2013).

An example of this involves providing an appropriate level of detail in the information resources created for those targeted; the information must be sufficient to be persuasive but not excessive otherwise people are likely to be overwhelmed and ignore it (ibid), as seemed to be the case with Energy Performance Certificates when first introduced: *"Energy Performance Certificates, as originally implemented in 2007, were too complex, and the information in them had little relevance for most householders (RICS/CLG 2010) because the information they contained was not relevant to householders: It did not set out what was in it for them if they improved the energy performance of their homes"* (Mallaburn et al. 2013). (NB the format and content of EPCs has since changed to reflect this and evolving policy needs (the Green Deal)).

9.4.5 Behavioural advice

In addition to recognising that providing physical energy efficiency measures is insufficient to drive uptake it is equally important to acknowledge that once installed, measures will be most effective if accompanied by appropriate energy advice (Lomax et al., 2009). Lomax et al. (2009) found that heating behaviour patterns were very difficult to change as they were so deeply ingrained. The authors advocate ensuring that energy advice is delivered as soon after a measure has been installed as possible for maximum impact. Clear guidance on how to use new heating controls will increase the chances of consumers engaging with them effectively. Banks & White (2011) present similar recommendations in their evaluation of a solid wall insulation pilot scheme: recipients of the measure could have benefited further from guidance on living with their new insulation system. Lomax et al., (2009) also noted that while hard-to-treat properties are often not included in energy efficiency schemes due to high costs of measures, there were potentially large savings to be made through tailored energy efficiency advice delivered via a long term strategy i.e. not just a one off visit from an advisor.

9.4.6 Government commitment to addressing Fuel Poverty

There is cause for doubt over the sincerity of the Government's commitment to addressing fuel poverty. National Government spending on energy efficiency schemes has reduced dramatically in recent years, with funding in real terms reduced by over 10% (Rosenow et al., 2013) and the demise of the Warm Front scheme, despite it being considered an overall success. As noted in section 8 the devolved nations have chosen to continue with state funded schemes of energy efficiency measures i.e. Nest in Wales and HEEPS in Scotland.

Through an examination of 40 years of government energy efficiency schemes, Mallaburn et al (2013) state that current policy appears confused and lacking direction. Considering early energy efficiency schemes were focused on carbon reduction, with consideration for fuel poverty added later, it is perhaps not surprising that these policy goals have not been properly aligned (Rosenow et al., 2013). Opportunities to develop cross-cutting policies have been missed by DECC, although there are signs this may be changing. Effective coordination with other departments such as the Department for Work and Pensions and the NHS could create similar 'win-win' logic as sometimes seen in the private sector. An example of this is that by increasing the energy efficiency of properties the result is a long term saving on energy bills which increases the total disposable household income of low income families. Instead energy efficiency is often regarded as an inconvenient add-on (Mallaburn et al., 2013). The reasons for the reduced commitment appear to be largely financial and based on the assumption that the private sector will deliver, as surmised by Mallaburn et al. (2013): *"It is hard to read this in any other way than a signal that the government is stepping back towards an approach based on neo-classical economic dogma, without having learned or retained the lessons of the past 40 years"*.

Minimum standards for energy efficiency: Private rented sector

In 2011, some 11% of households in the private rented sector (PRS) had an EPC rating of F or G, compared to 3% in the social housing sector and 8% in the owner-occupied sector (DECC, 2013d). The PRS tends to have lower energy efficiency standards than other sectors with the highest proportion of F and G rated homes. One of the main reasons for lower standards is the existence of a range of barriers to making efficiency improvements in this sector, primarily the fact that the cost of improvements fall to landlords whilst the benefits accrue to tenants.

Recognition that the PRS is lagging behind other sectors on energy efficiency levels provided the rationale for inclusion in the Energy Act 2011 of new provisions and requirements on private landlords. Properties let to private tenants must meet a minimum energy efficiency standard (currently set at an E rating) by 2018 or to have undergone all reasonable energy efficiency improvements that can be financed through the Green Deal or ECO if an E rating is unachievable (the tenant would repay this charge through their electricity bill). The Act also stipulates that landlords cannot refuse consent to reasonable requests for energy efficiency improvements (although again these improvements must be financeable through the Green Deal). However, whilst there is already this primary legislation in place, secondary legislation is still required for the detailed implementation of the minimum standard. This is currently being developed by DECC, but there is a risk that Government will reduce the stringency of these regulations under pressure from landlords (e.g. making exemptions for pre-1919 properties or limitations on the depth of energy efficiency required). These regulations should be implemented in full.

Minimum standards for energy efficiency: Social housing

The Decent Homes Standard involved the incumbent government setting targets for standards in social housing, to be implemented by local authorities. Since 2001, around £3.7 billion has been invested in improving the thermal efficiency of the social housing stock (this is not all as a result of Decent Homes) resulting in around 844,000 local authority dwellings receiving insulation and around 1.2 million receiving a new or replacement heating system. This is reflected in the average SAP rating of local authority housing, which increased from 50 in 2001 to 60 in 2009 (Hills, 2013).

The Decent Homes Standard, however, sets a low basic minimum standard for heating and insulation; well below what is needed to significantly reduce fuel poverty. Neither does it sufficiently address the environmental performance of homes, particularly in relation to climate change mitigation and adaptation (Preston, et al., 2011). A study exploring the potential for an enhanced Decent Homes Standard (Preston et al., 2011) suggests that this is considered, by many, a priority requirement and many housing organisations and partnerships were found to be experimenting with measures beyond the current standard, implementing localised Decent Homes 'Plus' programmes. This review would encourage Government to implement further programmes of enhanced Decent Homes to help transform the efficiency of our housing stock and reduce the burden of fuel costs on those often on the lowest incomes. However, recent changes (April 2012) to council housing finance suggest policy may be moving in the opposite direction, with councils now able keep their rental income and use it to fund their housing stock (called 'self-financing', powers for which were introduced through the Localism Act 2011), the aim being to "give councils the resources, incentives and flexibility they need to manage their own housing stock for the long term and to improve quality and efficiency" (DECC, 2014b).

Improving incomes and access to benefits

The Hills fuel poverty review report proposes three potential possibilities for improving incomes: one example for pensioner households is equity release; which addresses under-occupancy by residents down-sizing to smaller properties or taking in lodgers; and benefits entitlement checks. In terms, of equity release and addressing under-occupancy, the review concluded that both are unviable on a large scale (Hills, 2013). For the first this is due to being negatively perceived and offering limited opportunity for the fuel poor: *"Only about 18 per cent of those who are fuel poor according to our LIHC indicator – or about 500,000 households – are owner-occupiers aged 60 or more, and even for*

them, in many cases the terms of equity release products currently on offer may not provide the best value for money” (Hills, 2013). For the second, cost and inconvenience are identified as key barriers: “the costs of down-sizing can be significant. The cost of moving house tends to amount to several thousand pounds, and involves significant disruption, which is why many avoid it, even though there would be financial gains. Equally, taking in lodgers may be an unattractive option for some” (Hills, 2013).

Another method of income maximisation are Benefit Entitlement Checks (BECs) which have proved to be a more effective route to maximising income in the past. For example, in 2010/11, the Warm Front scheme identified over 6,000 unclaimed benefits amongst around 32,000 benefit entitlement checks carried out that year. Figures show there was an average increase in benefits of almost £1,900, an aggregate increase in annual income for their target group of £11 million (Hills, 2013). Energy efficiency programmes targeting low income households should therefore routinely include benefit entitlement checks.

Future tariff development

There are a number of potential future changes to the design of tariffs which could have an impact on the amount low income households pay for fuel. Before we go on to discuss the literature in more detail it is worth briefly summarising the two main types (see Box 8 and further discussion below).

Box 8. Future tariff intervention options

Rising block tariffs

Rising block tariffs, or increasing block tariffs, adopt a pricing structure in which the unit price of electricity or gas increases as consumption increases. The tariff increases occur at stepped intervals, with a low- (or zero) priced block(s) to cover basic/essential energy use, and subsequent blocks charged at higher unit prices. The approach ‘rewards’ low energy users with lower prices, provides incentives to reduce demand among higher energy users and ensures supplier revenue is recovered through the higher charges for high energy users.

Demand side response (DSR)

DSR tariffs typically offer householders lower energy costs if they change the times of day at which they use energy. This is typically done by offering a different unit price for energy or through direct control of appliances in their home (the latter would result in a direct demand side reduction). The main types of DSR tariff are: time of use tariffs (TOU); critical peak pricing tariffs (CPP); and direct load control (DLC).

Rising block tariffs

Thumim, et al. (2009) suggest that there are three broad options for constructing rising block tariffs, depending on the policy objective sought:

1. Achievement of electricity and gas demand reductions (environmental);
2. Increase the stability of supplier revenues by improving the predictability of the amount of expensive energy units used; currently the cheapest are most predictable (economic); or
3. Reduce the burden of energy costs on low-income households (social).

The study suggests that the introduction of a rising block tariff structure should aim to address both environmental and social objectives and include a parallel investment programme to improve the

properties of households at risk of fuel poverty. This programme could be funded, at least in part, by the additional revenue suppliers would receive from “*more aggressive increasing block tariff structures*”. It also suggests introducing special tariff arrangements for households reliant on electricity for space and water heating.

The current structure of energy bills typically sees customers paying more for the first allocation of units and then a lower charge thereafter. The rising block tariff approach penalises high consumption and therefore aligns with the ‘polluter pays’ principle. Whilst low-income households are typically lower energy consumers, analysis by White, et al. (2010) suggests that there are some 1.07 million low income households (with an annual household income less than 60% of median) with “above average” electricity consumption and 700,000 with above average gas consumption. The rising block tariff structure would unduly penalise these householders who may not be able to afford the measures required to reduce their consumption, or may have specific needs driving their higher energy use. The introduction of a rising block tariff would therefore need a number of safeguards to ensure these households are protected from escalating fuel bills. An example of such an approach is in France, where the French National Assembly adopted the socialist Government’s bill in 2013, which accords fiscal incentives to energy-efficient households and extends social tariffs. The French system varies the threshold for low income households with additional protections for those that use electricity for heating.

Low income households that use electricity to heat their home are already at risk from the future impact of policy costs (as discussed above) and also a high risk group should a rising block tariff be introduced. As suggested in France and previously by Thumim, et al. (2009), a new tariff regime in the UK would need to ensure that these households are afforded both a larger block of cheaper energy and access to resources to make their home more efficient (see DSR recommendations below). The Hills Review examined the potential for a rising block tariff but ultimately found that until there is a significant improvement in the general standard of housing with regards to energy efficiency this would penalise those with high energy requirements in a regressive way (Hills, 2013). Another alternative to rising block tariff is a variable VAT on energy whereby high users pay more in the form of a carbon tax. The key difference with rising block tariffs is that the revenue collected could be used to fund additional energy efficiency measures. This still has potential to be regressive compared to funding measures from income-based taxation.

The concerns about the implications of rising block tariffs for low income, above average consumers should not be a rationale for inaction. Rather, the move towards a more progressive system of charging or taxing those households that consume more should be explored in more detail, with due consideration to tariff design options for safe guarding the interests of low income higher consuming households.

Demand side response (DSR) tariffs

Consideration of the implications for and protection of vulnerable households must precede any larger scale rollout and marketing of demand-side response tariff offers. Ofgem’s Consumer Vulnerability Strategy provides the opportunity to consider issues relating to vulnerability in this market (Ofgem, 2013c). However, households typically considered vulnerable (such as those on a low income or elderly) will not necessarily need specific protections from a DSR perspective (i.e. vulnerability in one context of the energy market does not automatically equate to vulnerability in

the context of DSR tariffs). Furthermore, vulnerability is dynamic and transitional: people can be 'vulnerable' at certain times in their life (e.g. through illness, temporary loss of employment etc, as discussed in section 3.3) and not at others. However, under DSR someone who previously may have experienced vulnerability only in the short term may find it more difficult to reclaim their previous economic position. This is because current cross subsidies are not sufficiently responsive to changes in people's income which may fluctuate on a monthly or even weekly basis. If consumers are not able to take up DSR tariff offers, they may see their bills rise. It is difficult to draw conclusions about how particular groups of consumers will react to DSR, due to a lack of evidence at present, but certain sectors may be less able to engage in DSR (Owen et al., 2013). For example, low-income households are likely to have less discretionary load (i.e. they are already only using electricity to meet bare essential needs) and therefore have less capacity to engage in DSR; similarly, private rented tenants may be less willing and/or able to engage in DSR due to 'split agency' – that is, decisions about energy supply, appliances and usage may fall on the landlord rather than the tenant (Owen et al., 2013).

This discussion raises the following questions:

- Given the range of customer groups and the dynamic nature of some forms of vulnerability, is it possible or desirable to develop specific DSR tariffs aimed at protecting vulnerable households?
- If so, how should these be targeted and delivered?
- What additional policy and regulatory changes may be needed to ensure that vulnerable consumers are protected?

In terms of consumer engagement with DSR, the report on electricity demand and consumer issues (Owen, G. et al. 2013), identifies a number of household types that may be less likely to engage with DSR who are also more likely to be in poverty. For example, large families; families with young children; vulnerable older consumers; people with medical conditions that require reliable supply; and people with electric heating who do not use night storage heaters.

The future of DSR will become clearer once Ofgem has fully implemented its programme of Retail Market Reform. Whilst allowing consumers to choose a time of use or other DSR tariffs if it suits them sounds initially quite attractive from a consumer perspective, those with 'peaky' demand/large loads may be less likely to opt for these tariffs. If our energy systems are to become smart then we may need to move to a system whereby time of use (TOU) and DSR tariffs are mandated. In this instance there would need to be adequate protections for low income households, for example assisting with the installation of smart appliances, heat pumps and other micro-renewables. Alternatively, the seven district network operators (DNOs), who are responsible for the entire national transmission of electricity through a network of towers and cables, could assist vulnerable households in constrained parts of the network to install energy efficiency measures and smart appliances. This may be one way of enabling DNOs to take a more strategic approach to their social obligations towards vulnerable customers which forms part of their overall corporate social responsibility (CSR) plan.

Automated response/load management and vulnerable households

Automated response is where the customer agrees for certain appliances to be controlled remotely (e.g. to be switched on and off at high or low-priced times as required to reduce or to reinstate demand) in return for rewards or discounts (Owen et al., 2013).

Whilst automated response/load management is an aspect of DSR, it has been discussed separately here as it has significant implications for vulnerable low income households. This is partly because automation/load management for DSR purposes is sometimes confused with forms of load limiting²² that might be used for debt prevention and debt control. As automated response/load management could provide significant benefits to customers, it is important that this is clearly distinguished from the use of load limiting as a debt control tool.

In December 2012 Ofgem identified that there were then no plans by suppliers to introduce load limiting. At the time, a commitment was secured from suppliers that they would get input from Ofgem and Consumer Futures if they were going to introduce this in the future. It is important to ensure that future tariff development continues to ensure that low income households access to energy is not constrained.

Smart meters and prepayment customers

PPM customers arguably have the most to gain from the rollout of smart meters (see Box 9). Smart metering offers significant potential improvements in customer service and greater convenience for PPM customers (compared to those using other payment methods). In addition, smart metering could deliver, in the long run, improved competition and innovation in this sector (particularly enabling TOU/DSR tariffs as discussed above) that could lead to a downward pressure on price. There is also an opportunity to address many of the existing day-to-day challenges that prepayment meter customers face, such as problems with broken and lost payment devices, barriers to switching supplier and payment method, or misdirected payments.

However, these benefits will only be realised if the appropriate solutions and regulatory framework are put in place and further intervention is required by Ofgem and DECC to ensure that prepayment customers benefit. In particular: ensuring that there are adequate minimum standards for smart meter services and information; ensuring in-home displays include warnings of low credit levels; sufficient demonstration of functionality and operation when they are installed; relocation in accessible areas; and ensuring that a variety of devices were compatible with prepayment functionality.

Box 9. Potential benefits of smart metering for prepayment meter customers

Smart meters for PPM customers would operate in much the same way as for those who pay for their fuel in other ways. The difference between a normal PPM and a smart meter is the additional information that will be available to the customer. Currently a PPM displays credit information but a smart meter will also show energy use, potentially including a variable price for energy at any given hour of the day. This additional information is useful to all energy users but particularly beneficial to those on tight budgets who can then better monitor the amount of energy they use and the time they do so to ensure the best savings.

²² The amount of load that can be drawn by a household is limited, meaning only a basic level of electricity use can be supported. For example, supplying a fridge and lighting rather than enough to cook food or heat the home.

- More competitively priced tariffs
- Easier and quicker resolution of problems
- Greater choice and convenience when topping up
- An end to problems caused by payment devices
- Reduction in misdirected and unallocated payments
- Reduced barriers to switching between payment methods
- A reduction in self-disconnection
- New ways to help tackle self-disconnection
- New opportunities to improve customer engagement

10 Policy recommendations

Based on the discussion in the previous section, we have identified the following key recommendations for policy development. The final chapter of this review takes these recommendations and combines them into policy proposals which are presented within a Policy Assessment Matrix to show how these policy recommendations could translate into practice.

1. Focussing on improved standards of energy efficiency

Whilst this has historically been a priority for addressing fuel poverty, schemes have typically focussed on a set of lower cost measures rather than identifying those measures required to fully address the problem of cold homes and unaffordable energy bills. Instead policy should include ensuring all low income households are raised to a higher efficiency standard of D (as a minimum). Other schemes related to increasing income should be implemented in parallel to this primary policy goal (see 7 below).

2. Cross-cutting policies – Carbon reduction and fuel poverty

There is a need for policy development that addresses these two priorities in a way that is complementary rather than conflicting. The current paradigm of schemes, specifically the ECO, that obligate suppliers to deliver measures at least cost does little for long-term fuel poverty alleviation. These schemes are typically primarily focussed on carbon emissions reduction (and delivering these carbon savings cost-effectively) with a smaller affordable warmth aspect. Delivering the obligation at least cost means a focus on those areas where there are more opportunities for cost-effective measures (i.e. not solid walled properties) and where it is easier to deliver (i.e. not in rural areas). There is a clear rationale for a delivery model that focuses on the needs of fuel poor households as part of a wider programme to retrofit the whole of the housing stock. One possible option would be splitting the carbon and social aspects of the obligation to provide more clear boundaries in their design.

3. Better targeting

There is a clear need to ensure policies are targeted more effectively to ensure that funding is going to those most in need. This is particularly pertinent with regards to the Winter Fuel Payment (which goes to all pensioners at present regardless of affluence or housing standard) and requires acknowledgement that fuel poverty affects a diverse population beyond the elderly. Cross-departmental working and better data sharing are two key approaches that could help ensure spending on schemes is cost effective. Examples of new ways of targeting schemes that national government needs to be supportive of include:

- Working with NHS trusts to prescribe energy efficiency to those suffering the effects of cold homes
- Working with DWP to ensure that further data sharing enables better targeting of those on low incomes that are vulnerable to the rising cost of fuel
- Ensuring that local authorities are given the resources to tackle fuel poverty through local area approaches focused on the areas with the highest density of fuel poverty
- Working with and through community groups that help people access government schemes through guidance i.e. helping to identify the 'silent sufferers' who do not claim benefits to which they are entitled, and that are necessary to qualify for support through an energy efficiency scheme.

4. Funding fuel poverty measures

To ensure all low income households are raised to a higher efficiency standard of SAP band D will require considerably more funding. Furthermore this funding must be raised in a way that does not create regressive distributional impacts. There are several funding options that could be pursued by policy makers to address these combined needs, including funding measures through:

- a) Hypothecation – using an existing environmental tax, such as carbon revenues from the EU ETS and Carbon Price Floor to invest in measures to reduce energy demand.
- b) Taxation – although inconsistent with the current economic climate in which the Government is attempting to reduce the deficit primarily by cutting spending, taxation offers a more progressive means of funding than through an obligation on energy suppliers (which ultimately represents a cost to energy consumers).
- c) Paid by those who benefit directly from the measures – the Green Deal sought to do this by using an ECO subsidy as a catalyst for Green Deal funding. The range of finance options that enable householders to meet any funding gaps needs to be expanded. This will prove less regressive (as measures can translate into financial savings thus meaning the beneficiary is no worse off financially) but is not appropriate for low income households where the benefits of energy efficiency measures often need to be taken as warmth (and therefore no reduction in energy bill).
- d) Paid for by high energy users – whilst this translates into higher income households paying more as they are generally higher consumers, there are implications for a subset of low income households who have above average consumption. There will also be higher income households who consume less and thus stand to benefit. Furthermore, this may be politically unpopular due to wealthy households potentially being more politically vocal and are therefore likely to object.

5. Safeguarding Vulnerable Consumers

All new policies should be assessed to determine the extent to which they impact unduly on those in, or at risk from fuel poverty. This would require the development of a framework to analyse the energy justice implications of proposed policies. This would demonstrate a commitment to fuel poverty that has appeared to be lacking in recent UK policy development (if energy policy becomes a devolved matter then the same assessment should be made) and will increase the chances of a consistent approach to the issue. This is a necessary development to ensure that the social distribution of cost and benefits is fair. The households that require additional safeguarding will depend upon the policy cost recovery method and the method of targeting households. Three key groups of consumers at particular risk from adverse impacts of the current set of policies include:

- Households with electric heating (particularly if living in a purpose built flat and/or a home with at least one pensioner)
- People living in rural areas
- People who are high energy users due to specific needs e.g. long term ill/disabled

6. Greater openness in the energy supply market

The biggest factor affecting bills is the cost of wholesale energy and the networks, yet energy supplier's state they make only 5% profit. Vertical integration and concealment in the industry (due to protection of competitive advantage) makes this difficult to challenge. Ofgem should require a higher degree of openness regarding all profits i.e. including those from the generation / trading side of their businesses. This will also help inform the debate on the factors that are driving the costs of fuel and the role that energy policy plays in this. There is a clear justification for greater regulation of transparency on energy prices to consumers.

7. Managing fuel debt and increasing incomes

As residential energy bills are currently set to increase there is a need for policies that encourage good consumer debt management and income maximisation (such as the Warm Home Discount, Cold Weather Payment, etc). Past fuel poverty alleviation schemes have shown that the provision of benefits checks can have a greater impact on fuel poverty than measures alone. Maximising incomes through the provision of benefits checks and financial advice therefore represents a cross-cutting theme for the JRF Anti-Poverty Strategy.

8. Changing the market for tariffs

This includes tariff simplification to help customers understand their bills better and make comparisons more easily. Possible regulation against loss leading tariffs could also help ensure that the market operates effectively for those on low incomes, in particular pre-payment meter customers.

9. Smart meters for PPM

The smart meter roll out provides an important opportunity to enable new tariffs (see 8 above) and reduce the current tariff differential in the energy market. Ensuring that smart pre-payment meters offer functionality that helps low income households reduce their bills and manage their consumption is an important policy objective. In addition to this the smart meter roll out needs to be orchestrated to ensure that these households, who represent less attractive customers to suppliers, are not left until last to be targeted and engaged in the roll out.

11 Policy Assessment Matrix

The tables that follows takes the recommendations from the previous chapter and presents them as policy proposals framed within a Policy Assessment Matrix. This illustrates how these recommendations could be translated into practice and demonstrates how future policy proposals should consider implications for social distributional impacts. Six key policies/programmes are presented to address issues raised in the evidence review.

Box 10. Policy Assessment Matrix

Theme	Dimensions
Policy name	Name of policy / intervention
Description of policy	Policy focus <i>Is poverty alleviation the policy driver or sub-driver?</i>
	Intervention offered
	Overall aim <i>To what extent does the intervention seek to deliver a holistic solution, i.e. addressing energy demand, maximising income and lowering fuel costs through market engagement?</i>
Targeted population	Targeted population (eligibility)
	Policy targets
	Scale of target problem <i>What's the overall size and scale of the issue and how does this relate to the estimated impact?</i>
Delivery model	Delivery agent <i>What are the main implications for the UK policy landscape and who would be responsible for delivery?</i>
	<i>Who retains primary responsibility for delivery and are there any cross-linkages with other stakeholders?</i>
	Intervention type
	Key legislative driver
	Oversight of legislative delivery
	Cross departmental interests
	Links to policy agendas
Experienced impact	Accessibility <i>What are the main implications for the UK policy landscape and who would be responsible for delivery?</i>
	Uptake (estimate) <i>To what extent does the policy reach the target group identified by the target population</i>
Social justice implications	Distributional / procedural

Theme	Dimensions	Policy #1
Policy name	Name of policy / intervention	<i>Winter warmth programme</i>
Description of policy	Policy focus	Focussing on improved standards of energy efficiency
	Intervention offered	1. Cost effective measures (as approved by DECC economic analysis to improve homes to EPC band C) 2. Smart meters for PPM customers (with minimum functionality)
	Overall aim	The policy is designed to set a meaningful new statutory target for addressing fuel poverty following its redefinition. The target should ensure that the fuel poor are provided with some protection from rising energy prices in the future.
Targeted population	Targeted population (eligibility)	2.5 million fuel poor households (Low income and high fuel bill). Initially the policy would use the Index of Multiple Deprivation income domain to target the poorest areas through area-based schemes.
	Policy targets	Improve the homes of the fuel poor to EPC band D by 2025 & EPC band C by 2030. Increase the penetration of smart meters to higher percentages in early phases of the roll out (thus enabling demand side opportunities)
	Scale of target problem	Due to the imperfect nature of targeting DECC estimate that the scheme would need to target twice the number of properties i.e. 5 million
Delivery model	Delivery agent	Delivered locally by or in partnership with local authorities.
	Intervention type	Funded by taxation and an obligation placed on suppliers (through an act of parliament)
	Key legislative driver	DECC
	Oversight of legislative delivery	Ofgem (delivery)
	Cross departmental interests	DoH, DWP
	Links to policy agendas	Fuel poverty statutory framework; links to public health & DoH (the latter being supported by forthcoming NICE guidance)
Experienced impact	Accessibility	The scheme needs to operate on a two tier basis. In addition to a phased programme targeting low-income areas, there needs to be an access route for those households with the highest fuel costs. This fits with DECC's ambition to target the most vulnerable first.
	Uptake (estimate)	Approximately 350,000 per year to 2030
Social justice implications	Distributional / procedural	The distributional impacts will depend upon the level of funding from taxation and the incomes of those living in the bottom deciles of the IMD income domain. However, the approach will be inherently 'fair' with wealthier households subsidising the measures received by lower income households.

Theme	Dimensions	Policy #2
Policy name	Name of policy / intervention	Greener homes
Description of policy	Policy focus	Providing access for finance to reduce energy and carbon emissions
	Intervention offered	The policy will support energy efficiency measures and low carbon heat (replacing the domestic RHI)
	Overall aim	The programme offers support to able-to-pay households that wish to insulate their homes through a range of fiscal measures. The householder will ultimately pay for the cost of the measures.
Targeted population	Targeted population (eligibility)	The programme would offer a range of fiscal options to all households.
	Policy targets	To gradually improve the energy efficiency of the housing stock. The policy would have a set of targets linked to the carbon budgets and average energy efficiency improvements i.e. SAP points & EPC bands
	Scale of target problem	This programme needs to help the remaining 20 million+ households (those not targeted/eligible for the 'Winter Warmth' programme) through a range of fiscal measures.
Delivery model	Delivery agent	Delivered by a range of Government-backed agencies and private companies (i.e. potentially similarly to Green Deal Providers)
	Intervention type	1. Low interest loans (interest rate reduced through Government backing at a cost to tax payers) 2. Stamp duty rebate scheme to incentivise retrofit 3. Scheme to support extensions that incorporate whole house energy efficiency upgrades 4. Equity release schemes with repayment (fully or partially) through inheritance tax exemptions
	Key legislative driver	DECC
	Oversight of legislative delivery	Ofgem, HM Treasury
	Cross departmental interests	Business Innovation & Skills (BIS)
	Links to policy agendas	Links to strategies for economic growth
Experienced impact	Accessibility	The scheme needs be open to as many householders as possible. Although each strand of fiscal support will require its own criteria.
	Uptake (estimate)	Approximately 1 million per year to 2030
Social justice implications	Distributional / procedural	The distributional impacts will depend upon the level of funding from taxation. The stamp duty and inheritance tax schemes reduce the level of tax collected which is therefore not fiscally neutral; however, they do enable the householder (or purchaser) to use their own funds to install measures in the first instance.

Theme	Dimensions	Policy #3
Policy name	Name of policy / intervention	<i>Healthy homes programme</i>
Description of policy	Policy focus	Prescribing a basic level of insulation and heating control for those with cold-related illnesses
	Intervention offered	Full set of heating controls, repairs to heating systems and lower cost insulation measures
	Overall aim	Cold homes impact upon the health of those that occupy them. These impacts will be more profound for those on low incomes who struggle to heat their homes. By funding energy efficiency measures targeted at those with cold-related illnesses the policy link becomes explicit.
Targeted population	Targeted population (eligibility)	The scheme will be open to those with cold-related illnesses i.e. Chronic Obstructive Pulmonary Disease (COPD), Ischaemic Heart Disease (IHD), asthma and depression.
	Policy targets	To improve the health of the UK population by driving improvements in housing standards. The cost of the measures should be offset by reductions in the expenditure required to treat these illnesses. The first two years should be accompanied by a monitoring programme to monetise these savings.
	Scale of target problem	Cold related illnesses cost the NHS over £1bn per year
Delivery model	Delivery agent	Delivered by DoH
	Intervention type	Funded by taxation (via reduced health and social care budget expenditure)
	Key legislative driver	DoH
	Oversight of legislative delivery	DoH
	Cross departmental interests	DECC, DWP
	Links to policy agendas	Fuel poverty statutory framework; links to public health & DoH (the latter being supported by forthcoming NICE guidance)
Experienced impact	Accessibility	Qualified health professionals i.e. Doctors, nurses etc. will refer patients for support if they are deemed to: have a health condition that relates to cold homes; live in a home that's cold due to poor standards of thermal efficiency; and accessing a means-tested benefit.
	Uptake (estimate)	Approximately 250,000 per year to 2020
Social justice implications	Distributional / procedural	The distributional impacts will depend upon the level of savings to the health and social care sector. The savings are likely to be significantly higher than the costs, particularly if the longer-term benefits are factored into the calculations.

Theme	Dimensions	Policy #4
Policy name	Name of policy / intervention	Retail Market Transformation
Description of policy	Policy focus	Implementing further market reform to increase transparency and competition in the energy market.
	Intervention offered	Further legal compliance for energy suppliers
	Overall aim	Further regulatory intervention to ensure that the energy market operates fairly for all customers
Targeted population	Targeted population (eligibility)	All gas and electricity customers
	Policy targets	1. Further improvements and standardisation of energy bills 2. Publication of the costs of social and environmental policies (as part of the bill) 3. Disaggregation of trading profits in financial reporting 4. Auditing the tariff information label
	Scale of target problem	The policy aims to further address systematic market failures i.e. Lack of competition
Delivery model	Delivery agent	Delivered by Ofgem with support from other Government agencies
	Intervention type	The cost to Government will be revenue neutral. Suppliers are likely to suggest that these changes will increase bills; however, competition and transparency is likely to reduce costs for customers.
	Key legislative driver	Ofgem
	Oversight of legislative delivery	Ofgem
	Cross departmental interests	DECC, Cabinet Office, Number 10
	Links to policy agendas	Ofgem's Quality of Service Guaranteed Standards; Ofgem's Consumer Vulnerable Strategy; also links to the Fuel poverty statutory framework
Experienced impact	Accessibility	n/a
	Uptake (estimate)	n/a
Social justice implications	Distributional / procedural	If suppliers costs increase significantly then this will increase bills. However, consumers should be better placed to access tariffs from newer suppliers at lower costs. Those that do not switch are therefore likely to face an undue burden unless given support to do so.

Theme	Dimensions	Policy #5
Policy name	Name of policy / intervention	<i>Trusted intermediaries</i>
Description of policy	Policy focus	Supporting further switching for sticky low income customers
	Intervention offered	The policy would fund the development of new business models for switching services
	Overall aim	Provisions for a new type of business that supports low-income and vulnerable households by ensuring they are able to access the best deals in the market (for a range of utilities).
Targeted population	Targeted population (eligibility)	All gas and electricity customers with particular focus on low-income households and those without access to internet or bank accounts
	Policy targets	Support new methods of delivering switching services i.e. new models for collective switching programmes, new models for managing a customer's utility bills
	Scale of target problem	The scale of the issue is hard to quantify given the lack of information available. However, currently only 10-12% of customers switch per year and the majority use online services. There is huge potential to reach the 2.5 to 5 million fuel poor households (England LIHC and 10% definition).
Delivery model	Delivery agent	Delivered by private companies and not-for-profit organisations. However, Ofgem would need to implement a number of consumer protection safeguards
	Intervention type	Initially funded by BIS / DECC to support new business models. Long-term funding needs to be self generating
	Key legislative driver	BIS
	Oversight of legislative delivery	Ofgem
	Cross departmental interests	DECC, DWP
	Links to policy agendas	Fuel poverty statutory framework
Experienced impact	Accessibility	Business models need to target low income households, although the model could equally benefit all customers
	Uptake (estimate)	Unknown
Social justice implications	Distributional / procedural	Unknown

Theme	Dimensions	Policy #6
Policy name	Name of policy / intervention	<i>Benefit maximisation</i>
Description of policy	Policy focus	Providing benefits checks for those helped by the "Winter Warmth" or the "Healthy Homes" programme
	Intervention offered	A trained advisor will provide the householder with a benefit check to help maximise their income
	Overall aim	To increase the incomes of those in poverty, thus increasing their ability to pay for fuel and other essential services
Targeted population	Targeted population (eligibility)	Referred by the two primary energy efficiency schemes listed here.
	Policy targets	Improving the incomes of those assisted by £35 per week & enabling access to a range of targeted benefits
	Scale of target problem	Linked to the two energy efficiency programmes. Target audience likely to be in the region of 4 to 6 million households
Delivery model	Delivery agent	Delivered locally by or in partnership with local authorities.
	Intervention type	Funded by taxation
	Key legislative driver	DECC, DWP
	Oversight of legislative delivery	DWP
	Cross departmental interests	DECC, DWP
	Links to policy agendas	The desire to maximise benefits runs counter to the Government's rhetoric to reduce the burden on the state
Experienced impact	Accessibility	Householders referred for benefits check by the two primary energy efficiency schemes listed here.
	Uptake (estimate)	Approximately 250,000 per year to 2030
Social justice implications	Distributional / procedural	Likely to be a progressive measure overall given the policies inherent focus on low income households

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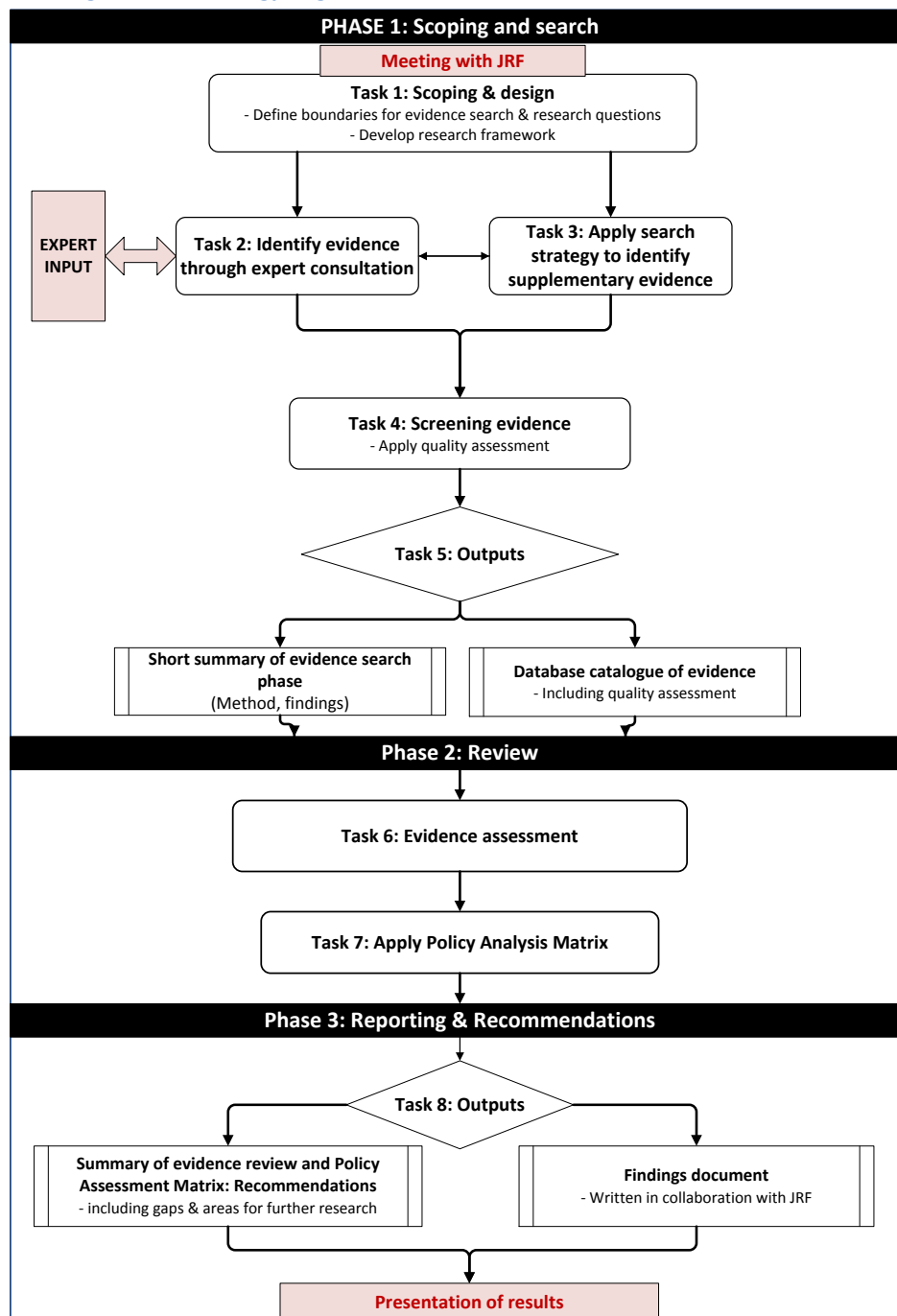
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Annex I. Methodology

The methodology applied in this evidence review adopts an ‘expert informed’ Rapid Evidence Assessment (REA) to provide a balanced assessment of the available research. The REA is centred on producing a high quality synthesis of evidence on fuel costs and poverty to include recommendations for effective solutions needed in energy policy and practice to reduce poverty in the UK. The *expert-informed rapid evidence assessment* combines expert knowledge of relevant information sources with a focused search of peer-reviewed and grey literature, thus making best use of the available resources and expertise of the team. The overall approach is illustrated in Annex Figure 1 below and described further in the proceeding sections of this report.

Annex Figure 1. Methodology diagram



Phase I – Scoping and searching

Search techniques

The initial phase of the evidence review sought to identify and assess a wide range of material, a collection of which would then be selected for full, detailed review in the next phase of the study. Three search approaches were applied, utilising:

1. **Previous CSE research.** CSE has many years of experience delivering fuel poverty and energy-related research projects. The project team is therefore aware of, and hold, a rich variety of relevant work on the subject. This was the starting point for collating material for this evidence review.
2. **Expert input.** Using CSE's large and diverse contact database experts from a wide range of organisations, including relevant government departments, NGO's and academic institutions were contacted to seek further input and recommendations for evidence sources, reports and peer reviewed articles for consideration in this review. A total of 44 experts were contacted, of which 10 provided a positive and helpful response.
3. **Focused online searches.** This involved using clearly defined search terms to conduct searches on Google scholar to source additional evidence of potential relevance for the review. The words and terms used in the searches are shown in the table below.

Annex Table 1. Search terms used for sourcing evidence from Google scholar

"Social" terms	"Energy" terms	"Action/ Operation" terms	"Financial" terms	"People" terms	"Behaviour" terms
N = 4	N = 5	N = 8	N = 10	N = 7	N = 5
Fuel Poverty	Energy efficiency	Policy	Wholesale Cost	Resident	Behaviour
Energy Poverty	Energy	Policies	Expenditure	Consumer	Behaviour
Social Exclusion	Energy Consumption	Strategy	Income	Tenant	Lifestyle
Deprivation	Energy Market	Strategies	Price	Elderly	Choice
	Fuel Cost	Scheme	Debt	Disabled	Coping
		Measure	Profit	Young	
		Intervention	Budget	Household	
		Impact	Benefit		
			Bill		
			Cost		

Combinations of different conjunctions were used depending on the breadth of results required. Initial searches separated terms with “or” to return a larger number of results while later searches used “with” to give a more focused set of documents. Each search included 3 to 5 different terms to ensure a high level of relevance in addition to restricting searches to material published in the last 10 years. Initial test searches involved reading titles only and keeping a numerical record of all relevant results so as to design better follow-up searches.

To ensure that a sufficient number of texts were identified for the second research objective on understanding the underlying drivers for changes in fuel costs, additional bespoke searches were performed using key words specific to this topic, but not so applicable to the other research questions (e.g. wholesale cost, profit, liquidity etc).

Managing and filtering search results

All material sourced through CSE's existing research base, expert input and the second round of searching on Google scholar were added to Mendeley (a free reference manager software package).

All evidence in the resulting catalogue of over 250 references was then 'tagged' (in Mendeley) based on a rapid assessment (e.g. utilising keywords, abstract/executive summary) and according to: applicability to research question(s); quality; relevance; and coverage (see Annex Table 2). Tagging facilitates easy filtering of the catalogue of references to identify which (if any) of the research questions are under-represented and may potentially require additional sources of evidence.

Annex Table 2. Tagging criteria

Research question tag	
F1	What impact does the cost of fuel have on poverty?
F2	What are the factors affecting (driving up) the price of fuel?
F3	How do environmental and social obligations placed on private companies by Government impact on prices (for those on low incomes)?
F4	What strategies have been adopted by other countries to manage fuel costs and demand, and what evidence is there of success?
F5	What strategies have been adopted across the UK devolved administrations to manage fuel costs and demand, and what evidence is there of success?
Quality tags	
HQ	High quality (e.g. high quality journal, peer-reviewed)
MQ	Medium
LQ	Low
Relevance tags – how directly relevant is the paper to the research question	
HR	Highly relevant
MR	Medium (some relevance, but not the focus of the article)
LR	Low (only very loosely relevant)
Coverage tags – use if the paper has a different geographic focus	
EU	Europe
INT	International (outside the EU28)
DEV	Wales, Scotland or Northern Ireland specific
Other tags	
NA	Not applicable to this evidence review
META	Flag if paper is an evidence review in itself

Phase II – Evidence review

A full list of tagged papers was exported from Mendeley and reviewed separately by the project team. Each member of the project team created a shortlist of 30 papers for review based upon: the spread of literature across research questions; quality; and relevance. The team then reviewed each shortlist to identify those papers for final selection, in particular seeking to ensure that the full spectrum of issues was covered. Annex Table 3 below shows the coverage of the 50 selected papers

by research question. Note that several papers cover more than one subject i.e. resulting in a total below which exceeds 50.

Annex Table 3. Selected literature coverage

Research question tag		
F1	What impact does the cost of fuel have on poverty?	24
F2	What are the factors affecting (driving up) the price of fuel?	15
F3	How do environmental and social obligations placed on private companies by Government impact on prices (for those on low incomes)?	7
F4	What strategies have been adopted by other countries to manage fuel costs and demand, and what evidence is there of success?	6
F5	What strategies have been adopted across the UK devolved administrations to manage fuel costs and demand, and what evidence is there of success?	21

Annex II. Characteristics of fuel poor households in the UK

The summaries below are derived from reports on the latest available national housing condition surveys at the time of writing.

England

The latest Fuel Poverty Report from DECC (published in August 2013 and drawing on data from the 2011 English Housing Survey), provides analysis of fuel poverty levels using the new Low Income High Cost fuel poverty measure which puts the number in fuel poverty at 2.39 million households (compared to 4.5 million using the 10% measure) (DECC, 2013d). DECC presents eight factors that are likely to contribute to a household being defined as fuel poor, these relate to details of the property, household income and defined groups known to be more likely to experience fuel poverty. (All figures apply to the new LIHC definition of fuel poverty):

- **SAP** – The Standard Assessment Procedure appraises the energy efficiency of a dwelling and is integral to both the estimated required spend on fuel and the costs actually incurred by a household. The evidence shows that both LIHC and high income high cost (HIHC) households have lower SAP ratings compared to those with low energy costs. A house with a lower SAP score is not only more likely to be in fuel poverty, but the severity of fuel poverty increases the lower the score.
- **Floor Area** – Due to the way LIHC indicator is calculated, the larger the dwelling, the greater the likelihood of being considered fuel poor: 5% of households living in properties of less than 50 square meters are defined as fuel poor, compared to 15% of properties between 90 -109 square meters.
- **Dwelling Age** – older properties typically have lower thermal efficiency (for example, having solid walls which are harder to insulate) and are more likely to be in fuel poverty.
- **Income** – The LIHC metric looks at household income *after* housing costs meaning that only households on the lower end of the income spectrum will be classed as fuel poor. Therefore the proportion of households living in fuel poverty reduces as income increases.
- **Working Status** - Fuel poverty is highest amongst the unemployed, with a third of all unemployed households (approximately 262,000 households) living in fuel poverty in 2011. Interestingly, in England only 11% of fuel poor households are unemployed and the depth of fuel poverty experienced by unemployed households is the lowest. This is attributed to a large proportion of unemployed households occupying social housing, which is typically smaller and more energy efficient, thus costing less to heat.
- **Household characteristics (composition)** – The group at highest risk are lone parent households with around 18% being fuel poor in 2011 although the average fuel poverty gap is one of the lowest. This is attributed to lower energy costs as this group generally occupies smaller, more energy efficient properties. The propensity of being fuel poor is lower for couples with no dependent children although the severity of fuel poverty experienced is generally greater than that observed for households with dependent children.

- **Age of occupants** – Approximately half of all fuel poor households included someone aged 50 or over in 2011 although only 9% of the over 60 age group are fuel poor. Fuel poverty is most prevalent amongst the under 25 year olds, with around 21 per cent of this group living in fuel poverty in 2011. This is primarily due to their lower average earnings and that the majority of this age group (around two-thirds) live in privately rented accommodation, which tends to be less energy efficient and thus have higher fuel costs. In contrast, over three-quarters of the over 60 year old age group own the property they live in, often resulting in lower housing costs, and in turn, higher disposable incomes compared to all other age groups.
- **Method of Gas Payment** - Households paying for their gas by direct debit have the lowest fuel poverty rate, with around 7% in fuel poverty in 2011. This contrasts with 14% of all households paying by standard credit and 19% of households using pre-payment meters. Due to discounts for paying by direct debit, the payment method affects the household income in real terms.
- **Regional fuel poverty** - Fuel poverty rates differ notably across England. In 2011, the highest rate of fuel poverty was seen in the West Midlands, followed closely by the East Midlands (with fuel poverty rates of 14% and 13% respectively). In general, regions with the higher fuel poverty rates (the Midlands and the North), tend to also have lower average incomes compared to London and the South, where proportionally fewer households are in fuel poverty. A combination of smaller dwelling sizes, better insulation measures and greater access to the gas network in these regions compensate the severity of the fuel poverty experienced, and so they have some of the lowest fuel poverty gaps.

Scotland

The Scottish House Condition Survey (SHCS) is a national survey of properties and households that combines data from occupant interviews and physical inspections of dwellings to give a holistic picture of Scotland's occupied housing stock. All dwelling types (flats, houses, etc) are included from across the country covering both owned and rented. The latest report from the Scottish Government using the 10% definition analyses data from 2011 and applies 11 key criteria in assessing those most at risk from fuel poverty (10% definition) which is in line with the Scottish Fuel Poverty Statement. Some factors are different to those used in England but fall under the same broad categories of property features, household income and special consideration of groups known to be more susceptible to fuel poverty. The 2012 survey found that in Scotland 27.1% of households (around 647,000) were fuel poor.

- **Type of Dwelling** - Detached properties have a high rate of fuel poverty, with 33% of these dwelling being fuel poor. 27% of converted flats are estimated to be fuel poor and terraced and semi-detached properties are similarly matched at 26%.
- **Age of Dwelling** – Buildings built before 1919 have the highest rate of fuel poverty in Scotland with 38% of household's fuel poor. Properties built between 1919 and 1982 are similarly matched, but it is only in properties built after 1982 that a significant drop in the number of households (15%) in fuel poverty is evident.

- **Primary Heating Fuel** – 45% of those who use oil and 42% of electrically heated properties were fuel poor compared to just 22%, of those who use gas.
- **NHER Band/SAP** - As expected dwellings with lower energy efficiency (low SAP rating) are more likely to be fuel poor, with 79% of those with a poor NHER rating being in fuel poverty (60,000 households).
- **Urban/rural** - 40% of those who live in rural areas are defined as fuel poor compared to just 24% of those who live in urban areas of Scotland.
- **Tenure** – People who own their home outright represented the highest proportion of fuel poor properties at 41%. For both local authority and housing association properties 29% of all homes are fuel poor. Privately rented properties in Scotland represent the lowest percentage with 22% of all households classed as fuel poor.
- **Household composition** - 48% of single pensioners in Scotland were classed as fuel poor. Single adult households were also proportionally high, with 35% classed as fuel poor.
- **Weekly Income Band** – Fuel poverty primarily affects those in the bottom 50% income bracket; 86% of those earning £100 to £200 a week are fuel poor whereas this affects only 39% of the £200 to £300 per week income band.

Wales

The 'Living in Wales' survey, commissioned by the Welsh Assembly Government collates household survey data for each year from 2004 to 2008 with additional property surveys by qualified surveyors for approximately 2,700 addresses in 2004 and 2008. Seven reports present analysis of this data, exploring different aspect of housing including health and safety, energy efficiency and repair costs and fuel poverty. Ten criteria are used to identify households at greatest risk of fuel poverty (10% definition) in Wales (Welsh Assembly Government Statistical Directorate, 2010):

- **Tenure** - A higher proportion of privately rented households are classed as fuel poor compared to other tenures. Although accounting for less than 10% of all households in Wales, 36% of privately rented households are fuel poor.
- **SAP** – Properties with a SAP rating of 35 or lower have 58% of their households in fuel poverty and as expected properties with a higher SAP rating, 65 and over, only have 9% of their households in fuel poverty.
- **Age of Dwelling** – Older properties represent a high percentage of fuel poor properties with 47% of homes built before 1850 and 43% between 1919 and 1944 in fuel poverty.
- **Type of Dwelling** – Just over half, 52%, of all converted flats are fuel poor in Wales which is much higher than other types of dwelling. 29% of all detached homes are fuel poor and 26% of all end terraced dwellings are fuel poor.
- **Main type of fuel used for heating** – 48% of those who use solid fuel and 47% of those who use oil are fuel poor compared to just 21% of those who use gas.

- **Household composition** – 53% of single pensioners are fuel poor, but if they are married then this number nearly halves with 27% of all married pensioners being classed as fuel poor.
- **Working status** – In Wales 58% of all unemployed, adult households are estimated to be fuel poor, with only 13% of working households classed as fuel poor.
- **Household income** - In the lowest income band (the 1st decile), 94% of households are fuel poor, whereas in the highest three income bands (7th to 10th deciles), only 4 per cent of households are fuel poor. The lowest three income bands comprise nearly 75% of all fuel poor households.
- **Nature of the area locality (urban/rural)** – 22% of all households living in urban areas of Wales are fuel poor compared to around 42% in rural areas.

Northern Ireland

The Northern Ireland 2011 Housing Condition Survey (HCS) provides an update of key figures relating to The Decent Homes Standard, Fuel Poverty, SAP, unfitness and disrepair at Northern Ireland level. The 2011 HCS has used the 10% definition of fuel poverty in order to bring its assessment of fuel poverty on a comparable basis with the rest of the United Kingdom. Out of the approximate total of 701,000 households in Northern Ireland it is estimated that 42% (approximately 294,000) of all dwellings are in fuel poverty.

- **Tenure** – Close to half of all households in the privately rented sector are in fuel poverty (49%, 60,320).
- **Age of dwelling** – Pre-1919 households represent the highest proportion of fuel poor households with 69% of properties falling within this category.
- **Type of dwelling** – Single storey (bungalows) properties have the highest percentage of fuel poor households (51%) with an estimate of 46% of all terraced households expected to be fuel poor.
- **Main fuel source for heating** – 59% of households that use solid fuel for heating are fuel poor, compared to 46% for electric and 44% for oil. Gas heated properties are the least likely with 34% of households in fuel poverty.
- **Age of household reference person** – The likelihood of fuel poverty varies according to age, with 44% of 17-24 year olds being fuel poor. A higher percentage of households aged between 60-74 (54%) are in fuel poverty, and over 75 it increases to 66%.
- **Working status** – Fuel poverty is high amongst the unemployed in Northern Ireland with 55% of households classified as fuel poor in 2011. For employed households this approximately halves with 27% in fuel poverty.

- **Household income** – Of households with an income of less than £10,000 per year, 79% are fuel poor compared to just 5.4% of those earning more than £30,000 annually.
- **Rural/Urban** – There is little distinction between fuel poor dwellings in rural and urban areas, with 44% of rural and 41% of urban properties being fuel poor.

Acknowledgements

The authors wish to thank the Joseph Rowntree Foundation for supporting the project. We thank Katie Schmuecker, Katharine Knox, Sanne Velthuis for their work with us. We also thank Mike Brewer for his review and comments and Donald Hirsch for his input and work on the project. Finally we would like to thank all experts who were consulted as part of the rapid evidence assessment phase in identifying key pieces of research for inclusion in the review.