



Fuel Poverty

The problem and its measurement

Interim Report of the Fuel Poverty Review

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Executive summary

Introduction

This report contains interim findings and issues for consultation from the review of fuel poverty and its measurement commissioned by the Secretary of State for Energy and Climate Change. The terms of reference for the review are presented in Annex A to the report. The remit of the review is for England, although its conclusions may also be of interest to the devolved administrations, and possibly more widely. The report draws on discussions with and evidence kindly submitted to the review by a wide range of individuals and organisations concerned with fuel poverty and with tackling it, and on detailed analysis by the review's secretariat.

This report examines issues around whether 'fuel poverty' constitutes a distinct problem, and the implications of the problems identified for its measurement. A final report to be submitted early in 2012 following responses to this report and further analysis will present final conclusions on these issues and on their implications for understanding the effectiveness of different policy approaches to the problem.

As discussed in more detail in Chapter 1, fuel poverty is an issue which has concerned campaigners since the 1970s or before and

which became the subject of legislation in the Warm Homes and Energy Conservation Act of 2000 (WHECA). This Act lays down that,

For the purposes of this Act, a person is to be regarded as living "in fuel poverty" if he is a member of a household living on a lower income in a home which cannot be kept warm at reasonable cost.

It also required the Government to publish within twelve months,

a strategy ... for ensuring, by means including the taking of measures to ensure the efficient use of energy, that as far as reasonably practicable persons do not live in fuel poverty.

The Act set a maximum target date for this of 15 years after publication of the strategy, so the *UK Fuel Poverty Strategy* published by the then government and devolved administrations in 2001 resulted in a date of 2016 for fuel poverty to be eliminated (in Wales the target date is 2018). The strategy set an intermediate target for 2010 for the elimination of fuel poverty within 'vulnerable groups'.

The Act itself did not, however, set out how fuel poverty and progress towards its elimination should be measured. The 2001 strategy document adopted a particular

definition of what constitutes fuel poverty, drawn from previous research on the issue, and governments have reported on progress against this indicator since then. The most recent analysis, published in July 2011, suggested that 4.0 million households in England were living in fuel poverty in 2009, with a projected rise to 4.1 million in 2011. This compares with 5.1 million households in 1996, but a low point of 1.2 million in 2003 and 2004.

In essence, the current approach defines a household as being in fuel poverty if it would need to spend more than 10 per cent of its income to achieve an 'adequate' level of warmth through the year and on other energy costs. The report examines in Chapters 1 and 5 the characteristics of the precise measure used in more detail, but its key features are that:

- It depends on a *modelled* assessment of what it would cost to heat a home to particular temperatures, based on data from yearly structural surveys of a sample of homes and interviews with the people living in them, plus an allowance for other energy costs, based mainly on the average energy use of households for the number of people in the household and their dwelling size. It does not use *actual* spending, as that might reflect very low costs for those who are living at low temperatures, or very high costs for those who are wasteful in their use of energy.
- In 2009 space heating accounted for 56 per cent of this assessment on average, and water heating for 10 per cent. The remaining third related to other uses (cooking, lights and appliances).
- It is based on the *ratio* between required spending and household income. The higher required spending and the

lower income, the greater this ratio (particularly if income reported in the survey is very low).

- It uses a particular *threshold*, 10 per cent, whose origins are that in 1988 this was twice median fuel spending as a share of income (that is, half of households then spent 5 per cent or less of their income on fuel, and half spent more).

While this definition has remained unchanged since it was officially adopted in 2001, it is notable that the 2010 Energy Act additionally refers to reducing fuel poverty as potentially involving reductions in its *depth* – the difference between required spending and the threshold for being counted as fuel poor – as well as its *extent* (the numbers affected).

Is fuel poverty a distinct problem?

The first question for the review was to assess whether there actually is a distinct problem of 'fuel' poverty, requiring particular strategies, or whether it is simply a manifestation of low incomes in general. There are many other items – some of them equally important – that people on low incomes find it hard to afford, but we do not have specific 'food poverty' or 'clothes poverty' indicators or targets. Some of those giving evidence to the review suggested that measuring fuel poverty was as important in illustrating the *impact* of poverty, as it was in constituting a separate problem.

However, the overwhelming argument of those submitting evidence was that it does constitute a distinct problem. We survey this evidence (summarised in Annex D) and other material we have collected in Chapters 2 and 3 of the report, looking in detail at both its causes and its effects. Reviewing this in Chapter 4 we agree that fuel poverty is a

distinct – and serious – problem. Fuel poverty is of major concern from three different but related perspectives: for those whose primary concern is poverty and its reduction; for those concerned with health and well-being; and for those concerned with climate change and reduction of carbon emissions.

The poverty perspective

The amount households have to spend is only ever an imperfect measure of the standard of living they can achieve, but for many things the same cash amount can translate into similar items in a shopping basket, meeting their needs in similar ways. The greatest exception to this is housing, because of the huge variations in rents and house prices across the country and the difficulty people would face in moving. Official measures of incomes and poverty rates take account of this by looking at them both before and after deducting housing costs. Equally, larger households need greater incomes to achieve the same standard of living, so conventional poverty measures adjust incomes to allow for household size.

As we discuss in Chapter 2, households also face widely varying costs to achieve the same level of warmth. These costs are often experienced in ways over which households have little immediate control. Further, bringing about change would need capital investment well beyond what they could afford. The primary reason for this is the poor level of insulation of much of the country's housing stock, and the high costs resulting from the heating systems of some households, for instance if they are in rural areas or high blocks of flats off the gas grid, or have inefficient heating systems. As an example of the scale of this problem, the most recent fuel poverty assessment was based around a calculation implying that in 2009 the median required fuel bill for couples without children was nearly £1,300 to achieve an adequate standard of

warmth. However, a sixth would have needed to spend more than £1,750, and 9 per cent more than £2,000. This degree of variation in the fuel bills faced by similar households across the country is not to be found in relation to other spending requirements. For instance, although certain differences in the price of food for similar households exist, perhaps reflecting regional price differences, the disparity is much less significant.

For those interested in establishing whether households have a lower standard of living because of their high heating costs, and so may be pushed into poverty, there is therefore a case for adjusting the way in which we measure incomes to allow for this. Some of the suggestions made to the review for measurement approaches that look at the 'residual income' people would be left with for their other needs after paying their fuel costs (see Section 6.4) follow from this kind of concern.

Beyond the physical reasons why some may need to spend more to achieve the same level of warmth, a recurrent concern has been that some of the 'poor pay more', as a result of payment methods or contracts that are considerably less good than those achieved by others. While the premium paid by those on pre-payment meters by comparison with those on standard tariffs has now largely disappeared, those on low incomes are least likely to be on the cheapest direct debit tariffs (see Chapter 2). It is often those with the greatest ability to make price comparisons – including through the internet – who end up with the best deals. The current market in energy contracts does not necessarily serve those on low incomes well. It is disturbing that Ofgem has found that almost as many of those on pre-payment meters who switched suppliers as a result of doorstep sales did so to a *more* expensive contract than the one they had before as switched to a cheaper one. The

current measurement of the extent of fuel poverty allows for variations in prices between regions and payment type, but does not allow for these sorts of differences. Evidence on the overall effect of these problems is scarce, but new analysis by the review team reported in Section 2.3 suggests that if the poorest 30 per cent of customers in 2009 were, in fact, on the highest tariffs within each category, fuel poverty would have been up to 7 per cent higher than reported.

As a corollary of these poverty-related concerns, in terms of practical policy, the problem of low thermal efficiency of the housing occupied by some households on low incomes means that there may be cost-effective and long-term ways of improving their standard of living through investment in energy efficiency, as well as through improvements in income. From some perspectives, giving such assistance 'in kind' is also politically more acceptable than simply increasing cash transfers through improving benefits or tax credits. The final report of the review will look at the evidence on the impacts of past interventions which have tried to achieve this. The implication of this kind of concern is that interventions should be targeted on households that both have low incomes *and* have energy inefficient homes.

Health and social effects of living at low temperatures

Much of the original concern about fuel poverty stemmed from concerns about the health of those living at low temperatures. In Chapter 3 we review some of the most persuasive evidence on this. In interpreting this evidence, it is important to note that the ill-effects of cold come both from internal temperatures when people are indoors and from external temperatures when they are outdoors. In addition, and in contrast to evidence on many other adverse features of

people's lives, there is much less of a socio-economic gradient for some of these outcomes than might be expected: they do not only result from low incomes.

Key elements in the evidence include:

- There are specific health consequences of exposure to low temperatures and the drivers of fuel poverty are significant factors in determining the temperatures at which individuals live (Sections 2.5 and 3.2). Health impacts caused by exposure to cold tend to relate to cardiovascular and respiratory problems at temperatures below 12°C and 16°C respectively. Low temperatures are also associated with diminished resistance to infections and the incidence of damp and mould in the home (which are also associated with lower standards of energy efficiency). These effects are most important for the youngest children and increase for the most elderly.
- Most dramatically, the UK has a higher rate of 'excess winter deaths' than other countries with colder climates (Section 3.3). While the number in England and Wales has fallen from around 40,000 per year in the 1970s to around 27,000 per year in the last decade, this is comparable to more than ten times the number of transport-related deaths in 2009.
- There is clear evidence of an increased risk of cardiovascular-related death following days when the maximum outdoor temperature falls below 20°C. Low indoor temperatures appear only to be part of the explanation, however. Expert opinion suggests that around half of excess winter deaths may be attributable to indoor temperatures.

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- This problem is significantly greater for those living in the coldest quarter of homes than those in the warmest quarter of homes. Using this difference, recent analysis attributes about a fifth of excess winter deaths to living in cold homes. Even if only half of this is due to fuel poverty, that would still mean 2,700 deaths – more than the number who die on the roads – every year.
- Beyond each premature death, there will be many more health-related incidents and associated costs to the NHS.

Precisely what temperature is needed to avoid these ill effects is, however, unclear (see Section 3.6). The UK Fuel Poverty Strategy set minimum temperature thresholds at 21°C in the main living room and 18°C in all other rooms, and this is embodied in the heating regime for measuring fuel poverty under the current definition. It is often said that these are the minimum temperatures to which houses should be heated to avoid negative health impacts, and that they are laid down by the World Health Organisation (WHO). In fact both the health evidence and WHO's recommendations are less clear-cut. The origin of most of the references appears to be a 1987 WHO review which found "no demonstrable risk" within a temperature range of between 18°C and 24°C. We note that 21°C is simply the midpoint of this range. Given also that those with average and higher incomes do not appear to heat their homes to the official thresholds (see Section 2.5), we discuss below the extent to which the current fuel poverty measure is sensitive to these assumptions. From this perspective, it is very unhelpful for policy-making that data on *actual* temperatures inside homes are now 15 years old.

Beyond physical health, the evidence we review suggests:

- There is a link between low temperatures and poor mental health, with those living at low temperatures more likely to be stressed and subject to common mental disorders (Section 3.4). The direction of causation is unclear, however.
- Social isolation amongst adults is associated with cold homes, while there appears to some association between cold homes, truancy, negative impacts on educational attainment and risk of anti-social behaviour amongst adolescents (Section 3.5).
- People with hard to heat properties may trade off other necessities to keep warm, at the most dramatic facing a choice of 'heat or eat' (with some evidence of reduced food spending at times of the very lowest temperatures by pensioners with the lowest incomes; see Sections 2.5 and 3.7).

All of these problems are very good reasons for trying to ensure that people can and do keep warm. Their implications for measurement of the problem suggest a focus on establishing who *is* living at a too low a temperature, on *actual* spending on energy being below the amount required to keep warm enough, and on outcomes such as excess winter deaths or cold-related health problems. The overlap between low incomes and high heating costs which lies at the core of fuel poverty is *one* of the drivers of this, but there are other drivers as well, and they do not only affect people on low incomes.

Carbon reduction and energy saving

The third perspective increasing concern about fuel poverty is its relationship with the national priority of reducing carbon emissions and energy consumption in general. Greenhouse gas emissions from domestic fuel consumption of UK households are currently 26 per cent of the national total (on an end-user basis). Improving domestic energy efficiency is one of the most promising contributors towards the 34 per cent carbon emission reductions by 2020 established by the 2008 Climate Change Act and for the targets beyond to which the current government (like its predecessor) is committed.

In this context, current policy developments have some immediate implications. We show how government policies both increase and decrease potential energy bills (Section 2.4). For example, 'products policies', which enforce better energy efficiency standards on producers of appliances, should reduce energy costs for all households. Here there should be a positive distributional impact, with the greatest proportionate benefit arising for low income households.

By contrast, those energy and climate policies that lead to higher prices will largely have a regressive impact. The net effect of these policies will depend on how their benefits are distributed (that is, who will receive the energy efficiency improvements they finance). DECC analysis in 2010 on one set of assumptions for this suggest a net cost by 2020 equivalent to 0.8 per cent of income for the poorest fifth of households, but break-even for the richest fifth (Figure 2.14). Whether this regressive outcome – which would tend to increase fuel poverty – occurs depends on both more recent developments (such as the Warm Home Discount) and decisions yet to be taken.

One of these decisions relates to a significant part of the current strategy to reduce carbon emissions – the forthcoming Green Deal and the Energy Company Obligation (ECO). Under this framework, people will be able to carry out energy efficiency improvements whose capital costs are met through a combination of up-front ECO funding (paid for by energy suppliers and recovered from energy bills in general) and a Green Deal finance charge (added to the particular property's energy bills). Eventually, once the capital costs have been repaid, people will benefit from lower bills. However, almost by definition, this approach can only help people affected by fuel poverty to a limited extent in the short run: if they cannot easily afford their existing bills, substituting part of a bill with a repayment charge that offsets this saving would not solve their problem, even if it had national benefits. Lower income households will therefore need higher levels of up-front subsidy or even full subsidy in order to allow them to improve the energy efficiency of their dwelling. The way ECO resources are split between measures directly benefiting the potentially fuel poor and measures aimed more generally at carbon reduction will therefore be crucial for the net effect of the policy package on distribution and on fuel poverty.

This discussion illustrates three general issues for those whose concern is with carbon reduction:

- It is important to understand the distributional consequences of carbon mitigation policies. Exacerbating fuel poverty could be one of those, unless this is offset in other ways.
- If this is not done, the adverse effects on those with low incomes could be a barrier to implementation of policies which have overall benefits.

- Improving domestic energy efficiency will be an important part of overall carbon reduction, but those on low incomes are unlikely to be able to afford or achieve this without assistance.

All of this suggests that a corollary of climate change mitigation policies must be a focus on those with low incomes with high fuel spending, and on those living in energy inefficient homes in particular.

Synthesis

This discussion, and the evidence reviewed in more detail in the report, explains why fuel poverty is – and should be – a concern within different policy debates. Its causes, impacts and solutions make fuel poverty a distinct problem. It comes at the overlap of different concerns, some with poverty in general, others with health, and others with domestic energy inefficiency. Tackling it therefore offers a potential ‘win-win-win’ for different agendas.

A corollary of this is that the distinct problem that needs to be measured from all these perspectives is in some form the *overlap* between low incomes and high required fuel spending. In this light, the wording of the Warm Home and Energy Conservation Act is entirely appropriate: we are concerned with individuals in households “living on a lower income in a home which cannot be kept warm at reasonable cost.” The implications of this for assessing the current definition and modifications or alternatives to it are discussed below.

How measurement can help (or hinder)

For any social problem of this kind there are several ways in which measurement – appropriate indicators – can help (see Section 4.2):

- It can monitor *trends*, reflecting changes in the underlying factors driving it.
- More precisely, it can indicate what is happening to its *extent* and its *depth* (and possibly its *persistence*).
- It can help *identify* the kinds of people affected, so they can be targeted by interventions and/or offered appropriate assistance and support, both for overall policy design, and for finding them on the ground.
- By judging the effectiveness of alternative interventions, both at the design stage and after implementation, it can support policy *design and assessment* to choose the most effective policy mix for people in different circumstances.

It is immediately apparent that one single indicator may struggle to do all of this at once.

As far as trends are concerned, one would expect changes in an indicator to reflect the scale of changes in the underlying drivers of the core problem. So in this case, one would expect a fuel poverty measure to improve if: there were fewer people in poverty; if the energy efficiency of the homes of those on low incomes improved; and if the cost of fuel to those at risk of fuel poverty fell. However, a single measure may not by itself give an adequate description of what is going on. In particular, we may well want, as suggested by the 2010 Energy Act, to distinguish between *extent* – how many people are affected – and *depth* – how badly those people are affected. When measuring poverty in general, we distinguish between ‘headcount’ measures of the numbers of people below a poverty line, and ‘poverty gap’ measures indicating how far below that line people fall. It would, for instance, be judged by most people to be an

improvement if those who were poor moved much closer to the poverty line, even if only some of them crossed it. We may also be interested in how long people are affected – is the problem persistent, or are many people affected over time, but only intermittently?

The current fuel poverty indicator

Chapter 5 of the report looks at the way in which fuel poverty has been measured and at how what it shows relates to these kinds of criteria. Before summarising some of the problems with the indicator as it stands, it is important to note its two key advantages. First, it is based on a combination of people's incomes, energy requirements and energy costs, and so is sensitive to some degree to all three, as required. Second, it is based on a detailed assessment of a household's *need* to spend, given their characteristics and those of where they live, and so avoids some of the problems that might be faced by a simple focus on actual spending. These are important advantages that should be preserved if the indicator is modified or supplemented.

However, the current definition is also open to a number of criticisms. Some of these relate to the precise way it is calculated, and some to its fundamental form, being based on the *ratio* between required spending and income.

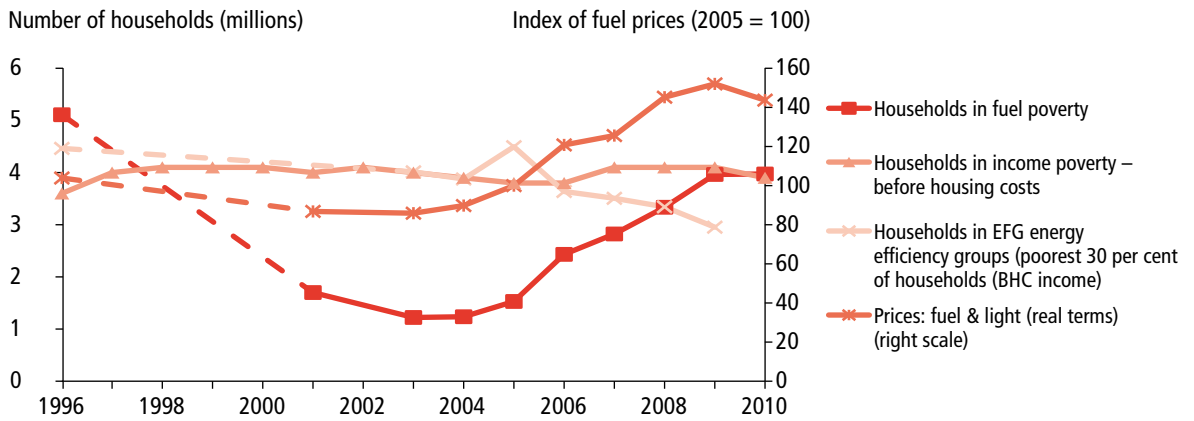
In terms of its calculation, a key feature is the fixed threshold of 10 per cent for the share of income taken by required fuel costs. This is derived from an original calculation that in 1988 the median household spent 5 per cent of its net income on fuel, and that twice this ratio might be taken as being 'unreasonable'. This threshold is therefore fixed, and does not move as the spending and behaviour of households in general changes. The factor of *twice* the median level is also essentially

arbitrary, although it is always hard to establish such criteria precisely, and the important issue is whether findings are unduly sensitive to such choices. In this case they are, as what the indicator shows is essentially the 'tail' of the distribution of costs in relation to incomes (see Figure 1.1 in Chapter 1). The number counted as 'fuel poor' is therefore very sensitive to the precise level of the threshold.

Further, as fuel prices change, the distribution of spending moves in relation to this fixed threshold, and the numbers counted as fuel poor can change very rapidly. This can be seen in Figure ES.1. This shows the number of English households counted as fuel poor, characterised by the rapid decline between the start of the series in 1996 and 2003, followed by an almost equally rapid increase since 2004. For an indicator being used to assess the *trend* in the problem as described above and in the evidence submitted to us, this gives immediate pause for thought. Did the underlying problem of fuel poverty *really* improve by nearly four-fifths in just seven years – suggesting that it was well on the way to being solved with little further action needed? Equally, have things deteriorated quite so fast in the last six years to suggest that the problem has more than trebled?

The chart also shows the three key drivers of fuel poverty. First, it shows the number of English households in poverty, as conventionally presented by the Department for Work and Pensions (DWP). This number was relatively constant over the period (although the percentage of individuals in poverty in the UK fell somewhat, see Figure 2.1). Second, it shows how many of the homes of the 30 per cent of households with the lowest incomes had the lowest energy efficiency ratings (E, F, and G energy efficiency groups). This fell from 4.5 million in 1996 to 3.0 million in 2009. If this was all that had happened, one might expect that fuel poverty

Figure ES.1: Fuel poverty, income poverty, energy efficiency and fuel prices, 1996 – 2010, England (except prices – UK data)



Source: Fuel Poverty Statistics (DECC), Fuel & light Index Statistics ONS (scaled to real terms) HBAI statistics (DWP)

would have fallen over the period, and to have done so fairly steadily. The explanation of the 'V' shape of the official fuel poverty measure lies in the third factor, real fuel prices, which fell until 2003, but have risen very sharply since. The particular way in which the current fuel poverty indicator is constructed means that it is the price index that dominates. But this means that over the period, the underlying changes in poverty and energy efficiency for low-income households have been masked.

One indicator of the sensitivity of the measure to price changes is the fact that, had the assumptions about fuel prices in the 2001 strategy been correct, fuel poverty would have been in the range 1.0 million-1.6 million in 2010, not the actual figure of 4.0 million.

The use of a ratio to determine the extent of fuel poverty leads to other potential limitations:

- In contrast to the focus of WHECA, some households with high (above average) incomes can be counted as 'fuel poor'.

- It is highly sensitive to low reported incomes. Even surveys focused on income recording suffer from some mis-reporting of very low incomes – for example some people record zero or negative incomes – but this is a more serious problem for those with wider scope such as the survey used.
- It is also sensitive to the temperature thresholds used. For instance, using a living room temperature of 18°C, not 21°C, would reduce the number of households by nearly 1 million in 2009. Conversely, using a higher temperature, as in Scotland for pensioners, would increase it.

One criterion for measurement is whether it can show the *depth* of the problem for those affected by it. In this case, although it is not usually the main focus of analysis, one indicator is the extent to which people's required spending on fuel exceeds the 10 per cent threshold. DECC publishes some figures that present this. As discussed in Section 6.3,

however, these numbers are affected by the presence of some households with very low reported incomes, which imply very high ‘fuel poverty ratios’, almost regardless of the level of their required fuel spending. Such low incomes can either reflect misreporting, or are genuine, but show that there are households whose current income falls so far short of the poverty line that they have severe problems affording *all* necessities, rather than necessarily having a particular problem relating to exceptional heating costs.

An indicator might help with the *identification* of those affected in a way that would help those implementing programmes on the ground to find people who might benefit from programmes designed to counter fuel poverty. Many of the submissions to the review were clear that the current indicator is not helpful for this purpose, and indeed would be very hard to calculate on the doorstep. Instead, local authorities and others delivering programmes use proxy indicators, generally reflecting a combination of low income and poor energy efficiency.

Finally, an indicator can help the *design and assessment* of effective policies. One feature of the current measure is that it is a ratio – required fuel spending divided by income. A consequence of this is that it is far more sensitive to changes in spending than it is to changes in income. Near the 10 per cent threshold, for instance, a cut of £10 in required fuel spending will have as great an effect in moving someone out of fuel poverty as a £100 rise in income. Policy-makers may see the former as more effective, although the household would probably have preferred the increase in income. From the outside, the design of the new Warm Home Discount seems to reflect this concern, directly reducing the fuel bills of qualifying households by £120-£140 per year, and so having more effect on measured fuel poverty than would

an equivalent increase in state benefits, for example.

Alternative indicators of fuel poverty

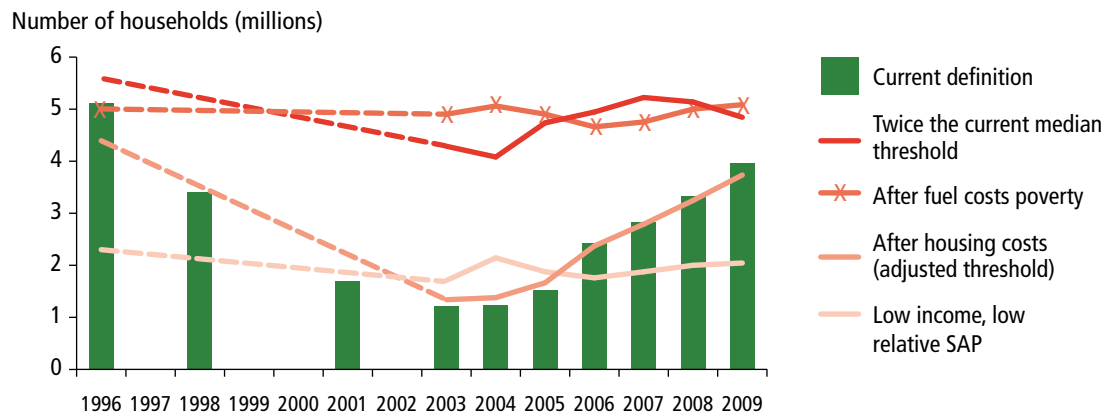
There are therefore issues about whether the fuel poverty indicator, as it is currently designed, adequately fills the roles it might serve. There are, however, problems with *any* indicator of problems of this kind, and alternatives may perform worse. Chapter 6 of this report therefore looks at a range of six other potential ways of measuring fuel poverty. The first three look at modifications to the current approach:

- A variant of the current indicator based on ‘after housing costs’ incomes, rather than on the ‘full income’ on which the main official series currently depends.
- An indicator based on the spending ratio *relative* to median spending in that year (rather than to fuel spending as it was 23 years ago).
- A supplementary ‘fuel poverty gap’ indicator, as is, for instance, used in the USA (although based on spending need, rather than actual spending, as there).

Three more variants are considered, reflecting more fundamental changes:

- A residual income indicator – examining which households would be below a poverty line ‘after fuel costs’, if the line were adjusted in line with their required fuel spending.
- A direct measure of the number of households that simultaneously have low incomes (i.e. are in poverty according to the official indicator, after allowing for housing costs) and live in

Figure ES.2: Number of households in fuel poverty under all indicators compared, selected years 1996 – 2009, England



Source: Fuel poverty dataset, 1996 – 2009, (DECC), English Housing Survey, 1996 – 2009, (DCLG)

Note: there have been some changes in the methodology used to calculate fuel poverty statistics from year to year, which affect all the time series presented here. See Annex B for details of these changes.

energy inefficient homes, based on the 'SAP' rating.

- Subjective indicators of whether households have difficulty in affording adequate heating or with paying their bills.

Aggregate trends in the numbers in fuel poverty under the main variants examined are shown in Figure ES.2.

Each of the six approaches has advantages, but also some shortcomings, which are discussed in more detail in the report. In particular:

- Measuring income after housing costs arguably gives a better picture of the true affordability of fuel bills (Section 6.1). However, logically, the threshold used should also be adjusted to be based on after housing costs income. This means that aggregate trends are little changed, but there is a good case that the composition would be more

appropriate, especially the regional distribution of fuel poverty.

- Using a spending threshold within the current ratio indicator that changes over time with median spending patterns would remove the extreme sensitivity of the current definition to fuel prices (Section 6.2). However, it could be argued that it would be inappropriate to remove *all* sensitivity to them. In total it would identify more households as fuel poor at the start and end of the period, and show a low-point in 2004.

- Using a 'fuel poverty gap' can give a very helpful sense of the depth of fuel poverty, measured both in pounds per household and in aggregate (Section 6.3). It could supplement an indicator showing the extent of fuel poverty. Fuel poverty gap data at a household or population group level could also help policy-making and delivery. However, basing a fuel poverty gap on the current

fuel poverty ratio indicator could put additional emphasis on observations that may not be accurate, and if used to generate an aggregate fuel poverty gap its extreme sensitivity to price changes is compounded.

- In essence, residual income indicators looking at who is poor 'after fuel costs', in the same way as we do 'after housing costs', are a more sophisticated measure of the extent of *poverty*, not a specific measure of *fuel poverty* (Section 6.4). They identify nearly *all* households that are low income, regardless of their energy requirements relative to others. The numbers identified as poor 'after fuel costs' therefore follow those in poverty overall (as measured after housing costs), remaining around five million across the period. This kind of approach does have an advantage in terms of identifying the impact of high fuel costs for those on the margins of poverty, by identifying those who are pushed into poverty by higher than average required fuel costs.
- In many ways, looking at which households are affected by a *combination* of energy inefficiency (relatively low SAP) *and* low incomes better reflects the spirit of WHECA, and what many regard as the core issue underlying fuel poverty than the other approaches examined (Section 6.5). The series shows a small improvement over the period. However, the SAP rating of a dwelling is only an imperfect indicator of what constitutes reasonable costs, and does not reflect changes in one of the drivers of fuel poverty – energy prices – at all.
- Using households' subjective description of the position they are in is a markedly

different approach from the current one and others we examine (Section 6.6).

One advantage of subjective indicators is to cross-check the trends shown by other approaches (and it is striking that there has been a wide discrepancy from trends in the current indicator). However, individual perceptions may be very different from those of society as a whole, and many (particularly elderly) people may be reluctant to say that they face particular problems – 'mustn't grumble'. Responses also vary depending on precisely what question is asked. Such questions are probably most useful as a way of complementing other more objective indicators, and it would be helpful to incorporate relevant questions into the survey used to derive them.

Each of these suggestions therefore brings important insights into the issue addressed by the review, but still has shortcomings. We therefore examine in Chapter 7 whether it is possible to construct an indicator that builds on the advantages of both the current definition and of some of the alternatives described above.

One attraction of looking directly at the number of people who *both* have low incomes *and* live in energy inefficient homes is that it reflects the intention of WHECA, that is, focusing on the overlap between the two. This captures what makes the problem of fuel poverty distinct from several perspectives. However, just looking at energy inefficiency (as in Section 6.5) fails to allow for other factors that affect households' need to spend. The approach we examine therefore is to look at households who have both *low incomes* (as conventionally measured by the Department for Work and Pensions) and *high costs* (as measured in the current fuel poverty definition).

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The simplest way of thinking about this indicator is illustrated by Figure ES.3. Essentially WHECA implies that the households of concern are those that have *both* a 'lower income', that is have incomes below some threshold, *and* required costs above a 'reasonable' level. This is those households in the lower left quadrant of the diagram. All of those with incomes below the income threshold – the two left-hand quadrants – are of concern in terms of their risk of being in poverty. All of those with required energy costs above a reasonable level – the two lower quadrants – are of concern because of their potential contribution to overall energy consumption and carbon emissions. But it is those for whom these two problems overlap that are affected by the specific and additional problem of fuel poverty as people normally understand it. Our final report will look at how different policies might affect the households in different quadrants.

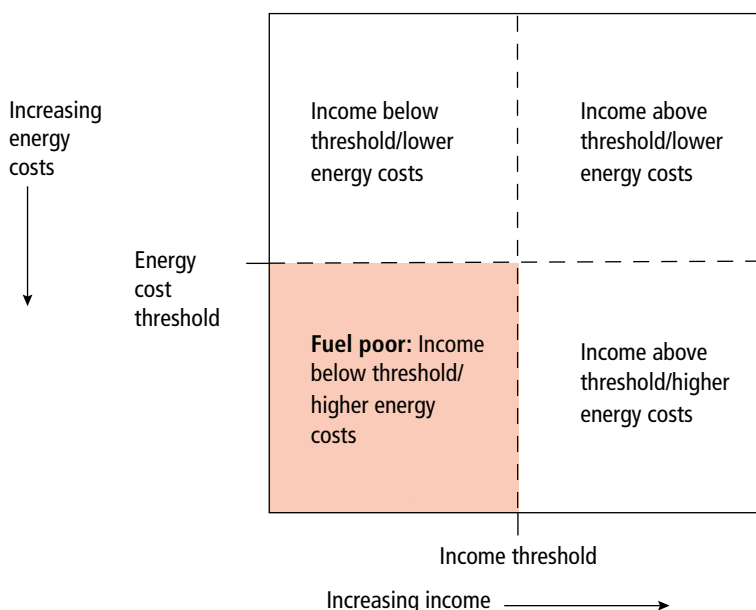
Furthermore, just as the extent to which people's incomes fall short of a poverty line gives a 'poverty gap' indicator of the depth of

poverty, so the extent to which their required costs exceed a reasonable level will give an indicator of the depth of fuel poverty, what one might call the 'fuel poverty gap'.

There are, of course, many different ways in which thresholds for 'lower income' and 'reasonable costs' could be set, but the example we explore has the following characteristics:

- The arguments in the evidence presented to the review for looking at incomes *after housing costs* are persuasive, so we use them.
- In line with current best practice, incomes are measured in the same way as DWP does for its Households Below Average Income (HBAI) analysis, in particular adjusted for household size and composition.
- Fuel costs are calculated as those required to achieve acceptable warmth, in the same way as they are for the

Figure ES.3: Fuel poverty defined as the overlap between low income and high energy costs



current fuel poverty indicator (focusing on need, not actual spending).

- It looks at household energy costs *relative* to a threshold based on the median spending needs of the population as a whole (see Box 7.2 in Chapter 7 for a discussion of the rationale for this).
- It takes account of the way in which those with high fuel costs can be pulled *into* poverty.
- It embodies a separate indicator of the *depth* of fuel poverty – a ‘fuel poverty gap’ – for fuel poor households on average and in aggregate, alongside the conventional indicator of its extent.

Although we have not been able to do this here, ideally the costs used should reflect the prices actually paid by people at risk of fuel poverty (that is, the actual tariffs they are charged). It would also be better to look at

the number of *people* affected by fuel poverty, than the number of *households*, removing the way in which the current indicator gives less weight to the problems of larger households, particularly those with children.

On this basis, a calculation of who would be counted as fuel poor would then be those who:

- **Had required fuel costs that were above the median level; and**
- **Were they to spend that amount, would be left with a residual income below the official poverty line.**

This gives the more detailed interpretation shown in Figure ES.4. This definition reflects how some people with slightly higher incomes are pushed into poverty by the high level of their required costs – (represented by the triangular area on the right of the shaded area). If energy prices are high, there will be more people in this position, and the income

Figure ES.4: Calculation of the ‘fuel poverty gap’

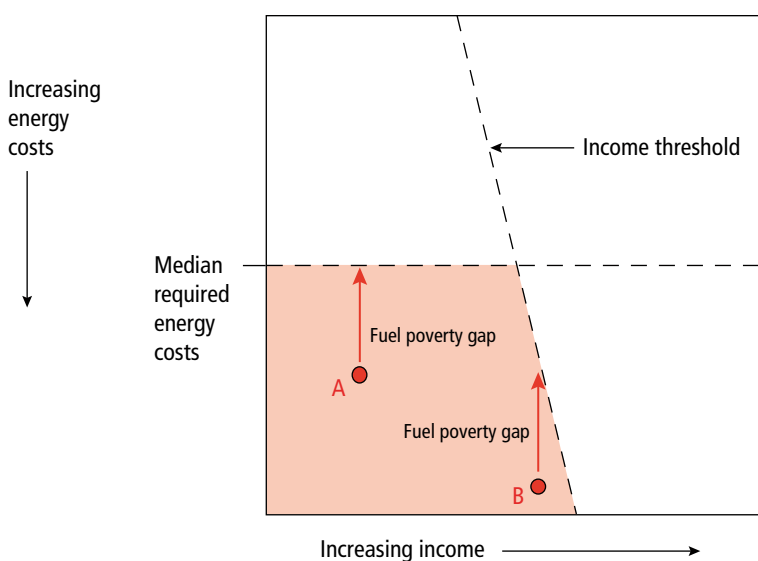
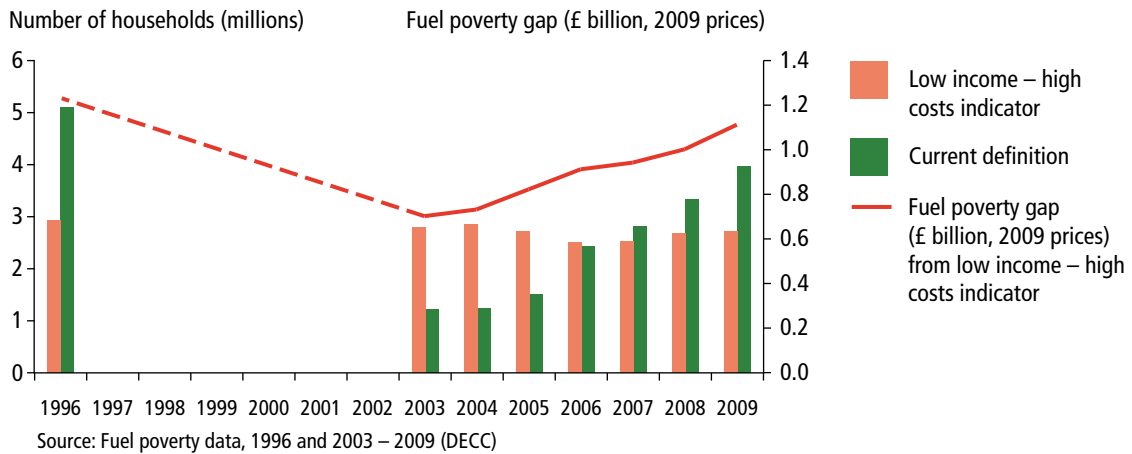


Figure ES.5: Number of households in fuel poverty under current indicator and low income high cost indicator, 1996 and 2003 – 2009, England



threshold itself will be higher, as median required spending would rise. These factors would mean more people would be counted by the indicator as ‘fuel poor’ if energy prices rose in relation to incomes, but the count of the number affected would be much less sensitive than under the current formula. The figure shows how the ‘fuel poverty gap’ – the difference between required costs and median required costs – could be calculated. This will also change as fuel prices change.

Note also that the choice of median required costs to define ‘reasonable costs’ means that the threshold moves in line with costs for the population as a whole (as suggested by those proposing a relative version of the current ratio indicator discussed in Section 6.2). Given that those on low incomes are counted as being in poverty if their total income is below 60 per cent of the national median, using median costs as the threshold is in fact quite a high threshold for those with such low incomes, who are likely to be living in smaller properties than the national average. They are getting by on incomes well below those of most others, but are counted here as having unreasonable costs only if their energy costs exceed the national average.

Figure ES.5 shows how the number of households and of individuals and the fuel poverty gap implied by this definition would have moved since 1996 by comparison with the numbers shown by the current definition. In 1996, 2.9 million households would have been classed as ‘fuel poor’, falling to 2.8 million in 2004 and 2.7 million in 2009. The average number of households classed as fuel poor over the period would be very similar to those counted by the current definition. However, the slow downward trend it shows may give a much better representation of the scale of the underlying problem than the ‘V’ shape from the current definition. It is the average fuel poverty gap that moves with energy prices – falling from £413 in 1996 (at 2009 prices) to £256 in 2004, but rising to £409 in 2009 (an aggregate amount of £1.1 billion).

Chapter 7 of the report discusses this indicator in more detail suggesting that it has a number of advantages by comparison with the current definition, while retaining its fundamental basis in an assessment of required energy spending:

- It allows separate calculation of the extent of fuel poverty (the number fuel poor) and the depth of the problem (the fuel poverty gap), rather than conflating them.
- Calculating the extent of fuel poverty in this way is more robust than the current definition, both to data problems (such as mis-reporting of low incomes) and to the assumptions used in calculating required spending (such as the precise temperatures used).
- Because the indicator is much more stable in who is identified as fuel poor, it is also much more stable in which people are identified as being at risk of fuel poverty than the current indicator. Under the current definition, many households with low incomes and relatively high energy requirements were counted as not being fuel poor in 2004 (Figure 7.5).
- Correspondingly, interventions that were targeted at households that might have been thought in common sense terms to be at risk were assessed as benefiting people outside the target group, potentially giving a misleadingly gloomy assessment of their effectiveness. An overlap indicator should avoid this problem.
- The use of a fuel poverty gap indicator also allows the impact of some interventions to be seen, even if they do not quite bring someone across the line that would bring them out of fuel poverty.
- However, the impact of interventions that only affect incomes without taking a household across the threshold would reduce the depth of poverty, as conventionally measured, not generally the depth of *fuel* poverty.
- There are some households with very low reported that are currently classed as fuel poor, even though they have very energy efficient homes. They are clearly a high priority for assistance to take them out of deep poverty, but it is not clear that it is helpful to class them as fuel poor. They would not be counted as such under this alternative.

Conclusions

The evidence we have examined and presented confirms that fuel poverty is a distinct and serious problem. It deserves and requires attention, as recognised by Parliament when it adopted the Warm Homes and Energy Conservation Act 2000.

The Act captures, in our view correctly, the core of the problem as being the overlap between low income and high costs. As it states, a household is affected by fuel poverty if it has a lower income and faces above reasonable costs – which will often be for reasons outside its control – to achieve adequate warmth. Fuel poverty is a priority for a range of coinciding concerns, including poverty alleviation, health and well-being, energy efficiency and carbon saving:

- Our calculation is that households in or on the margins of poverty faced extra costs to keep warm above those for typical households with much higher incomes adding up to £1.1 billion in 2009.
- Living in cold homes has a series of effects on illness and mental health. But at the top of the iceberg of these effects is the way in which Britain has unusually high rates of ‘excess winter deaths’. Even if only a tenth of them are due directly to fuel poverty, that means that 2,700 people in England and Wales are dying

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each year as a result – more than the number killed in traffic accidents.

- It is essential that we improve the energy efficiency of the whole housing stock. But those on low incomes in the worst housing can neither afford the immediate investment needed nor afford later repayments without additional help.

Doing something about these problems is obviously the priority. However to support action we need good measurement. Although the current definition has the key strength that it focuses on required, not actual, energy spend, its precise form – based on a ratio against a fixed threshold – gives it certain weaknesses. It generates, for instance, a pattern of trends over the last fifteen years – a rapid decline followed by an equally rapid rise – which does not reflect what happened in the underlying causes of the problem, and is not always helpful in designing or evaluating policy. It is also highly sensitive to the assumptions and data on which it is based.

After examining a series of possible modifications or alternatives to the current approach, we conclude that while they each bring insights into understanding the problem, they also have weaknesses. We have therefore put forward an alternative approach to measuring fuel poverty, drawing on these insights, which more directly measures what is described in the Act and in everyday discussion of what fuel poverty is and how to tackle it – looking at those who both have low incomes and high costs.

Looked at in this way, the underlying problem of fuel poverty did not almost disappear in the early 2000s, but nor has progress almost entirely been reversed. This is not necessarily a huge comfort: a reduction only from 2.9 million to 2.7 million households (and from 5.1

million to 4.8 million individuals) affected by such a serious problem over thirteen years is deeply disappointing, as is the major increase in the depth of the problem in the last six years, as measured by the fuel poverty gap. It is hardly on track for its elimination in five years' time.

As the report explains, there are different ways of looking at this problem, and different choices that could be made if the approach we propose was implemented. We would welcome views on the analysis and ideas presented in this report. We have included some specific questions for consultation in Chapter 8. In the final report we will discuss the responses to these and how they inform our final recommendations. We will also consider the implications of our approach for understanding the effectiveness of the range of policy interventions available to tackle fuel poverty.



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