

Definitions of fuel poverty: Implications for policy

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ABSTRACT

This paper outlines why the definition of fuel poverty is important in policy formulation and describes how the Government's current definitions evolved from the original concept. It discusses the determination of income and fuel costs and the possibilities for a relative and common European measure. It examines problems inherent in assessing fuel costs as a percentage of income and puts forward the arguments for a 'budget standard' approach. The paper illustrates how the size of the problem depends on the definition and chosen threshold and suggests advantages for a rating scale. It illustrates how the income composition and thresholds also govern the distribution of the target populations and the relative importance of the main causal factors, and examines the consequent policy implications. It explores the definition of vulnerable households and the importance of severity and questions whether the UK fuel poverty strategy is targeted at households least able to afford their fuel costs (as the name implies) or primarily those at risk from excess winter and summer mortality and morbidity. Finally, after examining the role of supplementary indicators, it looks at the opportunities for changing the definition and comments on the Government review of the definition and targets.

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1. Introduction

The definition of fuel poverty is important for policy formulation; for determining the scale and nature of the problem, targeting a strategy and monitoring progress. A distinction needs to be made, however, between the definition required for policies at a national or regional level and those required for identifying the fuel poor on the doorstep. This paper focuses on the former and analyses data from the 2008 English Housing Survey (EHS) data and previous annual English House Condition Surveys (EHCS) to explore the implications for policy. It concludes that the Government's current preferred definition is not directed at those most in need.

2. The government definitions and their evolution

While "fuel poverty" had been named and defined in broad terms by at least the early 1980s (Bradshaw and Hutton, 1983), it was defined specifically in Brenda Boardman's book of 1991 to cover households whose fuel expenditure on all energy services exceeded 10% of their income (Boardman, 1991). This was what the poorest 30% of households were then spending on fuel and, at twice the median expenditure, was a threshold above which spending was considered 'disproportionate'. To determine the

scale of the problem of 'affordable warmth', the 1991 EHCS Energy Report adopted the 10% of income threshold for fuel (DOE, 1996). However, rather than actual fuel expenditure, it used the fuel costs required to achieve either a minimum heating regime to safeguard health or a standard regime to provide thermal comfort, plus adequate lighting, cooking and typical appliance use.

The 1996 Energy Report further revised the definition by requiring 'satisfactory' heating (DETR, 2000). This comprised a full, standard or partial heating regime, depending on the household type and level of occupancy. As well as using basic income as in the 1991 EHCS, fuel poverty was now measured using full income, including Housing Benefit (HB) and Income Support for Mortgage Interest (ISMI). For trends between 1991 and 1996, the 1991 statistics were re-calculated using the 1996 definition, but only for basic income, as the 1991 survey had not collected or modelled HB and ISMI. The 1996 EHCS estimates of fuel poverty were used to underpin the UK Fuel Poverty Strategy of 2001, with the use of full income becoming the Government preferred 'target' definition (DTI, 2001).

Both the 1991 and 1996 EHCS definitions used the actual fuel prices of households to calculate fuel costs. However, the 2001 EHCS dropped the fuel consumption and tariff survey and since then the calculation of fuel poverty has been based on average regional fuel prices, broken down by payment type. In 2001, fuel costs were also based on modelled occupancy rates and by 2003, as well as HB and ISMI, mortgage payment protection insurance (MPPI) had been included in full income.

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Following a 2005 Government initiated peer review on the methodology for measuring fuel poverty, the computation of household incomes from any additional benefit units was improved and Council Tax (net of any CT benefit) omitted from all full incomes (Sefton and Cheshire, 2005). The fuel costs for hot water and lights and appliance use were also updated and re-based on actual occupancy. Subsequently, the EHCS based incomes were made more compatible with those from the Family Resources Survey and a fourth 'partial-standard' heating regime was added.

3. Incomes after housing costs

In poverty statistics, net (disposable) household income is measured either before housing costs are deducted (BHC) or after housing costs are deducted (AHC). Since the UK fuel Poverty Strategy, the Government has published annual statistics on fuel poverty using both the full and basic income definitions. Both definitions include housing costs, but because basic income omits HB, ISMI and MPPI, it nevertheless provides an after housing cost measure for those on full benefit. It is sometimes regarded as 'a half way house', but being an 'historical expedient' is unique to fuel poverty (Baker, unpublished). Both income measures also assume that households who own their home outright pay no housing costs.

The case for omitting net housing costs from income in the definition of fuel poverty appears self evident. Households cannot spend their housing costs on fuel, any more than they can so spend the national and local taxes which are specifically excluded from income. In theory, income poverty can be measured before housing costs are deducted, as it can be argued that households who own or rent properties that are above their incomes are taking the cost benefits in better accommodation. However, DWP's *Households Below Average Income* series (HBAI) recognises that this is not always the case in practice:-

Therefore, HBAI presents analyses of disposable income on two bases: Before Housing Costs (BHC) and After Housing Costs (AHC). This is principally to take into account variations in housing costs that themselves do not correspond to comparable variations in the quality of housing (DWP, 2010).

Unlike income poverty, however, fuel poverty is specific to the households existing home. Whatever their housing quality, the ability of the household to actually afford the fuel costs for their particular home will be dependent on their disposable income after housing costs, and not before. The housing benefit included in the full income definition may, in practice, be paid directly to the landlord and, without the omission of housing costs, households can be taken out of fuel poverty merely because of an increase in rent.

4. Equivalised incomes

Whether including or excluding housing costs, definitions of income poverty generally use equivalised household incomes. Equivalised incomes reflect the fact that larger households need a higher income than smaller households to achieve a comparable standard of living. Since 2005/2006, the HBAI series has used the OECD Modified and 'Companion' scales to, respectively, equivalise BHC and AHC incomes, in place of the previous, more complex McClements scales (DWP, 2005).

Whether equivalised incomes should be used in defining fuel poverty is controversial. Some argue that if you equivalise incomes, then fuel costs would also need to be equivalised, thus

Table 1
Income measures and an example of their affect on fuel poverty.
Source: EHS 2008 case data.

Income measures and income components	Couple with 2 children and fuel costs of £1,106 pa	
	Annual income, HB etc.	% fuel cost/ income
Basic income	£12,259	9.0%
+ Housing benefit (or ISMI and MPPI)	£4,784	
- Council tax less any CT benefit	£838	
= Full income, BHC	£16,205	6.8%
- Gross housing costs	£8,788	
= Residual income, AHC	£7,417	14.9%
/ Equivalence factors (OECD)	$0.58 + 0.42 + 0.2 + 0.2 = 1.4$	
= Equivalised income, AHC	£5,298	20.9%

negating the effect of equivalisation (DECC, 2009). Others suggest that 'partial equivalisation' of the fuel costs may be needed. However, as the space and water heating costs, cooking, lighting and appliance use costs in the existing definition are all calculated using the actual dwelling and household size, others argue that equivalising the fuel costs is not necessary. But, as fuel poverty is specific to the households existing housing, however costly and disproportionate to their income that is, it may be more appropriate to equivalise incomes after housing costs.

Table 1 shows how the different income measures are related and how, for example, these affect significantly the calculated severity of fuel poverty for a young, low income family renting in London, claiming Housing Benefit and with typical fuel costs.

5. Determining fuel costs

Despite early references to 'affordable warmth', fuel poverty in England has always been defined using total fuel costs. That households should be able to afford the fuel costs necessary for cooking, adequate lighting and essential appliances, as well as satisfactory heating, can be clearly justified on the grounds of health, safety and well being. To avoid excess seasonal mortality, homes need to be kept cool in summer as well as warm in winter and, in many dwellings, this may increasingly require some form of mechanical air-conditioning.

As with incomes, however, there are questions about the way total fuel costs are measured. Despite improvements, the 'algorithms' used for calculating the non-space heating costs are still too generalised. The Government's use of average fuel prices is also likely to significantly under-estimate fuel poverty as those at risk tend to be on higher than average tariffs for their region and payment type. However, the ongoing 2011 EHS Energy Follow-up Survey (EFUS) should enable any under-estimation to be assessed (CLG, 2010a).

There are also concerns regarding the partial 'half-house' heating regimes specified for households under-occupying their homes, particularly the additional fourth 'partial/standard' regime, as this may be insufficient to prevent condensation and mould growth in unheated rooms. Scotland uses just two heating regimes in calculating fuel poverty, full heating for elderly and infirm household, but with a higher living room temperature (23 °C rather than 21 °C), and the standard heating regime for everyone else (Pither and Moore, 2006). This and other methodological differences result in comparatively higher estimates of fuel poverty in Scotland, irrespective of any real differences.

The calculation of fuel poverty is currently based on annual fuel costs set against annual income. In practice, however, the ratio of fuel costs to income will normally be much greater during the winter than in the summer months. Meeting the additional winter fuel costs is likely to be genuinely more difficult, for the generally poorer households, who pay for their gas and electricity using pre-payment meters and quarterly standard credit than those paying a set monthly amount by direct debit. Thus, there could be a case for calculating fuel poverty on the basis of the monthly winter fuel costs against the monthly income.

6. A common European definition

Although there is no single, universally accepted definition of poverty, outside the third world, poverty is now generally considered to be relative. For example, the European Union's working definition of poverty is:-

'Persons, families and groups of persons whose resources (material, cultural and social) are so limited as to exclude them from the minimum acceptable way of life in the Member State to which they belong'(EC, 2007).

In line with this over-arching definition, the HBAI series uses relative incomes on both a BHC and AHC basis and adopts a 60% of median income as a proxy for the poverty line.

With increasing fuel prices, pressure to tackle fuel poverty has been growing across Europe and the amended European Commission's third electricity and gas directives of 2009 call upon all Member States to "develop national action plans or other appropriate frameworks to tackle energy poverty" (Directives 2009/72/EC, 2009). Earlier, an EPEE project paper had noted that, of the participating countries, only the United Kingdom had any official definition of fuel poverty (EPEE, 2006).

In the EC there is still no consensus on what actually constitutes energy poverty, although it is considered to only refer to the costs of electricity and gas and thus be somewhat narrower than fuel poverty, which covers all energy sources (EC, 2010). However, a recent EC Working Paper suggests that those in energy poverty could be defined as 'households that spend more than a pre-defined threshold share of their overall consumption expenditure on energy products', where the threshold equals 'double of the national average ratio number' (EC, 2010). While accommodating the differences between countries and compatible with the assessment of poverty generally, for the UK at least, this definition would present a number of problems.

Firstly, although relatively easy to determine, actual fuel spending is a poor indicator of fuel or energy poverty. Both the 1991 and 1996 EHCS showed that low income households often spent significantly less on fuel than required and suffered cold homes as a consequence. The 1996 EHCS Energy Report recorded that, for both full and basic incomes, the number of households actually spending more than 10% of income on fuel was under half of those with fuel costs of over 10% of income (DETR, 2000). With current income constraints and high fuel prices a large differential is still likely to be the case.

It is more meaningful, therefore, to measure fuel poverty with reference to the fuel costs required to maintain adequate thermal comfort, safeguard health and cover other normal fuel usage, irrespective of actual fuel spending. However, this requires a detailed knowledge of the energy efficiency of the housing stock. The UK is almost unique in having a series of large national house condition surveys that enable such fuel costs to be accurately determined and compared directly with corresponding household incomes.

Secondly, it is better to base the threshold on the 'mid-point' or median value rather than the average or mean value. The

median is generally considered to be the more 'typical' value where, as in this case, the distribution is asymmetrical and is also less affected than the mean by extreme values or 'outliers'.

7. Relative fuel poverty

Even if required fuel costs and median values are used, the question remains whether the definition of energy/fuel poverty should, like general poverty, be a relative rather than an absolute one. For example, should the threshold for fuel costs be determined relative to the median cost to income ratio for all households, with its value changing over time, or be a set, 'absolute' threshold, such as 10% of income? This question is additional to whether incomes are measured before or after housing costs and are equivalised or not.

While a relative definition seems right in principle, using the median % of income to determine fuel poverty appears problematic in practice. Fig. 1 compares recent trends in England in the number of households in fuel poverty, when using the relative thresholds of twice the median % of full income and of equivalised income AHC, with the trends for 10% of full income BHC and 10% of equivalised income, AHC. As shown, the trends are completely different. Under the latter, 'absolute' definitions, fuel poverty rose continuously in step with progressively higher fuel prices and the beginnings of a declining economy.

In marked contrast, there was little change in relative fuel poverty over this period. The rise in fuel prices was reflected in the increasing median % of income required for fuel by all households, but not by the number in relative fuel poverty. Thus, while such a relative measure may be better for determining the extent of exclusion caused by fuel poverty, it totally masks the fact that a great many more households will have had genuine difficulty in meeting their fuel costs in 2008 than in 2003.

A relative index appears appropriate for measuring income poverty as, in general, incomes tend to remain relatively static. For example, median full incomes as recorded by the EHCS/EHS increased by a total of only 2% in real terms (after inflation) between 2003 and 2008. However, over the same period, EHCS/EHS median fuel costs rose by a total of 55% in real terms, including a rise of 22% in one year alone. Such volatility appears to make a similar relative measure for fuel poverty much more questionable.

8. Percentage of income

While reflecting changes in fuel prices, expressing fuel costs as a percentage of income provides a poor indicator of the actual affordability of fuel. For example, 31% of single person households

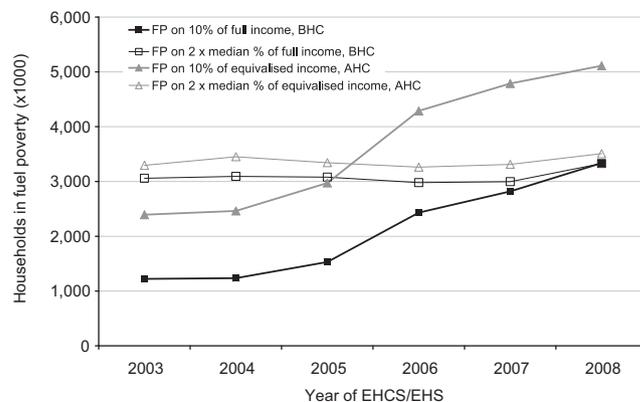


Fig. 1. Trends in absolute and relative fuel poverty, England, 2003 to 2008. Source: EHCS 2003 to 2007 and EHS 2008 data.

who have fuel costs of between 13% and 14% of residual income AHC are in the lowest income decile, having an average income of £5276 and average fuel costs of some £709. However, a further 23% of such households are in the third income decile or above with average incomes AHC of £11,154 and fuel costs of £1499. With well over twice the average residual income of the first group, this group is likely to have significantly less difficulty in meeting their fuel costs, despite being classed as equally 'fuel poor'. Such anomalies occur at all levels of severity, in all the definitions of fuel poverty that are based on fuel costs expressed as a percentage of income, regardless of how income is defined.

The current 10% of income definitions can also exaggerate the impact of fuel price rises. For example, a household with a full or basic income of £10,500 has total fuel costs of £1000. The following year, the household's fuel costs have risen by well over the cost of inflation to £1200 and despite a significant increase in income to £11,500, the household is therefore defined as newly fuel poor. However, in practice, the income rise of £1000 is more than sufficient to both cover the extra £200 in fuel costs and the more typical inflation of other commodities, making the household actually better off.

The approach also leads to potential anomalies with respect to the allocation of fuel related benefits. For example, in the calculation of fuel poverty, Winter Fuel Payments (WFPs) are currently added to incomes, as they are not necessarily spent on fuel. However, were they to be paid in the form of fuel tokens and taken off fuel costs, they would have reduced full income fuel poverty in 2008 from over 3.3 to under 2.6 million, despite no real difference in household circumstances.

9. MIS based fuel poverty

A more accurate and consistent measure of a household's ability to afford fuel costs can be provided by a 'budget standard' approach. Research funded by the Joseph Rowntree Foundation, and undertaken at Loughborough University and the University of York, has sought to establish the minimum incomes needed by different household types in different locations to participate in society (Bradshaw et al., 2008). These minimum income standards (MIS) can be used with data from the EHS to estimate the number of households in fuel poverty (Moore, 2009). In this context, households are deemed to be in fuel poverty if, after deducting their actual housing costs, they have insufficient residual net income to meet their total required fuel costs (as measured by the EHS) after all other minimum living costs (as defined by the MIS) have been met. Conversely, a household is in MIS based fuel poverty if:-

Fuel costs (EHS) > Net household income (EHS) – housing costs (EHS) – minimum living costs (MIS).

The minimum living costs cover all MIS items, other than those such as Council Tax, rent/mortgage payments and fuel, which are included in the EHS incomes, housing and fuel costs, plus childcare. Formal childcare is excluded, as research has shown that up to two-thirds of young families in the lowest income groups do not use it, but rely on friends and relatives (DCSF, 2008). However, it is recognised that this is likely to under-estimate fuel poverty in some groups. Household insurances are retained, as are other housing (maintenance) costs, thereby realistically providing out-right owners with some housing costs.

In general, the MIS budgets, for food, clothing, cultural participation etc, are only used where, above any absolute minimum necessary for survival, actual levels of household spending are discretionary. Wherever spending is fixed and known, for example, rents or mortgage payments and for required fuel costs, household specific data from the EHS are utilised in the definition.

Although there still has to be a detailed calculation of the fuel expenditure needed by each household to ensure it has adequate warmth and energy services in the home, the MIS based definition provides, in principle, a much more direct and relevant measure of need. The threshold for fuel poverty – the point at which total required fuel costs exceed the remaining household income available for fuel – appears clearly justifiable. As such it is inherently more rational than the current definitions and solves all of the problems discussed above. It takes account of housing costs and equivalises incomes in a far more transparent way than the OECD scales. It consistently and accurately measures the affordability of fuel, regardless of whether WFPs or other fuel related benefits are added to incomes or taken from fuel costs. It is a relative definition in that "‘minimum income standards’ relate to relative poverty rather than to absolute poverty" (Palmer) and, in principle, would be readily translatable to other countries with different incomes and minimum living costs, provided that required fuel costs rather than actual fuel expenditure can be determined.

10. Headline numbers

The numbers generated by the MIS-based definition does however suggest that the Government's definition of fuel poverty could be under-estimating the scale of the problem. The official headline figures for fuel poverty in England for 2008 are 3.3 million (15.6%) and 3.7 million (17.4%) for the full and basic income definitions, respectively.

Excluding housing costs from full income increases the number in fuel poverty by around 70%, if the same 10% threshold is maintained. However, in 2008, median fuel costs as a percentage of full and residual incomes (including equivalised incomes AHC) were 5% and 6.1%, respectively, so, using twice the median, 12.2% of residual income can be taken as a comparable threshold to 10% of full income. As shown in Fig. 2, this definition gives 4 million or 18.7% of households in fuel poverty, while equivalising these incomes reduces the number to around 3.6 million (16.8%). Both these AHC definitions show a significant increase in the proportion of all fuel poor in severe fuel poverty, that is with fuel costs of over twice the threshold percentage.

On the MIS-based definition of fuel poverty nearly 5.5 million or 25.5% of households could only afford their fuel costs by cutting back on their minimum living costs. Some 3.3 million (15.6%) of these – a figure equal to the Government's 2008 estimate of fuel poverty – would need to cut back on their other living costs by over 25%, while 1.5 million (7.0%) would need more than a 50% cut.

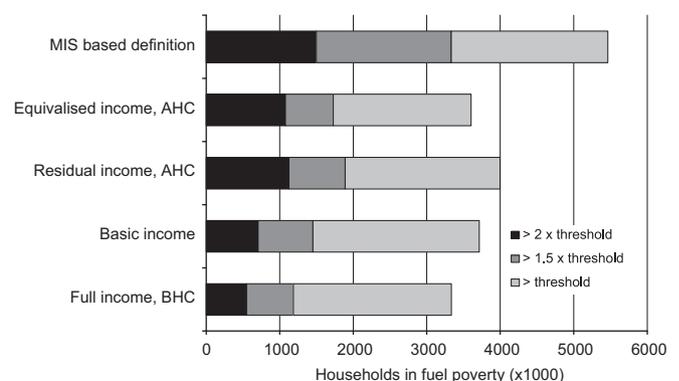


Fig. 2. Extent and severity of fuel poverty by different definitions, England, 2008. Source: EHS 2008 data.

Table 2

MIS based fuel poverty scale, England, 2008.
Source: EHS 2008 and MIS 2008 data.

	Reduction in MIS living costs	Households	
		Thousands	per cent
	Required to afford fuel costs		
A	No reduction required	15,943	74.5
B	up to 10%	874	4.1
C	10 to 20%	870	4.1
D	20 to 30%	719	3.4
E	30 to 40%	762	3.6
F	40 to 50%	741	3.5
G	Over 50%	1,498	7.0
Total requiring a reduction		5,464	25.5

While the MIS threshold seems justifiable, it may be unrealistic to have a rigid threshold, where a household is classed as 'fuel poor' if they have fuel costs of 10.1% of income, but 'not fuel poor' if they have fuel costs of just 10%. It might be less stigmatizing to measure fuel poverty on a scale, similar to those used to measure energy efficiency, with SAP and EPC ratings, and unhealthy housing using the Housing Health and Safety Rating System (HHSRS), the latter having replaced the Boolean values of 'unfit' or 'not unfit'.

For example, using the MIS-based definition, fuel poverty could be assessed on a scale showing the extent to which households would need to cut their MIS living costs to afford their fuel costs. Table 2 shows such a scale and the corresponding estimates for 2008. As with the general inefficiency of the housing stock, when numbers are large, such a scale can be politically more acceptable and manageable than simply quoting a headline figure for England of '5.5 million households in fuel poverty'. As the category increases, the severity of fuel poverty becomes more acute. With the MIS based definition, fuel poverty moves from being relative, with households in category B suffering some social deprivation, to becoming clearly absolute by category G, where households would need to more than halve the minimum living standard to fully afford fuel costs.

11. Distributional implications

As well as generating different numbers of fuel poor, the different definitions also produce fundamentally different distributions of fuel poverty, with major implications for the most appropriate policies, their targeting and allocation of resources.

On the Government's preferred full income definition, 63% of fuel poor households in England are owner occupiers, over 3 in 4 of these owning their homes outright. Despite being officially classed as fuel poor, the latter are a comparatively 'rich' group having an average equivalised annual income of £14,155 and less than 1 in 4 of households in income poverty. In addition, they have an average housing equity nationally of £207,373 and £392,708 in the London region, while some 46% also have savings of over £16,000.

The effect of excluding housing costs from income is to reduce this group from 48% to only 25% of the fuel poor, while conversely increasing the proportion who have no housing equity and rent their homes, from 37% to 52%. Equivalising incomes further reduces the proportion of outright owners to under 17% of the fuel poor, while further increasing both those with a mortgage and those renting from private landlords. Using the MIS based definition, the proportion of outright owners is reduced to under 13%, with the three rented sectors now accounting for 59% of all households in fuel poverty (Fig. 3).

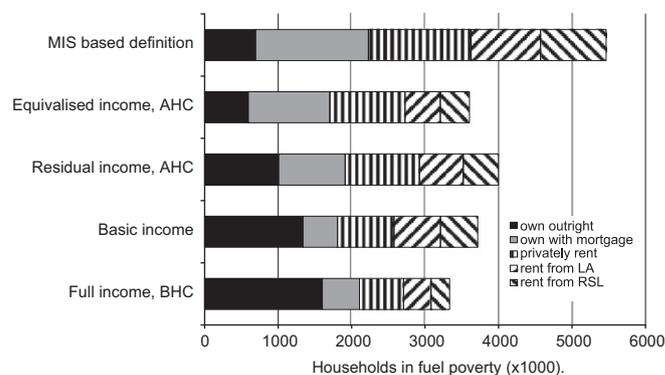


Fig. 3. Fuel poverty by household type, under different definitions, England, 2008.
Source: EHS 2008 data.

This move away from outright owners to those renting their homes from social and private landlords could potentially make fuel poverty easier to tackle. This is due not only to the increased intervention possible in rented housing, but because households in the former group are often difficult to identify, being pepper-potted in relatively good housing areas where the vast majority of households are not fuel poor.

The extent to which different household groups are fuel poor under different definitions also has major implications for the most appropriate policies. On the full income definition, nearly a half of fuel poor households in England are single elderly households or elderly couples, only 17% being households with children. Excluding housing costs from full income reduces the proportion of small elderly households to 35% and conversely increases family households to 25% of the fuel poor. However, as might be expected, the greatest change in the composition of household types is brought about by equivalising incomes. After equivalisation, the proportion of small elderly households falls to only 17%, while the share taken by lone parents and couples with children increases to 46%. Although with larger numbers, these overall proportions are similar under the MIS based definition, but the share taken by all single person households is partially restored.

The omission of housing costs and equivalisation of incomes also dramatically changes the regional distribution of fuel poverty. For example, using the MIS based definition, London moves from having the lowest proportion of households in fuel poverty after the South East, on the Government's definition, to having easily the highest proportion using the MIS based approach. This is largely due to the capital's higher gross housing costs – in 2008 an annual average of £7760 for households in income poverty compared to £5638 for England (CLG, 2010b).

Traditionally the extent of fuel poverty is measured in terms of households, but it could also be measured in terms of the numbers of people actually affected. With the increase in the proportion of larger families deemed fuel poor due to the omission of housing costs and equivalisation of incomes, this would further increase the differences in the extent and distribution of the problem under the various definitions.

12. Changes in causal factors

The relative extent to which fuel poverty is the product of low incomes, high fuel costs, poor energy efficiency or under-occupation also varies significantly with the definition used, with consequent implications for the relative mix of income, fuel, energy efficiency and housing management-related policies.

For different definitions of fuel poverty, Table 3 shows the average value and the percentage of the fuel poor in the worst

Table 3
Mean value and % in worst quintile for causal related factors by definition 2008.
Source: EHS 2008 data.

Causal related factors	In fuel poverty under the definition based on					Total Households
	Full income	Basic income	Residual income	Equivalised income AHC	MIS costs	
Equivalised income, AHC						
Mean £	10,782	10,155	10,039	9,006	8,340	22,283
% in Income poverty*	50.5	55.0	56.7	68.5	72.8	20.2
Unit fuel costs						
Mean £/m ²	17.3	17.2	16.7	16.8	16.0	14.5
% In highest quintile	37.7	37.1	33.8	34.7	28.3	20.0
SAP 2005 rating						
Mean rating	42.0	44.6	46.5	46.4	52.7	51.6
% in lowest quintile**	41.1	35.7	31.0	30.3	18.1	20.0
Floor area per adult						
Mean m ² /adult	69.9	67.1	63.7	56.2	52.5	55.1
% in highest quintile	35.6	32.4	29.1	20.8	16.9	20.0

* Households with incomes below 60% of the median and thus in income poverty approximate to the lowest quintile.

** The lowest quintile comprises all SAP ratings below 41 and thus includes EPC bands F & G and the bottom of band E.

quintile for a number of causal related factors. The average equivalised income, AHC, is highest for those households in fuel poverty under the Government's preferred definition and lowest (by nearly 23%) for the MIS based definition. Only a half of the fuel poor are in income poverty on the full income definition compared to nearly three quarters on the MIS based definition. However, for the remaining factors (unit fuel costs, SAP ratings and floor area per adult) the reverse is generally the case, those fuel poor on full incomes having the worst averages and highest proportion of households in the worst quintile. Although the prevalence of fuel poverty generally increases with the inefficiency of housing, under all the definitions, the majority of fuel poor are nevertheless located in housing of average or slightly above average energy efficiency.

13. Vulnerability and severity

If fuel poverty is only about the ability of households to afford required fuel costs then, arguably, the MIS based estimates provide the most meaningful assessment yet of the scale and distribution of the problem. However, the UK Fuel Poverty Strategy defined fuel poverty for all households and also set targets for first eradicating the problem 'as far as is reasonably practicable' in vulnerable households by 2010 and then in all households by 2016 (Defra, 2004) and 2018 in Wales. Using a much broader classification than used in other policies, vulnerable households are defined as those containing "older householders, families with children and householders who are disabled or suffering from a long term illness" (DTI, 2001). The raison d'être for giving vulnerable households priority was clearly due to the health risks associated with fuel poverty.

This raises the question of whether the policy focus of the UK fuel poverty strategy is:-

- households least able to afford their fuel costs (as the name fuel poverty implies); or
- primarily those at risk from excess winter and summer mortality and morbidity.

As well providing an interim target to deal with vulnerable households, the Government's target definition is, as already

shown, biased towards elderly households, particularly the single elderly, in two ways:-

- By including housing costs in income, it is biased towards households who own their homes outright, well over two thirds of whom are single or elderly couples.
- By making no attempt to equalise household incomes, it is also biased towards single person households, the majority of whom are aged 60 years or over.

Conversely, however, by not equalising incomes or excluding housing costs, the full income definition is biased against other vulnerable groups, particularly larger, low income families with small children, renting or purchasing their home with a mortgage. In defining vulnerability, the strategy also takes no account of the severity of the problem. In practice, non-vulnerable households in severe fuel poverty (e.g. with fuel costs greater than 20% of their full income) could well suffer a greater health risk than vulnerable households who are only slightly above the threshold of 10%.

14. Supplementary indicators

Unlike subsequent surveys in the series, both the 1991 and 1996 EHCS collected data on actual fuel consumption, expenditure and tariffs as well as on home temperatures. This enabled the extent to which each household was under-spending on fuel to be calculated. This under-spending on fuel, as well as the temperature measurements, provided powerful supplementary indicators of fuel poverty. However, until the 2008 EHS, the EHCS had continued to ask detailed attitudinal questions on heating, enabling 'self-reported' fuel poverty to be assessed (Defra and BERR, 2008).

Home temperatures, particularly, provide a direct and straightforward measure of cold homes, in contrast to the complex modelling in the current key indicator of fuel poverty. In both 1991 and 1996, the correlation between under-spending on fuel and unhealthily cold homes was, unsurprisingly, found to be far stronger than the correlation between a household's fuel poverty status (under the 10% of income definitions) and the temperatures recorded in the home.

The case for re-introducing the collection of actual fuel consumption and expenditure and room temperatures in the EHS or,

at least in a regular EHS follow-up survey, appears a strong one. It would provide much more accurate fuel costs for defining fuel poverty, other supplementary indicators of the problem and direct data for the HHSRS and Decent Homes Standard.

15. Changing the definition

The Government's definitions have long been questioned within regional and local government. With the region's higher housing costs, the 10% of residual income definition of fuel poverty was first used by the Greater London Authority in 2002 and was the preferred definition in the *Mayor's Energy Strategy* of February 2004 (GLA, 2004). Subsequently, the GLA have also published statistics on fuel poverty in London using the equivalised income, AHC, definition (ACE et al., 2008).

Despite the lead shown by the GLA and a number of Beacon local authorities and despite revising the definition significantly in other ways, the previous Government appeared unwilling to consider any change in the income definition for fuel poverty. Following discussions at the meetings of DECC's Fuel Poverty Methodology Group, a brief analysis of the effects of using incomes after housing costs in the definition of fuel poverty was included in the Annual Progress Report of 2008. However, this was based on the previous 2004 EHCS dataset and the Report stated that "There is no intention to change the fuel poverty definition to an After Housing Costs basis" (Defra and BERR, 2008). Similarly, the following year, the *Annual Report of fuel poverty statistics, 2009*, included a one-off analysis of the effect of equivalised incomes using the 2005 EHCS data, although it was again made clear that this was not a future option (DECC, 2009).

In the past, ministers have argued that changing the definition would be a distraction from the task of alleviating the problem. However, in practice, local strategies tend not to be concerned with the detailed definition, but with making housing generally 'fuel poverty proof'. The different number and distribution of fuel poverty would have major implications for resources, targeting and mix of policies, but the basic way the programme is implemented would not necessarily need to change as a result of adopting a different definition.

With the escalation of fuel poverty on the current definitions, a new Government and the commitment to cut Government spending, circumstances have now changed. The Spending Review statement for the Department of Energy and Climate Change of 20 October 2010 announced that:-

To ensure the available resources are focused most effectively in tackling the problems underlying fuel poverty, the Government intends to initiate an independent review of the fuel poverty target and definition before the end of the year (Treasury, 2010).

In the event, due to the difficulty of finding a politician willing to accept the brief, a further announcement was delayed until March 2011 (Webb, 2011). Led by Professor John Hills, Director of the Centre for Analysis of Social Exclusion at LSE, the terms of reference for the review are:-

(1) To consider fuel poverty from first principles: to determine the nature of the issues at its core, including the extent to which fuel poverty is distinct from poverty more generally, and the detriment it causes. (2) As appropriate and subject to the findings under (1), to develop possible formulations for a future definition and any associated form of target, which would best contribute to:

- addressing the underlying causes identified;
- helping Government focus its resources (which are set out in the Spending Review for the period to 2014–15) and policies on those who need most support;

- measuring the cost effectiveness of different interventions in contributing to progress towards any target; and
- developing practical solutions, particularly around identification and targeting of households and measuring progress resulting from Government action (DECC, 2011).

16. The proposed 'low income/high costs' definition

In an Interim Report published in October 2011 (Hills, 2011), the Hills Review proposes a 'low income/high costs' definition of fuel poverty, in which households would need to have both a low income and high energy costs to be classed as fuel poor. This is said to be consistent with the Warm Homes and Energy Conservation Act 2000, which lays down that "... a person is to be regarded as living in 'fuel poverty' if he is a member of a household living on a low income in a home which cannot be kept warm at reasonable cost". The low income threshold for each household is defined as 60% of the median equivalised income, after housing costs (the official poverty line) plus their particular fuel costs after equivalisation. The high energy cost threshold is set at the median equivalised fuel cost for all households.

Independent research (Moore, 2011) on the 'low income/high costs' definition has exposed many of the shortcomings of the proposal as it currently stands:-

- It is excessively complex and non-transparent, largely as a result of its equivalisation of fuel costs.
- Due to its use of total rather than unit (£/m²) fuel costs, it focuses on large, under-occupied properties and excludes many low income households living in smaller homes of poor energy efficiency.
- It sets a high fuel cost threshold at the median, despite the generally poor energy efficiency of the housing stock.
- The median threshold, with its need to always keep 50% of households below the threshold, makes it extremely difficult to eliminate fuel poverty by reducing fuel costs in low income/high energy cost homes.
- This is particularly the case where a fuel poverty strategy is in competition with a successful carbon reduction programme, aimed primarily at higher income/high energy cost homes.
- The definition largely obscures the impact of escalating fuel prices on the affordability of fuel, and
- Conversely, does not adequately reflect improvements in the energy efficiency and fuel costs of low income housing.

The Government may well prefer a definition that masks the impact of major fuel prices rises, but may be more reluctant to sign up to a definition that also fails to adequately reflect major achievements in improving the energy efficiency of the targeted homes.

While accepting the income threshold as satisfactory if not ideal, the research makes a number of recommendation for improving the 'low income/high cost definition', particularly with respect to the energy cost threshold. It proposes that:-

- The use of equivalised energy costs is avoided, by using unit fuel costs which generally vary far less by household size than total costs. This would not only considerably simplify the definition, but also help to avoid the exclusion of smaller dwellings of poor energy efficiency.
- The energy threshold is set significantly below the median, to generally enable dwellings with lower fuel costs, which are nevertheless of poor energy efficiency, to be included in the definition and improved.
- The threshold is set at the unit fuel costs for homes of a particular SAP rating (such as below Energy Performance

Certificate bands C), to avoid the problems with the median and to explicitly focus action on homes of poor energy efficiency. Such a threshold would also give a better reflection of the impact of real changes in fuel costs, but without exaggerating the effects as in the existing definition.

Given the economic climate, many suspect the motives behind the review and the fact that the Hills Review team have proposed a relative definition, which probably does not require new legislation and cuts 2009 levels of fuel poverty by nearly a third – down from 4.0 million to 2.7 million – seems to confirm these suspicions. Even under a relative definition, the estimated fall in fuel poverty since 2004 is questionable. For those on the lowest 30% of incomes, AHC, the average rise in unit fuel costs since 2004 (76.2%) has been slightly greater than that for the majority of households (75.6%), even calculated using average rather than actual fuel prices, while the increase in their equivalised incomes has been less (14.1% compared to 16.3%).

Although the definition as detailed in the Interim Report leaves a lot to be desired, in principle, a ‘low income/high cost’ definition of fuel poverty has many advantages over the existing definition, especially in its treatment of incomes. While not yet finalised, therefore, the Review still provides an opportunity – effectively the first opportunity there has been since the 2001 UK Fuel Poverty Strategy – for developing and implementing a far more meaningful and fairer official definition of fuel poverty.

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