

RESEARCH INSIGHT

WHAT COUNTS AS 'REQUIRED' ENERGY?

PRINCIPLES OF NEED IN MODELLING THE EXTENT OF FUEL POVERTY

Key points

- The modelling used to generate statistics on the extent of fuel poverty depends on calculating required energy expenditure.
- There are key differences in the principles of need adopted in relation to different categories of energy use.
- These differences need to be recognised, articulated and debated.

Introduction

Official definitions of fuel poverty refer to the 'required' level of energy consumption that households should be able to afford. The modelling that generates statistics on the number and distribution of fuel poor households depends on calculating expenditure on heating, lighting, appliances, cooking and water heating across the country's households. Our research examined the principles underlying these calculations, looking at how 'requirement' is specified and whether this is based on a fixed definition of need, or on norms that shift over time.

Questions

- What principles of need underpin calculations of 'required' energy consumption?
- How does the diversity of households figure in these calculations?
- What consequences follow from current approaches?



Findings

A recent review of fuel poverty policy argued that the key strength of the established method of defining fuel poverty was "that it focuses on required, not actual, energy spend".¹ Ignoring what households actually spend is justified on the grounds that many fuel poor households will be 'under-heating' their homes. For heat, the method of establishing need is to define a standard of energy service, based on expert judgements about what constitutes a safe and healthy room temperature. The energy consumption households need to achieve this is then modelled. Rather different approaches are used for the other categories of required energy use, which add up to an estimated 45% of average household required energy consumption (see Figure 1):

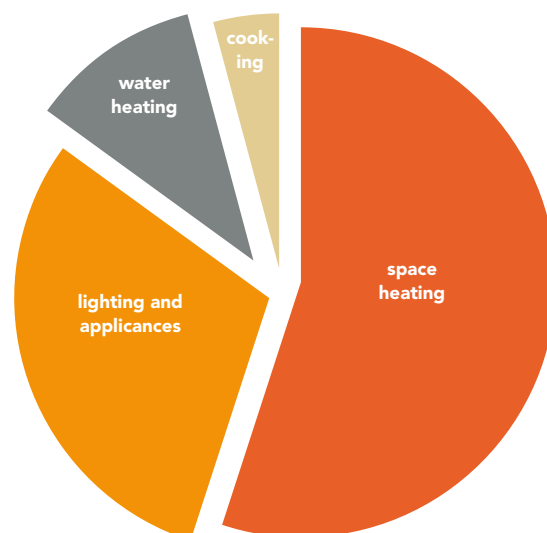


Figure 1
Mean Calculated Required Fuel Costs by Use DECC 2014.

¹ Hills, J. (2011) *Fuel Poverty: The Problem and its Measurement. Interim Report of the Fuel Poverty Review*. CASE, London School of Economics.

- For hot water a standard is specified but this is based on an average of current patterns of water usage, not on expert judgement of how much washing, showering or bathing a household needs. The energy required to heat these amounts of hot water is then calculated.
- For lighting, cooking and 'appliances' there is no standard of energy service specified. Instead, current levels of energy consumption are assumed to be what is required. Data on average household energy use is taken from various sources, and changes are tracked over time.
- In modelling the required energy across the country's housing stock, certain household characteristics are taken into account for some categories of energy use, but not for others (see Table 1). For example, differences in household size and floor area are part of all calculations. But for lighting, cooking and appliances variations in the efficiency with which energy is converted into energy services is not systematically taken into account.

Variation allowed for across households	HEATING	LIGHTING	APPLIANCES	COOKING	HOT WATER
Household size and/or floor area	✓	✓	✓	✓	✓
Amount of time home occupied	✓	✗	✗	✗	✗
Efficiency of technologies and/or building	✓	Partly	✗	✗	✓
Geographical location	✓	✓	✗	✗	✓

Table 1
How calculations of required energy incorporate variation across households.

✓ Taken into account
✗ Not taken into account

Significance

There are key differences in how the notion of required energy is translated in modelling fuel poverty. For heating, a standard is set that is essentially static over time (unless expert judgements shift). Definitions of fuel poverty reflect a household's ability to achieve this standard. For other energy uses there is no agreed benchmark, and no method of evaluating whether individual households can meet a specified standard. This has a number of implications:

- Calculations of required energy for uses other than heating reflect what is 'typical'. Recent trends like those of showering for longer and more frequently, or of owning more and larger electrical appliances, are incorporated when the model is updated. Such trends are included in a changing specification of basic energy needs.
- Since many different uses of energy are amalgamated within the category of 'appliances', the energy consumption of devices some people might consider to be 'desirable' rather than 'essential', such as tumble dryers, will be included in estimates of required energy.
- Overall energy efficiency improvements in light bulbs, TVs, dishwashers and so on will be picked up in calculations of required energy that are based on average consumption. However, poor households may own older and less efficient technologies and therefore spend more on energy than the calculation method would suggest.

Implications

There has been little recent scrutiny of the principles underpinning the modelling of required energy. There is a need for careful consideration of whether the differences we have highlighted are important, and whether they indicate the need for reform. For example, greater consistency could be achieved by adopting a standard-of-service approach across the board. By equating what is required with what is normal, some methods support escalating expectations of need and run counter to other policy objectives like those of reducing energy demand. Although the present focus is on meeting need, and on households that are consuming too little, policy should also be concerned with households that are consuming more energy than is 'required'.

DEMAND research insight #5 REQUIRED ENERGY

Further reading: Simcock, N. and Walker, G. (2015) Fuel Poverty Policy and Non-Heating Energy Uses. Working Paper 16. Lancaster: DEMAND CENTRE. Available at: www.demand.ac.uk/research-themes/theme-4-normality-need-and-entitlement/4-1-energy-and-justice

Contact the researchers: Gordon Walker (g.p.walker@lancaster.ac.uk), Rosie Day (r.j.day@bham.ac.uk), Neil Simcock (n.simcock@outlook.com)



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