The EU Fuel Poverty Toolkit: an introductory guide to identifying and measuring fuel poverty

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1. Introduction

Fuel poverty is a term used to describe when a household is unable to afford the most basic levels of energy for adequate heating, cooking, lighting and use of appliances in the home.

The consequences of fuel poverty include a restricted use of heating, cold and damp homes, debts on utility bills and a reduction of household expenditure on other essential items. In addition, fuel poverty is associated with a wide range of physical and mental health illnesses, such as depression, asthma and heart disease.

This introductory guide is designed to help advice workers, practitioners, researchers and other interested parties new to the topic of fuel poverty to understand what the phenomenon is and how it can be identified and measured.

In the following sections (2 and 3), the guide will discuss what causes fuel poverty and provide an overview of the symptoms, whilst sections 4 and 5 will discuss the prevalence of fuel poverty across Europe and how to measure it. As this guide is not intended to be an in-depth manual, the final sections provide recommendations for further advanced reading and useful websites.
2. What causes fuel poverty?

The main cause of fuel poverty is an interaction between high energy bills, low income and poor energy efficiency, as depicted in the figure below.

However, fuel poverty is multi-dimensional and reflects many situations, such as being in arrears on utility bills, living in a damp home and/or being unable to maintain adequate warmth. In addition to the three causes listed above there are many other potential determinants, including:

- Tenure – renters may be particularly vulnerable
- Dwelling type
- Additional energy needs – for example, disabled households and households containing young children may require the heating to be on for longer and at a higher temperature than other household types
- Living in a rural area that is not connected to mains electricity/gas
- Under-occupancy
- Lack of savings
3. Signs of a household in fuel poverty

Households that are fuel poor are unlikely to identify themselves as living in fuel poverty, particularly as it is a stigmatising term.

Instead, fuel poverty should be identified using proxy indicators. Common signs of a fuel poor household include:

- Household struggling to pay energy bills
- Property cold when visited
- Obvious lack of heating system
- Household living in one room or area of the house
- Condensation, damp and mould present in the house
- Household spending more time in warm public areas, such as shopping centres or libraries, during cold weather
- Reluctance to have visitors

In terms of measuring fuel poverty for monitoring purposes, there are two main methods that can be used:

1. **Expenditure method**

The expenditure approach is the most commonly used method of measuring fuel poverty, and is used for national statistics in the United Kingdom and Republic of Ireland.

Broadly speaking, under an expenditure definition a household is considered fuel poor if they spend more than X% of their income on all energy in the home for heating, hot water, cooking, lighting and appliances.

However, whilst this method seems simple in theory, it can be problematic in practice and requires consideration on a number of topics, such as:

- Whether to use an absolute expenditure threshold, such as the UK’s previous 10% line, or to use a relative threshold such as twice-median expenditure
- If energy expenditure will be modelled to estimate how much households *should* be spending to achieve an adequate standard of living, or if actual household expenditure data will be used
- How to measure household income – for example, should disability related benefits be classified as income? Should income be equivalised to account for household size?
- The use of median or mean energy expenditure figures

The latter point concerning median and mean expenditure is sometimes overlooked, but is important as fuel expenditure is asymmetrically distributed.
The use of the mean can provide misleading results as it gives weight to atypically high values, whereas medians smooth out extreme values and are particularly useful for comparative research.

In terms of energy expenditure thresholds, it is important to note that the United Kingdom’s previous 10 per cent fuel poverty line originated from a calculation of twice-median expenditure, and referred to required household expenditure rather than actual expenditure. Replication of the UK’s 10 per cent fuel poverty line should be carried out with caution.

The distinction between actual and required energy expenditure is significant. Research from the UK has shown that fuel poor households often spend far less on energy than is necessary to achieve adequate warmth, lighting etc., which is why the UK government models required energy expenditure.

However, whilst required energy expenditure allows a more accurate assessment of fuel poverty to be made, the detailed housing stock data used in the modelling is unavailable in many countries. In this situation, actual household expenditure can be used as a substitute, but researchers should be aware of the risk of underestimating the number of fuel poor households.

Where possible, actual expenditure data should be cross-referenced with other indicators, such as whether the household can afford to heat their home and/or pay their utility bills on time, in order to identify under-spending on energy.

To find out more about measuring fuel poverty using expenditure data, see Boardman (2010) and Hills (2012) in the Further Reading section.
2. Consensual method

Some researchers advocate the use of consensual indicators to measure fuel poverty, whereby households are judged to be fuel poor if they fail to achieve a minimum standard of living.

Instead of focusing on income and expenditure, consensual indicators tend to ask households to make subjective assessments of their ability to maintain an adequately warm home and pay their energy bills on time. Consensual indicators also ask objective questions about the condition of the home. Examples of consensual survey questions are shown below:

- Do you have any of the following problems with your dwelling / accommodation? A leaking roof, damp walls/floors/foundation, rot in window frames or floor
- Dwelling equipped with air conditioning facilities? (EU SILC 2007 housing module)
- Dwelling comfortably cool during summer time? (EU SILC 2007 housing module)
- During the cold winter weather, can you normally keep comfortably warm in your living room? (English Housing Survey)
- How easy or difficult is it for you to meet your heating/fuel costs? (English Housing Survey)

A key advantage of the consensual method is that it can be less complex to collect consensual data than expenditure data. In addition, consensual indicators have the potential to capture the wider elements of fuel poverty.

However, consensual fuel poverty indicators have been criticised for their error of exclusion, whereby households do not identify themselves as fuel poor even
though they may classified as being in fuel poverty under other measures. In addition, a comparison of the expenditure and consensual methods in the UK and France has shown that different populations are classified as fuel poor, with only a small degree of overlap between the methods. To identify and control for these errors, subjective indicators should be cross-referenced with objective questions concerning the energy efficiency and condition of the home, and where possible, the indicators should be compared with expenditure data.

A relatively recent development in consensual fuel poverty research has been the recognition of ‘summertime fuel poverty’, with some researchers arguing that fuel poverty should include cooling related difficulties during the hot summer months, as well as heating difficulties during cold winter months.

However, the 2007 one-off module from the EU Statistics on Income and Living Conditions has been the only survey to ask households if they are able to keep comfortably cool and if they have air conditioning. Consequently there is limited data available. Nevertheless, the recent heat waves across Europe are a strong argument for using cooling related indicators in the measurement and analysis of fuel poverty.
5. Fuel poverty in Europe

At present, consensual indicators from the EU Statistics on Income and Living Conditions are the only standardised data available to measure pan-European fuel poverty as expenditure micro data does not yet exist. The most recent EU SILC data shows that fuel poverty is prevalent across the EU, particularly in Central, Eastern and Southern Europe:

- In 2011, 9.8% of households in EU27 and 15.8% of households in the 12 new Member States could not afford to heat their home adequately (EU SILC 2011).
- 8.8% of EU27 households and 17.1% of households in the 12 new Member States were in arrears on their utility bills (EU SILC 2011).

However, despite evidence of the existence of fuel poverty across Europe, national policy responses have been limited with only three national level definitions of fuel poverty, in the United Kingdom, Republic of Ireland and France.

Policy responses at the EU level have also been limited, with no specific policy package to address fuel poverty. European Council Directives 2009/72 and 2009/73 both acknowledge fuel poverty exists and mandate Member States to “define the concept of vulnerable customers which may refer to energy poverty”. However, no guidance or definition of a vulnerable customer or fuel poverty is provided, which has led to a fragmented approach to addressing fuel poverty across Europe.
6. Further reading

The list below contains suggestions for advanced reading on the topic of fuel poverty policy and measurement.


7. Useful websites

Pan-European

- **ACHIEVE**, Action in low-income households to improve energy efficiency through visits and energy diagnosis
- **CECODHAS Housing Europe**, European Federation of Public, Cooperative & Social Housing
- **Citizens' Energy Forum - European Commission**
- **Coalition for Energy Savings**
- **EC-LINC**, Energy Check for Low Income Households
- **Energy Cities**
- **Energy Community**
- **EU Fuel Poverty Network**
- **EuroACE**, The European Alliance of Companies for Energy Efficiency in Buildings
- **EurActiv**
- **European Council for an Energy Efficient Economy**
- **European Energy Network**
- **European Fuel Poverty and Energy Efficiency**

Austria

- **Austrian Institute for Sustainable Development**

France

- **ADEME**, Agence de l'Environnement et de la Maîtrise de l'Energie
- **ANAH**, Agence Nationale de l'Habitat
- **CLER**, Réseau pour la transition énergétique
- **Club de l'Amélioration de l'Habitat**
- **Fédération Nationale des Centres PACT-ARIM**
- **Fondation Abbé Pierre pour le logement des défavorisés**
- **Fondation de France**
- **HCPLD**, Haut comité pour le logement des personnes défavorisées
- **ONPES**, Observatoire nationale de la pauvreté et de l'exclusion sociale
- **Réseau RAPPEL**, Réseau des acteurs de la pauvreté et de la précarité énergétique dans les logements

**Hungary**
- **Energiaklub**

**Ireland**
- **Energy Action**

**Spain**
- **Asociación de Ciencias Ambientales (ACA)**
- **Ecoserveis**

**United Kingdom**
- **Association for the Conservation of Energy**
- **Centre for Sustainable Energy**
- **Consumer Futures**
- **Department of Energy and Climate Change**
- **eaga Charitable Trust**
- **Energy Action Scotland**
- **Fuel Poverty Indicator**
- **National Energy Action**
- **Rural Fuel Poverty**
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