

Assessing energy poverty. An analysis of indicators, methods, and data

Abstract

Energy poverty attracts a lot of attention around the world. It is a major concern in countries experiencing difficulties with access to energy. It is also an issue in countries, where people cannot afford sufficient energy to maintain comfortable temperature at reasonable price. Policy-makers are looking for tools to estimate the predicament and to channel their efforts towards the energy poor. It has been recognized that energy poverty is a cross-cutting issue, which is associated with income poverty only to some extent. Other dimensions of energy poverty include housing stock energy efficiency, energy market integration, vulnerable consumer protection, renewable energy usage, air pollution, health protection, energy saving, prosumer energy generation, etc.

The study represents a critical assessment of energy poverty metrics, methods and data. The analysis is based on the existing direct and indirect indicators and comprises results of the EU-wide comparisons as well as a single-country analysis (Poland). Most of the EU-wide energy poverty studies rely on the EU Survey on Income and Living Condition (SILC) data. Alternatives include Household Budget Surveys, Quality of Life Survey etc. At the national level, some countries conduct residential energy consumption surveys. In Poland, the aforementioned survey is carried out every three years (E-GD survey). Whilst some countries have very sophisticated data on housing technical specification, others do not compile data on that topic at all, which impedes cross-country comparisons. The micro-data on households' energy consumption is not available at the EU level yet, not to mentioned the specifically-tailored energy poverty surveys.

Since there is little consensus on energy poverty metrics, pros and cons of various measures are revealed. The preliminary analysis of indicators shows inconsistency of results. Namely, the scale and the depicted profile of the energy poor depend on the adopted measure and could vary a lot between indicators. The study also provides a model-based explanation of energy poverty. We examine energy poverty using a set of parameters from the EU-SILC relevant to income and housing components of energy poverty ratio. Main statistical tools utilized in the study are multiple linear regression, logistic regression, clustering methods, and principal components analysis.

The main research questions we attempt to answer in the study are as follows. 1. What are the scale and depth of energy poverty in Poland and in the EU26? 2. What are the determinants of energy poverty in Poland? 3. How the energy poor could be described?

Keywords: energy poverty, energy vulnerability, energy poverty metrics

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