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Analysis of energy poverty intensity from the perspective of the regional administration: Empirical evidence from households in southern Europe

Sabina Scarpellini [a,*], Pilar Rivera-Torres [b], Inés Suárez-Perales [c], Alfonso Aranda-Usón [d]

[a] CIRCE – Centre for Research of Energy Resources and Consumption. University of Zaragoza, Spain
[b] Department of Marketing – University of Zaragoza, Spain
[c] CIRCE – Centre for Research into Energy Resources and Consumption. University of Zaragoza, Spain
[d] Department of Management – University of Zaragoza, Spain

HIGHLIGHTS

- New approach to energy poverty through the collaboration with social services.
- Regular data collection systems on energy poverty are needed at the regional level.
- Household's conditions in accredited energy poverty have been measured.
- A comprehensive analysis of the energy poverty at Regional level in the Southern Europe.

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ABSTRACT

The current economic situation has increased the number of households in Europe experiencing restrictions and/or limitations of affordability of energy services, demonstrating the urgent need to intervene in those extreme cases in which households suffer the daily consequences of what is internationally defined as energy poverty. In such a context, this paper presents the results obtained in a case study characterising a sample of 615 households with demonstrated energy poverty in the region of Aragón (Spain). In parallel, the intensity of energy poverty in the studied cases is examined by measuring the percentage of energy expenditures with respect to income in the households that suffer it, and a descriptive analysis of the main determinants of energy poverty in the homes studied is presented as well as the policy implication at regional level.

1. Introduction

The economic situation in Europe has increased the number of households with unexpected economic difficulties and situations of debt and insolvency. Among other negative consequences, the low income and the consequent household decapitalisation are significant limitations to accessing energy resources necessary for the home.

In many cases, housing is in fact one of the elements that Europeans use to reduce household spending in times of recession, causing an increase of extreme cases in which some suffer the daily consequences of what is internationally defined as energy or fuel poverty. Energy poverty is here understood as the economic inability of the home to meet its domestic energy needs, increasing as energy expenditures and their relative significance in relation to household income also rise.

Spain has also been affected by this problem, and action has been taken by different institutions mainly to assess the problem at the local, regional, and national level and to define which actions ought to be taken and measures adopted. To do so, the Public Administration must identify the households that are most vulnerable to the problem and their main features to take concrete steps that are preventive in nature and suitable for every type of household. These steps would also be taken to avoid situations of

* Correspondence to: Edificio CIRCE- Campus Río Ebro. Mariano Esquillor Gómez, 15, 50018 Zaragoza, Spain.
E-mail addresses: sabina@unizar.es (S. Scarpellini), privera@unizar.es (P. Rivera-Torres), isuarez@unizar.es (I. Suárez-Perales), alaranda@unizar.es (A. Aranda-Usón).

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consumer vulnerability that may lead to severe energy poverty in all the European countries, as Spain, located in the south of the European Union (EU), even though they have more favourable weather conditions than in northern Europe. Substantial differences among EU member states have in fact been detected, with Southern and Eastern European countries generally reporting a higher incidence of energy poverty (Tirado-Herrero and Bouzarovski, 2014), and the highest incidences of fuel poverty in southern Europe include Portugal, Spain, Greece and Italy (Healy and Clinch, 2002b).

As Bergasse et al. (2013) note, when homes must cover excessive energy costs, they find themselves in a situation of energy vulnerability, and this situation may represent a deterioration of living conditions and socio-economic development for society in general. For this reason, the need to protect citizens from energy vulnerability (Bouzarovski, 2012) and to prevent social exclusion by ensuring basic access to energy at reasonable and stable prices (CESE, 2013) has been considered in all Europe. This consideration is acknowledged, in fact, in the third energy package of the year 2009 (Rab et al., 2011), in which Member States of the European Union should take appropriate steps to protect these clients.

Nevertheless, the EU approach has led to some fragmentation in member States' actions concerning energy poverty, not only in relation to the definition of energy poverty or vulnerable consumers but also regarding measurement and the definition of preventive or palliative measures implemented in each country. In most member countries, market competition is not the main factor affecting the significant components of individuals' final energy bill but rather numerous taxes, levies, supports for energy diversification and security, etc. that depend on national energy policy.

In this context, it is important to have primary source material to provide a complete picture of the energy poverty phenomenon in each country, in line with the approach proposed by Howden-Chapman et al. (2012) and by Brunner et al. (2012). These authors advocate for a holistic approach to the daily energy practices of households on low incomes and/or suffering from fuel poverty that is needed at national and local level.

The paper is focused on this goal and it is divided into five sections. After the introduction, the second section presents a background of literature on energy poverty in terms of its definition and operationalization. The third section provides an account of the empirical work conducted, including the sample, variables, and methodology used for analysis. The fourth section describes the main results, and in the last section, the main research conclusions are presented.

2. Background

In recent years, the definition of the concept of energy poverty has been a recurrent issue that has reached a certain level of agreement about issues of affordability and unmet needs of domestic energy services. The advisability of using Boardman's (1991) initial proposal at the European level has been debated, with the author stating that the proportion of household income spent on energy services in a household is the main indicator of the scope of energy poverty.

Based on this fundamental contribution, the use of 10% of income to sufficiently meet energy needs (Boardman 1991) as an index to detect households in energy poverty was introduced in the debate (Liddel et. al. 2012), in addition to other needs regarding the analysis of comfort in a home with indoor temperatures ranging between 18 °C and 21 °C (see BERR, 2001). Other authors, such as Hills (2012), the International Energy Agency (2011), Tirado-Herrero et al. (2012), and Thomson and Snell (2013), introduced concepts such as “cold home,” “energy debt,” and “relative” perspectives into the definition of “energy poverty” (Grevisse and Brynart, 2011). Li et al. (2014) provide a summary of the related concept as used in the literature and foremost a principal distinction regards access versus affordability. In general terms energy poverty is frequently used regarding the inability to obtain or maintain service, and fuel poverty means a temporal variability of domestic energy deprivation.

Bouzarovski et al. (2014) pointed out that the factors that contribute to the rise of domestic energy deprivation can be captured under the concept of ‘energy vulnerability’ – defined, simply, as the propensity of an individual to become incapable of securing a materially and socially needed level of energy service in the home, thinking brings to the fore issues of resilience and precariousness.

These different concepts highlight that the term's definition is not univocally applied and outside the third world energy poverty is now generally considered to be relative, in line with Moore (2012). A relative conception of the phenomenon is therefore applied in this study, and a household is considered to suffer energy poverty if its dwellers are unable to pay for energy services sufficient to satisfy domestic needs, once such economic necessity has been “accredited” by the Social Services that attend/support the home, whether regional/local or other competent authorities depended on for this purpose.

Despite the fact that the accreditation of energy poverty may be restrictive and those households that suffer the consequences of this problem without being recipients of social aid may be excluded from the analysis, the application of this approach allows one to limit urgent situations to a territorial level to clearly define the problem determinants by tracing households in need according to their features, thus planning public and private interventions based on specific measurements.

Defining households in energy poverty on the basis of accreditation also responds to a holistic view of the problem that regards energy poverty as one of the indexes of relative poverty (Practical Action, 2013) in a context of the overall poverty that represents the problem according to a classification of society into two groups: those who are most disadvantaged, which could be called “poor” (in this case in “energy” terms) and the rest.

In Europe, the latter typically involves the intervention of social services or social action agencies. The implementation of this approach allows one to identify urgent situations using a broader criterion that goes beyond age or household member income (Boardman, 2012). As Chaudhuri and Ravallion (1994) indicate, the most important studies in this field highlight the direct relationship between household income and level of poverty, both general and relative in order to define the solutions.

In Spain, Tirado-Herrero et al. (2014) estimates that, in 2012, 17% Spanish households (12% in 2010) were subject to disproportionate domestic energy expenses (over 10% of their annual income). The 2012 percentage figure is equivalent to 7 million people affected by this condition (5 million in 2010) and 9% of Spanish households (8% in 2010) were unable to keep their home adequately warm during wintertime. In the same year, the percentage of households in Region of Aragon (in the Northeast of Spain) with domestic energy expenses over 10% of their annual income was higher than the Spanish average, while the percentage of households unable to keep their home adequately warm during wintertime was below the Spanish average throughout the series studied by Tirado-Herrero et al. (2014).

In Europe, different empirical studies that have been conducted using large sample sizes are not numerous, and the relationship between energy poverty, thermal comfort, and the consequences of living in inadequately heated housing (Healy and Clinch, 2002a) continues to be the subject of analysis with regard to defining