

Perspective on Energy Poverty in the Public Debate and in Research in Portugal

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Perspective on Energy Poverty in the policy debate in Portugal

There is no official concept or definition of energy poverty coming from a legislation or policy perspective in Portugal, and it is still a rather unknown concept for the Portuguese population. Nevertheless, a national strategy for energy poverty mitigation is currently being developed.

Energy Poverty has been receiving growing attention from several media outlets, due to relevant research being carried out at national and regional levels. In the news, energy poverty is more frequently linked with extreme weather events, especially cold waves.

At a policy level, energy poverty has been increasingly incorporated in national medium and long term strategy instruments, with important mentions in the National Energy and Climate Plan 2030 (Portuguese Republic, 2019a), the Roadmap for Carbon Neutrality for 2050 (Portuguese Republic, 2019b) and the Long Term Strategy for Buildings Renovation (Portuguese Republic, 2021). The National Roadmap for Carbon Neutrality states that investment in urban renovation will result in the increase of energy efficiency in residential buildings, electrification and incorporation of renewable energy sources, which could contribute to energy poverty reduction. The National Energy and Climate Plan 2030 set out as one of its goals the elaboration of a long-term strategy to tackle energy poverty, which

will improve vulnerable consumer protection instruments and propose measures to reduce energy poverty.

On the preliminary version of The Long Term Strategy for Building Renovation (2020), the need for tailored policy action is highlighted, particularly for financing energy efficiency projects and through subsidies for energy efficiency interventions for residential and commercial buildings, tax abatements and energy bill payments (Portuguese Republic, 2021). One of the main axes of action defined in this strategy is precisely energy poverty mitigation, for which the aforementioned set of policy measures should be adopted.

At the municipal level, the Lisbon Municipality also highlights the importance of mitigating energy poverty in the Municipal Housing Chart, presenting the results of Gouveia et al. (2019) index applying it to the different civil parishes (CML, 2020). Energy poverty was also a topic of discussion in the Portuguese parliament, connected to draft resolutions concerning the implementation of a maximum price on LPG bottles and the excessive rents that power companies have to pay, which are reflected in energy costs for Portuguese families.

Currently, the only measure that directly address the energy vulnerability of the population is the social tariff for electricity and natural gas use. These social tariffs consist of a discount on the tariff for access to the low voltage electricity networks and/or low-pressure natural gas for households. Around 800 000 households benefit from this support measure (19% of Portuguese households), identified and qualified automatically based on social welfare system data (ADENE, 2019).

Although not directly addressed and fostered as a solution to energy poverty, but with possible positive outcomes to this problem, energy efficiency measures are supported by a variety of financial mechanisms. There are state incentives to promote and ease household access to energy efficiency projects, as well as to renewable energy systems. The majority of energy-related policies targeted to the residential sector are developed at a strategic level, with instruments in general lacking sufficient tailoring to deliver the expected results. In several energy-related dimensions, Portugal is still behind compared to other EU countries (Gouveia, 2017). As an example, BPIE (2017) includes Portugal as a slow starter for the 'smart building revolution'.

Moreover, as an incentive and a way to secure the stability of investment in renewable energy sources, especially for small electricity producers, the Portuguese government decided to maintain the reference tariff for the electricity sold to the public grid, set at 95 euros per MWh. Recently, the government has also approved a decree-law (Decree-law 162/2019), setting new rules regarding decentralized energy communities, directed to ease investment in generation units

to provide electricity to a small community of consumers, with potential benefits for energy poverty reduction.

Research perspective on Energy Poverty in Portugal

The research carried out on energy poverty in Portugal is mostly focused on space heating and cooling and related to thermal comfort, energy performance of buildings and energy efficiency. Gouveia *et al.* (2018a) frames the problem by characterizing households in terms of the typical enablers of energy poverty (e.g. low incomes, inefficient dwellings), with low levels of consumption suggesting energy deprivation for basic energy needs. Others (Gouveia *et al.* 2012, 2017a, 2017b, 2018a; Simoes *et al.* 2016; Palma *et al.* 2019) highlight energy poverty as being focused on space heating and space cooling and related to problems of thermal comfort in residential buildings, energy consumption profiles and inefficient households. Gouveia *et al.* (2016, 2017b) included socio-economic variables combined with electricity smart meter data to identify and characterize potentially vulnerable consumer groups. In these latter papers, analysis is focused on scope and methods; to include thermal comfort at the household level and assessment of electricity consumption associated with both space heating and cooling for a specific region in the country. Simoes *et al.* (2015) briefly assessed this topic under a thermal comfort and future climate vulnerability perspective. Simoes *et al.* (2016) delved more into this topic using CENSUS 2011 data to map vulnerable elderly people in 29 municipalities across Portugal.

A novel energy poverty composite index – the Energy Poverty Vulnerability Index (EPVI) – was recently developed to map and characterize energy poverty at a very high-resolution spatial scale (all 3092 Portuguese civil parishes), that combines:

- socio-economic indicators of population (e.g. elderly and young people; unemployed; levels of income; education levels);
- climate variables (Heating Degree Days and Cooling Degree Days, heating and cooling season length);
- energy consumption levels (e.g. electricity, natural gas, biomass);
- energy needs for heating and cooling (per square meter, per household);
- Heating and cooling technologies details (efficiency, ownership);
- construction characteristics of 187 building typologies (e.g. height, area, bearing structure, type of wall, windows, roofs) by country region (Gouveia *et al.*, 2018b and Gouveia *et al.*, 2018c).

This work builds upon early work from Lopes (2010), Simoes *et al.* (2016) and Palma *et al.* (2019). Figures 1 and 2 present respectively the energy poverty vulnerability maps related to space heating and cooling that result from this research. The civil parishes located in the north and inland center regions of the country have generally higher energy poverty vulnerability for both heating and cooling, due to more severe climate conditions; lower energy efficiency of the dwelling stock and low energy consumption for space heating and cooling; and lower ability of the population to implement thermal comfort improvement measures (Figure 1 and Figure 2). This research have been highlighted by national media including television (*Sic Noticias, RTP1, TVI, Porto Canal*), radio (*Observador, Renascença*) and newspaper (e.g. *Expresso, Público, JN*) due to its importance and societal impact (SIC Noticias, 2018) and was recognized as one of the top projects regarding social innovation for tackling Energy poverty by ASHOKA and Schneider Foundation Award 2017/2018 (ASHOKA and Schneider Foundation, 2018).

Horta *et al.* (2019) provides an additional perspective into how the Energy Poverty Vulnerability Index contributes to a better understanding of energy poverty by providing results highlighting ten vulnerability hotspots across the country where a team of social scientists conducted interviews with 100 households.

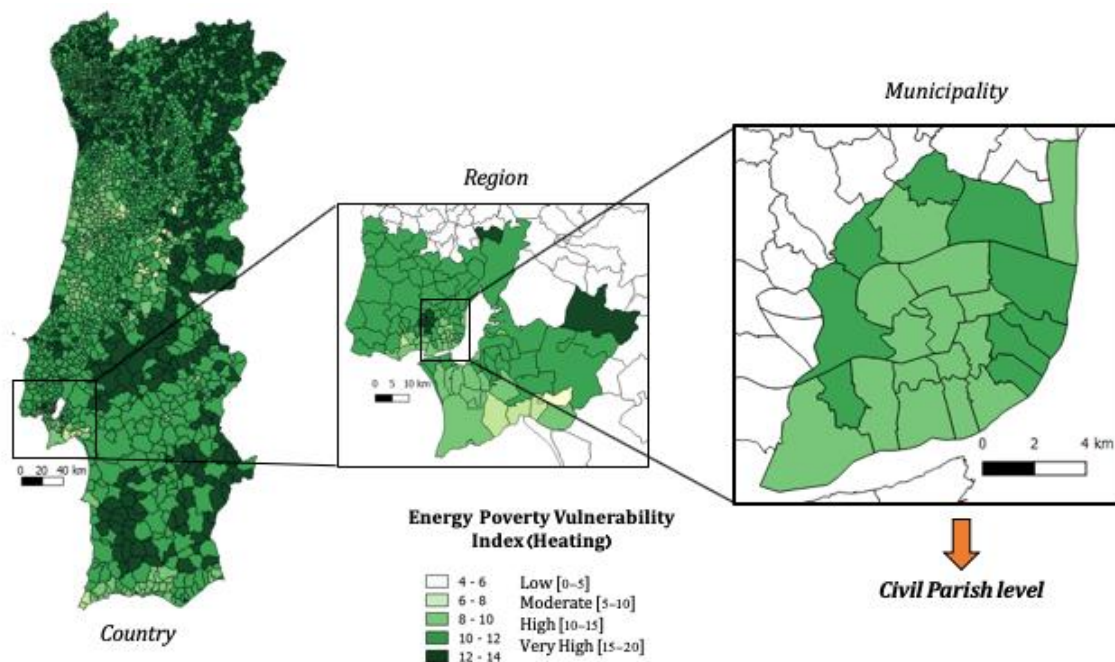


Figure 1 - Regional Energy Poverty Vulnerability Index for Space Heating for Portugal (Adapted from Gouveia *et al.*, 2018b)

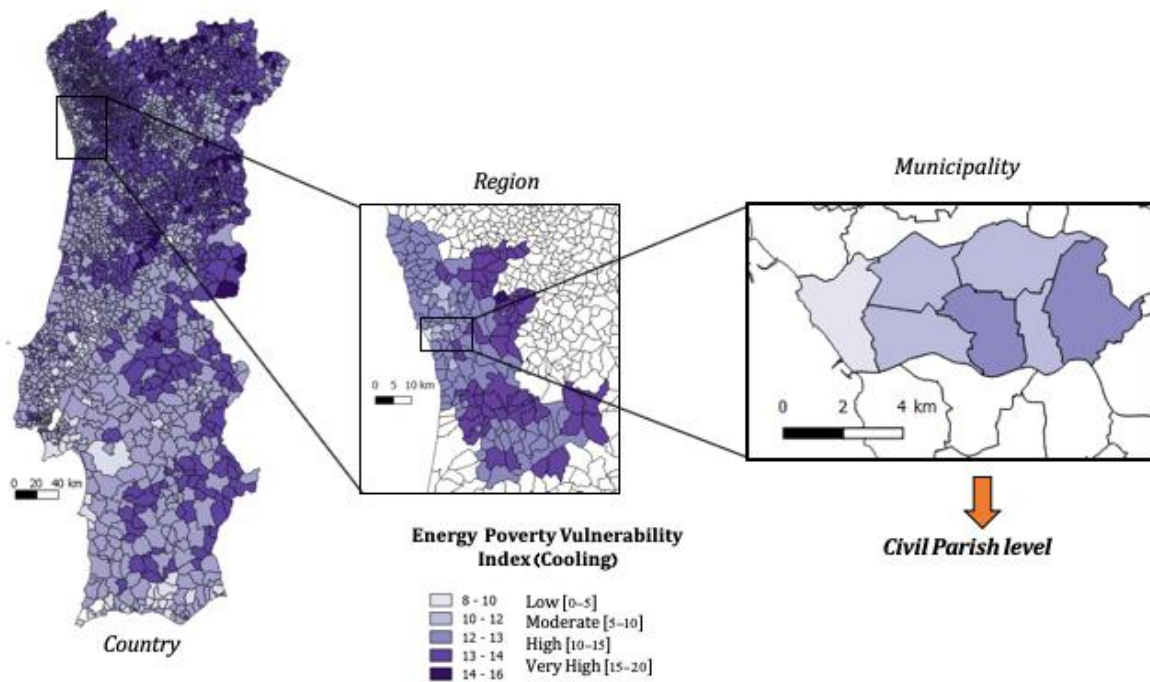


Figure 2 - Regional Energy Poverty Vulnerability Index for Space Cooling for Portugal (Adapted from Gouveia *et al.*, 2018b)

Rodrigues *et al.* (2019) developed a study for EDP (Energias de Portugal S.A.), a Portuguese energy utility company, to analyse energy poverty in Portugal through a direct measurement approach, the energy gap, comparing a standard energy consumption with the actual energy consumption, considering an energy poverty threshold. Families with a consumption below the set threshold (50% of the normative theoretical energy needs) were considered to be in energy poverty. The authors also used a modified Low Income High Costs (LIHC) indicator to measure energy poverty and compared the results with the energy gap indicator. Results show a proportion of 11.4% and 11% of people in energy poverty according to the energy gap and modified LIHC approach respectively. The amount of financial resources necessary to take an energy poor household out of energy poverty was estimated at 35.9€ and 40.7€ per month respectively for the two methods.

Additionally, a study on the Application of the Energy Social Tariff was published in April 2019 by the Energy Observatory and financed by ADENE, the Energy Agency. It concluded that energy poverty in Portugal is a widely overlooked phenomenon. Only recently Portuguese entities took part on EU funded projects related to this topic. ADENE and the University of Porto are partners in the Interreg Sudoe project Energy Push on social housing in the north of Portugal. The consumer organisation DECO is also a partner in the Horizon 2020 STEP project which focuses on behavioural change, raising awareness and energy efficiency.

Coopérnico, a renewable energy cooperative is a partner on the Horizon 2020 POWERPOOR project which aims to develop support programmes/schemes for energy poor citizens and encourage the use of alternative financing schemes e.g. establishing energy communities / cooperatives, crowd funding). FCT NOVA is part of the coordination team of the EU Energy poverty Advisory Hub (2021-2024) aiming to provide technical assistance to municipalities implementing sustainable solutions with the view to alleviating energy poverty.

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