

# **Unpacking the energy crisis impact with a multidimensional vulnerability index: a granular analysis of the Spanish case**

L. Blas Álvarez; R. Barrella

## **Abstract-**

Since 2021, energy affordability has become a major issue for both low and middle-income European households. One of the main causes has been the increase in energy prices. This rise started in 2021 and has been exacerbated by the ongoing conflict between Russia and Ukraine, therefore aggravating the already dire situation. In this context, the Spanish case draws importance, as this country has a high share of energy poverty and a variate climate. This paper explores the likelihood of being exposed to energy poverty in this Member State by using a novel metric of energy vulnerability at the local level, i.e. the Multi-Factor Energy Vulnerability Index (MFEVI). The MFEVI ranges from 1 to 5 and measures energy vulnerability caused by a combination of four factors. It allows to identify territories in a more vulnerable situation and, therefore, with a higher risk of suffering energy poverty. The MFEVI results for the Spanish case study in 2022 state that over 84% of the municipalities show a vulnerability index of 3 or higher and almost one-third of these municipalities are located in the southern regions of Andalusia, Extremadura and Castille-La Mancha. Moreover, in the worst-performing municipalities (with an MFEVI between 4 and 5) the electricity price increase in 2022 has only aggravated an already worrisome starting point. Indeed, these localities have certain particularities that explain this high index, such as: lower net income, colder winters, hotter summers, and lower energy efficiency than the average. Eventually, this article highlights the differences in energy vulnerability across the Spanish mainland and the geographical breakdown of the proposed indicator might help policy decision-makers fight this social issue at the local level.

**Index Terms-** Energy poverty; Energy vulnerability; Multidimensional index; Energy crisis; Spain

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**Citation:**

*Barrella, R.; Blas-Álvarez, L. "Unpacking the energy crisis impact with a multidimensional vulnerability index: a granular analysis of the Spanish case", GeoJournal, vol.89, no.1, pp.34-1-34-25, February, 2024.*