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## **UNVEILING ENERGY POVERTY IN SOUTHERN EUROPE: INDICATORS, VULNERABILITY FACTORS, AND POLICY IMPLICATIONS**

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### **Overview**

Energy poverty refers to a household's inability to meet its basic energy needs in an adequate and affordable manner. It often results from a combination of financial constraints, energy-inefficient housing, high energy prices and unfavorable socio-economic factors. The Covid-19 global health crisis and, more recently, the energy crisis have significantly exacerbated this issue in the EU. For instance, the share of European households unable to keep their homes adequately warm grew from 6.9% in 2019 to 10.6% in 2023. These crises have highlighted the fragility of the EU's energy systems and urged decision-makers to adopt a more proactive approach to mitigating their socio-economic effects. The growing urgency of understanding energy poverty in Europe highlights the need for its measurement and the identification of the vulnerability factors in different European countries.

### **Methods**

To adequately measure energy poverty, which is a multi-dimensional issue, in Spain, Italy and France, a measurement tool calculating several indicators to capture different forms of energy poverty has been developed. The four main indicators identified by the Energy Poverty Advisory Hub (EPAH) have been used: the share of the population having arrears on utility bills, the share of the population unable to keep their home adequately warm, the share of the population having a high share of energy expenditure in income (2M), and the share of the population having a low absolute energy expenditure (M/2). Additionally, a fifth indicator has been computed: the share of the population living in a dwelling with leaks, dampness and rot. To compute these indicators, we used the data from the national Household Budget Surveys (HBS) and the Statistics on Income and Living Conditions (SILC), which are conducted on a periodical basis.

Additionally, to identify the characteristics of those households more vulnerable to energy poverty, an econometric analysis has been performed. This model intends to explain whether a household is likely to be unable to keep its home adequately warm, based on socio-economic factors. To this extent, French data from the SILC has been used.

### **Results**

The measurement tool developed enables the calculation of the five different energy poverty indicators under study for the case of Spain, Italy and France for the years in which the data are available. In all three countries, the situation is alarming, as the values of the indicators have all increased over the 2018-2022 period. Nevertheless, there are differences in the prevalence of different types of energy poverty. Disproportionate energy expenditure is slightly higher in Spain, while low absolute energy expenditure is more prevalent in France and Italy. The share of the population having arrears on utility bills is higher in Spain than in France (9.2% vs. 7.1% in 2022), but it increased over the 4-years period in both countries. The same indicator is lower in Italy, where it remained stable at around 5% over the period.

Both Spain and France show alarming results in the inability to keep home adequately warm, an indicator that has roughly doubled over the past 4 years, although the problem remains much more acute in Spain. Conversely, the share of the Italian population unable to keep their home adequately warm decreased between 2019 and 2020, then it has been stable in 2021 and increased in 2022. Additionally, the share of the population living in a dwelling with leaks, dampness and rot has also increased by about 50% in all three countries between 2018 and 2020.

The econometric model we developed aims to identify the households unable to keep home adequately warm, using socio-economic and demographic factors. Although this model does not clearly identify households at risk, it does identify certain risk factors. The more children a household has, the higher the probability of being unable to keep the home adequately warm it has. Additionally, households whose reference person has no higher education are more likely to be unable to keep their home adequately warm. Finally, if the reference person is inactive or unemployed, the probability of being in energy poverty also increases significantly. This model has yielded a pseudo-R-squared of 0.109.

## Conclusions

Despite some disparities, France, Italy and Spain share similar trends in terms of energy poverty. This reinforces the idea that harmonized policies to tackle energy poverty at the European level could be relevant.

The households vulnerable to energy poverty remain difficult to clearly identify precisely because of the multitude of socioeconomic factors to be considered and the multiple facets of energy poverty. However, some vulnerability factors can be identified, such as a low level of education, being inactive or unemployed, or having a large family to support. These factors should help to design policies to adequately tackle energy poverty by addressing vulnerable households.

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