

Exploring energy poverty in urban and rural contexts in the era of climate change: a comparative analysis of European countries and Israel

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Abstract-

This article examines the multidimensional problem of energy poverty, focusing on its connections to climate change and its manifestation at rural and urban scales across selected European countries and Israel. The study examined 31 locations in eight countries with diverse geographical and economic backgrounds: Bosnia and Herzegovina, Greece, North Macedonia, The Netherlands, Portugal, Spain, Slovakia, and Israel. The article aims to understand how winter energy vulnerability in rural and urban locations in these countries could be identified using selected energy poverty indicators and how it evolves under the influence of climate change. A set of sociodemographic, infrastructural, and economic variables, combined with climate analysis, were selected and assessed for their impact on energy poverty. We found that energy poverty in most countries depends significantly on location and regional development. Due to a combination of factors influencing energy poverty, rural households tend to be more vulnerable. Furthermore, climate change consequences will likely leave rural areas more likely to experience energy poverty in the future.

Index Terms- winter energy poverty; rural–urban divide; buildings; socioeconomic factors; impacts of climate change

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