

Editorial

Multidimensional Perspectives for Energy Poverty Sustainable Mitigation

João Pedro Gouveia ^{1,*}  and Ricardo Barbosa ² 

¹ Centre for Environmental and Sustainability Research & CHANGE, Global Change and Sustainability Institute, NOVA School of Science and Technology, NOVA University Lisbon, 2829-516 Caparica, Portugal

² Department of Civil Engineering, ISISE, University of Minho, 4800-058 Guimarães, Portugal; ricardobarbosa@civil.uminho.pt

* Correspondence: jplg@fct.unl.pt

1. Overview

Energy poverty is a growing societal issue that puts the welfare of many citizens on both sides of the global north-south divide at risk. It is a multidimensional problem that extends beyond individual households and has linkages and interdependencies with the economic, technological, and social systems with multiple geographical specificities. Connecting sustainable energy transitions, energy equity issues, and energy poverty is, therefore, a new challenge. This editorial aims to summarize the nine scientific publications that contributed to this thematic collection entitled “Multidimensional Perspectives for Energy Poverty Sustainable Mitigation”, which addresses a wide range of approaches and tools to mitigate energy poverty while considering sustainability aspects. Authors from different disciplines such as geography, sociology, economics, engineering, and other related fields, contributed to the discussion.

This Special Issue is composed of a wide selection of contributions that aims to shed light on various aspects, comparing and discussing these issues with energy poverty, including an identification of the phenomena, assessment of future vulnerability in the context of climate change, and addressing important questions regarding the vulnerability of specific populations.

2. A Short Review of the Contributions to This Special Issue

The geographical distribution and identification of energy poverty are vital for mitigating this phenomenon—several papers in this Special Issue address this subject from the perspectives of different countries. Bajomi et al. focus on the mapping of energy vulnerabilities of Hungarian solid fuel users using six energy vulnerability factors (contribution number 1) This shows evidence of the increased exposition of these users compared to the average household in this country. On the other hand, Karpinska et al. address the subject from a regional perspective in Poland and show the spatial distribution of vulnerability to energy poverty in this territory while investigating the influence of different vulnerability factors (contribution number 2). In a complementary approach to mapping energy poverty, Antepara et al. focus on the improvement of measurements of energy poverty and analyze how energy poverty levels are evaluated for Greece, the municipality of Évora (Portugal), and the Basque Country (Spain) (contribution number 3). Their study concludes that, for more accurate measurements that can distinguish under-consuming households, theoretical energy needs can be combined with socio-demographic data instead of actual energy bills to measure energy poverty. Regardless of its necessity, identifying energy poverty situations in the present situation can be limiting in terms of action, mainly due to its urgency. Looking to the future, Castaño-Rosa et al. use climate change scenarios to analyze climate vulnerability in seven different national contexts, framing it in the context of future summer energy poverty (contribution number 4). A different approach is taken



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by Montes-Villalva et al., where a methodology is proposed to evaluate the impact of urban planning on indoor lighting demand and its relationship with energy poverty levels, along with the potential implications of policies directed toward influencing high-rise densification and re-densification in urban areas (contribution number 5).

The articles in this Special Issue also highlight the importance of behavior patterns and practices in energy use that influence vulnerability to energy poverty. Nazarahari et al. looked at knowledge, attitude, and practices towards the energy usage of college students in Japan (contribution number 6). They suggested that the exposure of such (not so evident) populations should be considered in future studies with more attention. On the other hand, Cuervo-Vilches et al. analyze the effect of domestic confinement resulting from COVID-19 measures in Madrid, Spain, regarding the difference in exposure to energy poverty (contribution number 7). The results point to a disproportion in the exposure of vulnerable and energy-poor households regarding discomfort and inevitable energy consumption increase. In the same direction, Ortiz et al. analyzed the effect of a collaborative empowering engagement tool designed as an “assembly of peers” in Barcelona, Spain, with interesting results in terms of increasing awareness and support for energy-poverty-affected households (contribution number 8).

Although most of the studies in this Special Issue address energy-poverty-related issues in a European context, it also recognizes the emergent research focusing on other contextual settings where energy poverty can be framed. This is the case for the articles by Nazarahari et al. (contribution number 6) and Monte-Villalva et al. (contribution number 5), but in particular for the study by Kumar et al. (contribution number 9), which looks into how affordability, accessibility, and awareness are associated with liquified petroleum gas (LPG) adoption using a significant number of rural poor households in India as a case study. Using results from their research, it was possible to draw meaningful insights regarding the relation between energy justice and energy poverty, particularly concerning the adoption of clean fuels.

3. List of Contributions

1. Bajomi, A.Z.; Feldmár, N.; Tirado-Herrero, S. Will Plans to Ease Energy Poverty Go Up in Smoke? Assessing the Hungarian NECP through the Lens of Solid Fuel Users' Vulnerabilities. *Sustainability* **2021**, *13*, 13047.
2. Karpinska, L.; Śmiech, S.; Gouveia, J.P.; Palma, P. Mapping Regional Vulnerability to Energy Poverty in Poland. *Sustainability* **2021**, *13*, 10694.
3. Antepara, I.; Papada, L.; Gouveia, J.P.; Katsoulakos, N.; Kaliampakos, D. Improving Energy Poverty Measurement in Southern European Regions through Equivalization of Modeled Energy Costs. *Sustainability* **2020**, *12*, 5721.
4. Castaño-Rosa, R.; Barrella, R.; Sánchez-Guevara, C.; Barbosa, R.; Kyprianou, I.; Paschalidou, E.; Thomaidis, N.S.; Dokupilova, D.; Gouveia, J.P.; Kádár, J.; Hamed, T.A.; Palma, P. Cooling Degree Models and Future Energy Demand in the Residential Sector. A Seven-Country Case Study. *Sustainability* **2021**, *13*, 2987.
5. Montes-Villalva, E.; Pereira-Ruchansky, L.; Piderit-Moreno, B.; Pérez-Fargallo, A. Impact of Urban Re-Densification on Indoor Lighting Demand and Energy Poverty on the Equator, in the City of Quito. *Sustainability* **2022**, *14*, 3783.
6. Nazarahari, A.; Nader Ghotbi, N.; Koji Tokimatsu, K. Energy Poverty among College Students in Japan in a Survey of Students' Knowledge, Attitude and Practices towards Energy Use. *Sustainability* **2021**, *13*, 8484.
7. Cuervo-Vilches, T.; Navas-Martín, M.A.; Oteiza, I. Behavior Patterns, Energy Consumption and Comfort during COVID-19 Lockdown Related to Home Features, Socioeconomic Factors and Energy Poverty in Madrid. *Sustainability* **2021**, *13*, 5949.
8. Ortiz, J.; Martínez, M.J.; Alegría-Sala, A.; Tirado-Herrero, S.; Pijuan, I.G.; Blaya, M.G.; Canals Casals, L.C. Tackling Energy Poverty through Collective Advisory Assemblies and Electricity and Comfort Monitoring Campaigns. *Sustainability* **2021**, *13*, 9671.

9. Kumar, P.; Dover, R.E.; Iriarte, A.D.-V.; Rao, S.; Garakani, R.; Hadingham, S.; Dhand, A.; Tabak R.G.; Brownson, R.C.; Gautam N. Yadama, G.N. Affordability, Accessibility, and Awareness in the Adoption of Liquefied Petroleum Gas: A Case-Control Study in Rural India. *Sustainability* **2020**, *12*, 4790.

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