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ENERGY POVERTY AND ITS SOCIAL CONSEQUENCES IN MOLDOVA

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Purpose of the article: *assessment of energy poverty in Moldova, identification of the most vulnerable groups of the population, and study of the social consequences of energy poverty.*

Methodology: *The study employs quantitative methods of analysis, including statistical data analysis and stratification, to identify patterns.*

Conclusions: *The results of the study showed that the number of Moldovan families facing energy poverty is growing, and the gap between urban and rural populations is also widening. An analysis of the effectiveness of government measures, such as the creation of the Energy Vulnerability Reduction Fund and the Residential Energy Efficiency Fund, showed that the trend of increasing energy poverty has not been stopped or reversed. Long-term investments in energy efficiency are needed to combat energy poverty and reduce energy vulnerability. Recommendations for a just energy transition are presented in the conclusion.*

Originality: *The novelty of this study lies in examining the social consequences of energy poverty in Moldova. The paper assesses the impact of energy poverty on education and health, and also explores the following repercussions: social isolation and migration intentions.*

Keywords: *energy poverty, energy vulnerability, social consequences, effectiveness of government measures, Moldova.*
JEL Classifications: H53, Q48, I32

INTRODUCTION

The energy crisis has impacted not only the economies of most countries but also the well-being of their populations. Western and Eastern European countries were the most severely affected. The crisis has heightened energy vulnerability and exacerbated energy and fuel poverty, underscoring the importance of research into these concepts. Although these terms have been the subject of study for several years, there is still no clear description of the relationship between them and no consensus on the precise distinctions between them.

The terms “energy poverty” and “fuel poverty” are closely related in definition. An analysis of trends in the research subject of articles in Scopus-indexed journals showed that in 2015, the number of articles on energy poverty was approximately the same as the number of articles on fuel poverty. However, in the following years, their number increased sharply, and by 2019, it was four times the number of articles on fuel poverty (Primc et al., 2021). Scientific interest in research on fuel poverty has remained stable, while interest in energy poverty has increased.

Castaño-Rosa et al. believe the difference between these two terms is that “fuel poverty” is used primarily in industrialized countries, while “energy poverty” is used in developing countries. They argue that “fuel poverty” describes situations where households’ disposable income is so low that they cannot afford their energy needs, while “energy poverty” refers to a situation where households lack physical access to energy services (Castaño-Rosa et al., 2019). Although most scholars share this view, this interpretation differs from the views of others. According to Belaïd and Flambard, “energy poverty” is synonymous with “monetary poverty” and “fuel poverty” (Belaïd & Flambard, 2023). J. Sokołowski believes that the term “energy poverty” is broader than “fuel poverty” and includes not only limited physical access to energy resources but also difficulties in paying bills (Sokołowski et al., 2020).

MATERIALS AND METHODS

There are several methods for assessing energy poverty. The most common is the Ten-Percent Rule (TPR), which considers a household energy poor if it spends more than 10% of its income on energy consumption. This method is not perfect, as it underestimates "hidden" poverty when households live in unheated rooms and limit their electricity consumption to avoid high bills.

In the United Kingdom, the Low-Income High Cost (LIHC) indicator is used to assess energy poverty, allowing for a more accurate identification of vulnerable groups. This indicator encompasses households with incomes below the national average and energy expenditures that are above average.

Energy poverty can be assessed using the "double median" (2M) method. This method compares the share of household expenditure on energy with the national median. The "half median" (M/2) indicator, which allows the identification of "hidden" energy poverty, can also be used. In recent years, the Multidimensional Energy Poverty Index (MEPI), which encompasses economic, infrastructural, and social aspects, has gained popularity.

The subject of this study is energy poverty, and its objective is to identify the social consequences of energy poverty. The study is based on data from the National Bureau of Statistics (NBS). The TPR indicator was used to assess energy poverty, and social indicators were used to analyze the social consequences. Quantitative methods of analysis were used in this study.

RESULTS AND DISCUSSIONS

Since 2020, the Moldovan national economy has been subjected to a series of shocks. First, the COVID-19 lockdown, then the energy crisis that began at the end of 2021 and continued into the following years. All these shocks created a cumulative effect that seriously undermined the well-being of the population (Gutium, 2021). The Moldovan economy proved to be highly susceptible to these shocks because the economy is energy-vulnerable, dependent on energy imports (Gutium & Postolaty, 2019), with high poverty rates and low incomes for most households. As a result, while before these events, every fourth citizen was absolutely poor (the absolute poverty rate was 25.2% in 2019), by 2024, every third citizen had become poor (33.6%). Thus, chronic problems have escalated into an acute national crisis and have had profound social consequences.

The energy crisis triggered a chain of effects, including high inflation and a decline in living standards (Table 1). The highest inflation rate of 28.62% was recorded in 2022, and in this year, real disposable incomes fell by 5.80% and real consumption expenditures by 5.05%. In 2024, although inflation was no longer as high, the real level of consumer spending still fell.

Table 1. Evolution of disposable income growth, consumption expenditure growth, and inflation

	2020	2021	2022	2023	2024
Growth rate of disposable incomes, %	7.50	13.35	21.15	15.59	7.49
Growth rate of real disposable incomes, %	3.55	7.84	-5.80	1.40	2.68
Growth rate of consumption expenditures, %	0.17	8.90	22.12	14.45	3.73
Growth rate of real consumption expenditures, %	-3.52	3.61	-5.05	0.41	-0.91
Annual inflation rate, %	3.82	5.11	28.62	13.99	4.68

Source: *author's calculations using National Bureau of Statistics data, 2025.*

The crisis had a significant impact on all households (Figure 1), with the most vulnerable groups being hit the hardest. Average monthly real consumption expenditures per person decreased in all five quintiles. However, in the case of quintile I, the decrease continued in the following years, 2023 and 2024.

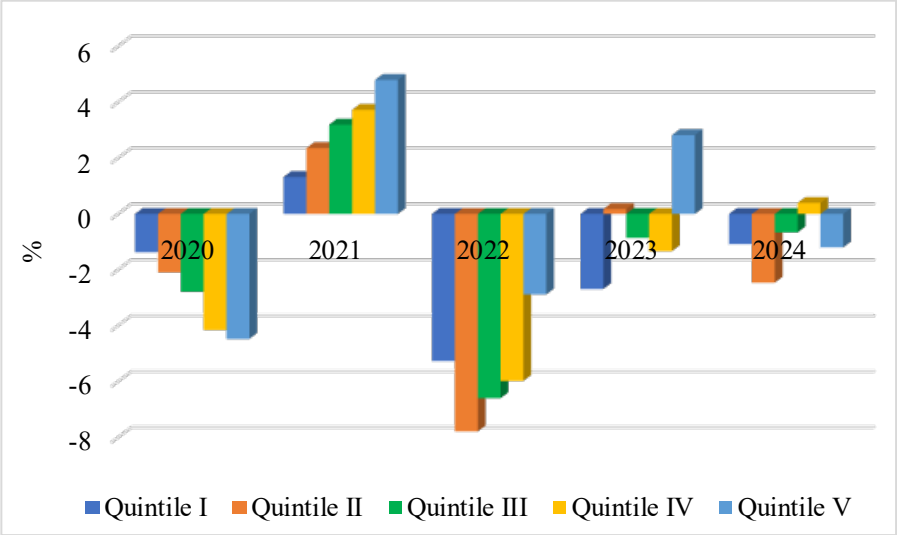

Figure 1. Evolution of the growth rate of real consumption expenditures by quintiles.
Source: *author's calculations using National Bureau of Statistics data, 2025.*

The significant increase in energy prices led to a rise in the price index in 2022, which impacted the structure of average monthly consumption expenditures per person across quintiles. According to Table 2, food expenditures account for a significant share of the budgets of low-income households (quintile I), approximately 57%. Furthermore, the share of expenditures on housing, water, electricity, and gas increased from 16.3% in 2019 to 17% in 2022. The impact of the energy crisis has had a long-term effect; the share of energy consumption in household expenditures in quintile I continued to grow in subsequent years. In 2024, it was 18.6%. The increase in the share of these two expenditure groups occurred due to a decrease in the share of expenditures on clothing and footwear, as well as on healthcare and education. Paradoxically, according to Table 2, households in quintile V spend 14.7% of their total expenditures on housing, water, electricity, and gas, and 13.1% on transportation in 2024, which in each case constitutes over 10% of their total expenditures. According to the Ten-Percent Rule, even some wealthy citizens are energy vulnerable. The analysis of the expenditure structure confirms the energy vulnerability of all population segments.

Table 2. Structure of consumption expenditures, average monthly per capita, by some expenditure group and quintiles

	2019	**2020**	**2021**	**2022**	**2023**	**2024**
Food and non-alcoholic beverages						
Quintile I	55.2	57.3	57.3	56.9	55.5	54.9
Quintile II	50.0	52.4	52.0	51.8	50.0	51.1
Quintile III	46.0	49.0	48.0	47.3	45.7	46.5
Quintile IV	41.5	44.2	43.0	42.2	41.5	41.5
Quintile V	30.7	33.9	31.2	30.3	29.2	29.1
Clothing and footwear						
Quintile I	8.0	7.6	6.9	6.9	6.8	6.9
Quintile II	9.0	8.3	8.9	7.6	7.7	7.1
Quintile III	9.7	8.8	9.1	8.4	8.2	8.2
Quintile IV	9.5	9.5	10.1	9.1	8.0	7.7
Quintile V	10.4	9.0	9.0	8.7	7.8	7.9
Housing, water, electricity and gas						
Quintile I	16.3	16.4	16.5	17.0	18.8	18.6
Quintile II	17.1	17.0	16.7	17.7	19.4	19.5

Quintile III	17.6	17.1	16.4	17.9	20.0	19.2
Quintile IV	16.7	16.6	16.0	17.3	18.9	18.5
Quintile V	14.9	15.0	13.3	14.4	15.0	14.7
Transport						
Quintile I	2.3	1.9	2.3	2.4	2.4	2.2
Quintile II	3.3	2.9	2.6	3.7	3.6	3.0
Quintile III	4.0	3.2	4.1	4.4	4.3	4.2
Quintile IV	5.1	4.7	5.1	6.5	5.5	5.2
Quintile V	9.5	8.8	10.8	11.7	11.0	13.1
Health and education						
Quintile I	3.9	2.6	3.1	2.9	2.8	2.4
Quintile II	4.2	3.3	4.3	3.5	3.5	3.1
Quintile III	5.0	4.6	4.5	4.3	3.8	4.1
Quintile IV	6.4	5.8	6.0	5.3	5.5	5.7
Quintile V	8.3	7.0	9.7	8.6	7.7	8.1

Source**:** *author's calculations using National Bureau of Statistics data, 2025.*

The burden of energy poverty is distributed unevenly. The most striking gap is between urban and rural households (Figure 2), which has widened and reached 3.5 percentage points by 2022. The energy poverty rate (TPR) in rural areas was 18.1%, while in urban areas it was 14.6% in 2022. This gap reflects not only income disparities but also structural differences in energy consumption and the effectiveness of public policy.

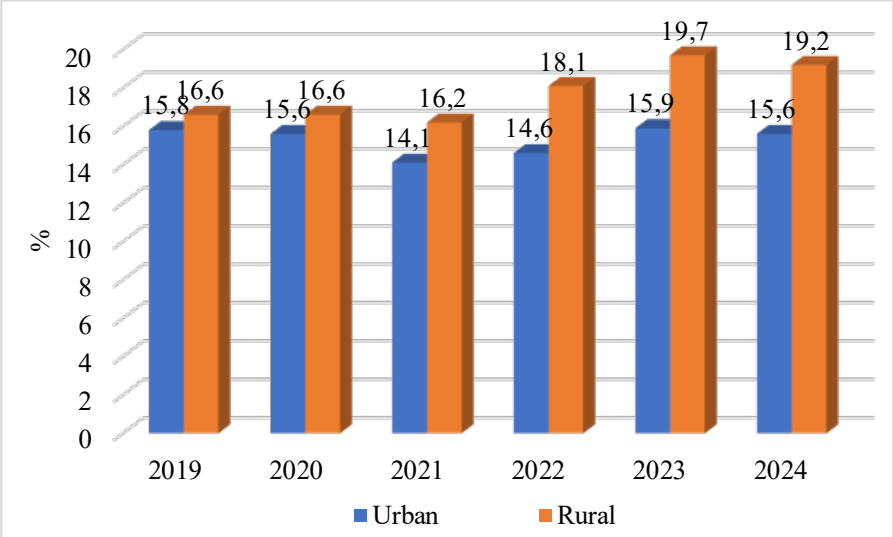

Figure 2. Evolution of the share of housing, water, electricity, and gas in consumption expenditures by areas.

Source: *author's calculations using National Bureau of Statistics data, 2025.*

The reason for this disparity lies in the fact that the Moldovan government's "Help with the meter" compensation policy has proven more effective for households connected to centralized gas networks and district heating, which is typical in cities. In rural areas, where some households rely on solid fuels for heating, the compensation mechanism is less effective. As a result, the urban population received greater support, while rural residents remained in a significantly more vulnerable position. Due to the increasing share of expenditures on food and energy resources, rural households were forced to reduce their expenses on health and education (Figure 3).

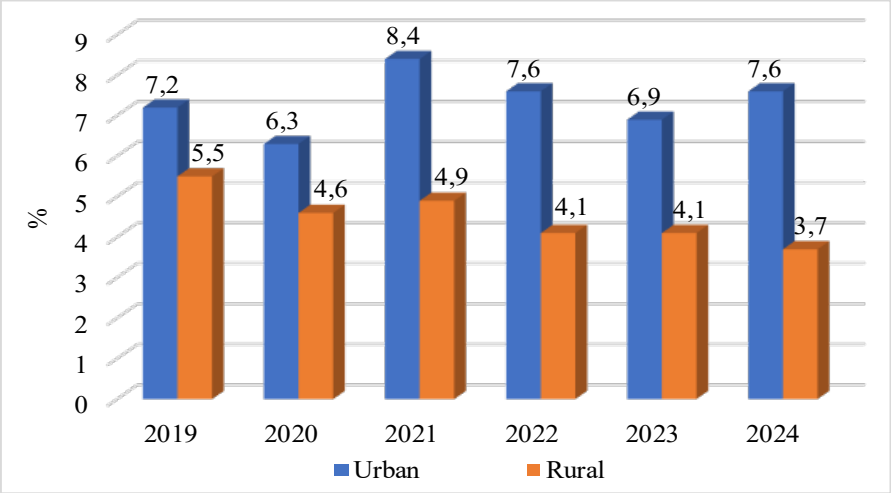

Figure 3. Evolution of the share of health and education in consumption expenditures by areas.
Source: *author's calculations using National Bureau of Statistics data, 2025.*

Energy poverty harms public health due to the need to save money and live in cold, unheated, and damp rooms. It exacerbates respiratory, urological, psychological, and other illnesses, including chronic illnesses. Stress caused by worrying about unpaid bills is a trigger for psychological illnesses. Furthermore, energy poverty hinders the healthcare system's ability to address the challenges of limited access to energy, especially in rural areas. Ultimately, it hinders the provision of quality medical services.

The deterioration in the well-being and living standard of the population had the following effect: in 2022, the number of emigrants (Figure 4) increased, as Moldovan citizens decided to move to countries with a higher quality of life.

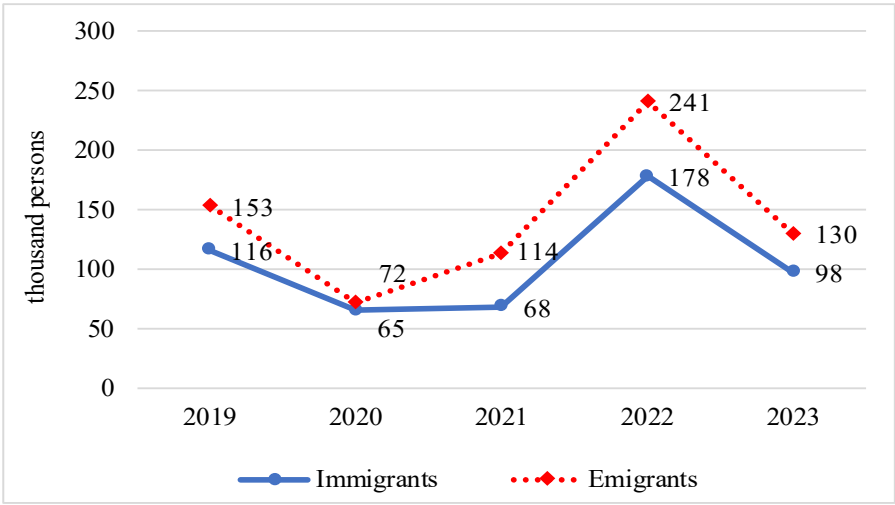

Figure 4. Evolution of immigrants and emigrants.
***Source*:** *author's calculations using National Bureau of Statistics data, 2025.*

To mitigate the impact of the energy crisis on the country's population, the Energy Vulnerability Reduction Fund (EVRF) and the Residential Energy Efficiency Fund (REEF) were created. According to a report by the United Nations Development Programme (UNDP) in Moldova, "the level of energy poverty has decreased thanks to the compensation program from 83.5% to 71.8% during the 2021-2022 cold period, from 90.0% to 83.3% in 2022-2023, and from 86.4% to 76.4% in 2023-2024" (UNDP, 2025).

CONCLUSIONS

This study demonstrates that the worsening of energy poverty in Moldova is a cumulative result of the country's high dependence on imported energy resources, the low incomes of most citizens, and the impact of external shocks, such as the energy crisis. The social consequences of energy poverty are systemic, affecting not only the population's living standards but also financial stability and health. The implementation of the EVRF and REEF compensation programs partially reduced energy poverty, but state assistance was more significant for the urban population than for the rural population. In addition to the widening energy poverty gap across geographic areas, other gaps exist. The most energy-poor households are those headed by people with disabilities, the elderly, women, and families with three or more children.

To reduce energy poverty, it is recommended to establish a direct link between the EVRF and REEF programs. The EVRF program identifies households with the highest energy vulnerability. These households should automatically receive access to technical and financial assistance under the REEF program. Furthermore, it is necessary to reduce the gap between the assistance provided to rural and urban populations. To this end, alternative support instruments must be developed. For example, rural populations could be provided with vouchers for the purchase of solid fuels or subsidies for the purchase of energy-efficient heating systems.

No program, strategy, or reform can be implemented without investment, so it's essential to attract investment in increasing energy efficiency. Grants and loans on preferential terms should be made available to vulnerable households to enhance the energy efficiency of their homes.

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