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The Effects of the Energy Crisis on Citizens in North Macedonia

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Abstract

This paper examines the socioeconomic effects of the recent energy crisis on citizens in the Republic of North Macedonia, focusing on household living standards, affordability of basic services, and perceptions of government support measures. Drawing on primary data from a nationwide survey and supported by secondary statistical indicators, the study identifies significant negative impacts on household budgets, energy affordability, transportation, food security, and overall quality of life. The findings reveal pronounced disparities across income levels, regions, age groups, and educational attainment, underscoring the need for targeted and transparent policy interventions to mitigate energy poverty and protect vulnerable populations.

This study contributes to the existing literature in three key ways. First, it provides original survey-based evidence on the household-level socioeconomic effects of the energy crisis in a small, import-dependent economy. Second, it highlights the unequal distribution of impacts across income groups, regions, and demographic characteristics, demonstrating how the crisis intensified pre-existing vulnerabilities. Third, it offers policy-relevant insights into citizen perceptions of government support measures, emphasizing the importance of transparency, targeting, and long-term energy resilience.

Keywords: Energy crisis, living standards, energy poverty, households, North Macedonia

Introduction

Energy is a fundamental input for modern life, underpinning household welfare, access to essential services, and social participation (Carvalho & Santos, 2024). Disruptions in energy supply or sharp price increases therefore have far-reaching consequences (Liu et al., 2025; Cao et al., 2020). The recent global energy crisis has affected many countries, but its effects have been particularly acute in small, import-dependent economies such as the Republic of North Macedonia.

North Macedonia relies heavily on imported energy and fossil fuels, making households vulnerable to external shocks. As energy costs rose, citizens faced growing pressure on disposable incomes, forcing changes in consumption patterns and lifestyle choices. This paper focuses on the lived experiences of citizens during the energy crisis, providing a citizen-centred analysis of its socioeconomic consequences.

Literature Review

Recent literature emphasizes that the post-2021 energy crisis has had strongly regressive effects, disproportionately affecting low-income households, exacerbating existing energy poverty and significantly affecting the energy market and market agents (Baumeister et al., 2022).

Contextual Background and Structural Vulnerabilities

North Macedonia's energy system is highly import-dependent, with over 60% of consumption sourced from abroad (Deutsche Gesellschaft für Internationale Zusammenarbeit [GIZ], 2020). Electricity generation relies heavily on lignite and imported fuels, exposing the system to international market volatility. Since 2021, global energy markets have experienced disruptions driven by geopolitical conflicts and post-pandemic demand surges. These shocks amplified domestic vulnerabilities, forcing state-owned producers to purchase costly electricity and increasing fiscal pressure due to regulated, below-market electricity prices and subsidies (International Monetary Fund [IMF], 2023).

Economic Effects on Households

The primary economic effect of the crisis has been the sharp increase in electricity and heating costs, with low- and middle-income households disproportionately affected. Inflation in energy and food prices has significantly reduced purchasing power. Nearly one-third of the population cannot adequately heat their homes,

highlighting persistent energy poverty. Temporary relief measures—including VAT reductions and targeted subsidies—helped mitigate immediate pressure but added to fiscal burdens.

Social and Public Well-Being Impacts

Rising energy costs forced households to make difficult trade-offs between heating, food, and other essentials. Many resorted to wood or coal for heating, worsening air pollution. Literature indicates increased financial stress, food insecurity, and social dissatisfaction, with energy prices contributing to protests and declining public trust in government (Macedonian Association for Public Policy [MAPP], 2023).

Government policy responses included the subsidized electricity payments for low-income households, temporary VAT reductions on energy products and support for household solar and energy efficiency measures. While these provided short-term relief, experts agree that long-term resilience requires structural reforms—greater energy diversification, renewable investment, and efficiency improvements (Organisation for Economic Co-operation and Development [OECD], 2022).

Thus, the findings in the literature suggest that rising energy and food costs strained budgets, especially for vulnerable groups and one-third of the population struggles to heat their homes adequately (Petreski & Petreski, 2023).

Methodology

Research Design

This study employs a quantitative, cross-sectional research design based on a structured household survey to examine the socioeconomic effects of the energy crisis on citizens in the Republic of North Macedonia. The research adopts a citizen-centred perspective, focusing on changes in household living standards, affordability of essential goods and services, behavioural adaptations, and perceptions of government support measures during the crisis period.

Data Collection and Sampling

Primary data were collected through a nationwide survey conducted between [March-September–2023] among 500 adult respondents across all eight administrative regions of North Macedonia. A stratified sampling approach was used, with strata defined by region and settlement type (urban/rural), in order to ensure

geographic and socioeconomic representativeness. The Skopje region accounts for a larger share of respondents, reflecting national population distribution.

Participation was voluntary, and respondents were informed about the purpose of the study. Anonymity and confidentiality were ensured in accordance with ethical research standards.

Survey Instrument

The questionnaire consisted of closed-ended questions organized into four main sections:

1. **Demographic and socioeconomic characteristics** (age, gender, education, income level, region, settlement type);
2. **Household economic impacts** (changes in energy expenditures, ability to pay utility bills, food affordability, and transportation costs);
3. **Behavioural and lifestyle adjustments** (changes in consumption patterns, heating behaviour, leisure activities, and coping strategies);
4. **Perceptions of government support measures** (effectiveness, transparency, accessibility, and adequacy of subsidies and assistance programs).

Responses were primarily measured using categorical variables and Likert-scale items to capture the intensity of perceived impacts.

Analytical Methods

The analysis combines descriptive statistical methods (frequencies and percentages) with comparative analysis across income groups, age categories, education levels, and regions. Survey findings are interpreted in conjunction with secondary data from national statistical sources and international institutions to contextualize household experiences within broader trends related to energy affordability, inflation, and energy poverty.

Limitations

The study relies on self-reported data, which may be subject to recall bias and subjective perceptions. Additionally, the cross-sectional design captures conditions at a specific point in time and does not allow for causal inference or longitudinal assessment of impacts.

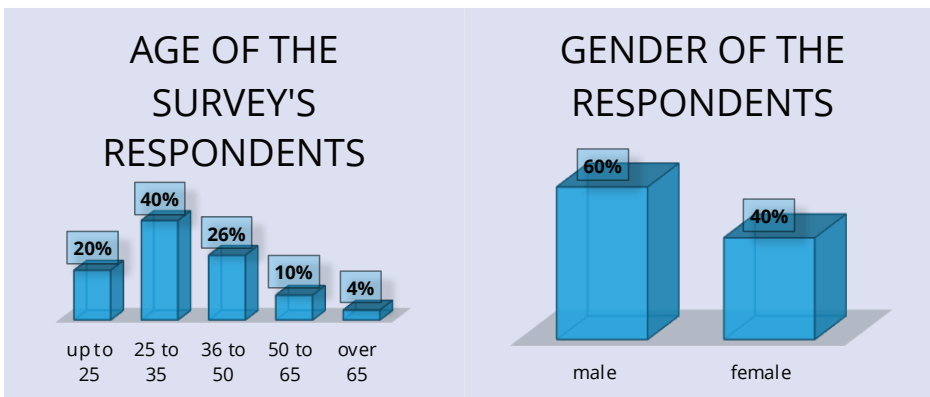
Empirical Results

Survey Sample and Coverage

The empirical analysis is based on a nationwide survey of 500 citizens conducted across all eight administrative regions of North Macedonia. The sample includes both urban and rural households, with a higher concentration in the Skopje region, ensuring geographic and socioeconomic representativeness. The demographic structure reflects economically active population groups, with a predominance of respondents aged 25–50 years.

Chart 1.

Age and Gender of The Respondents



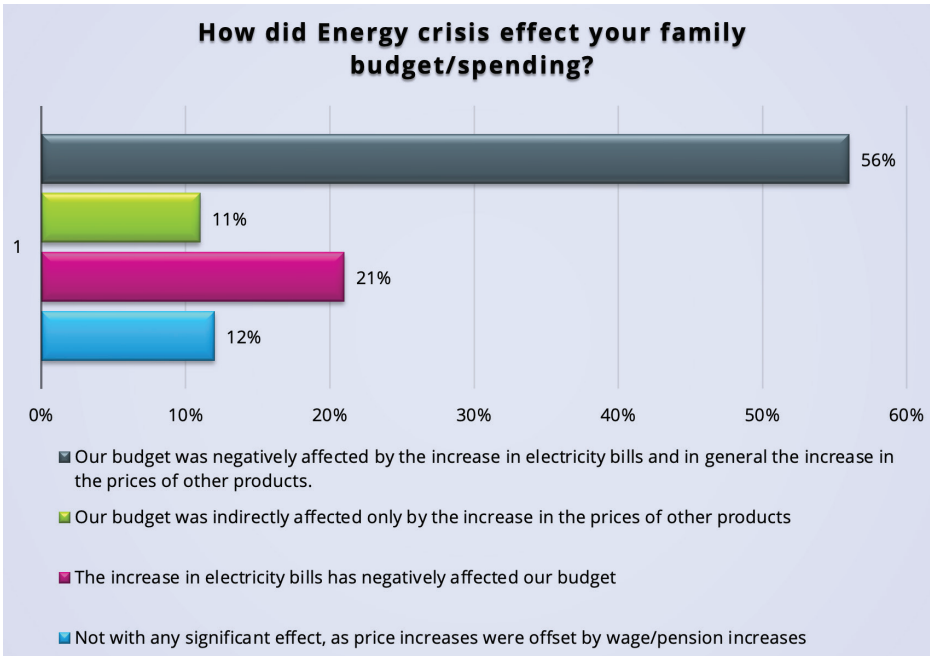
Source: Own research

Impact on Household Budgets

The energy crisis exerted a strong negative pressure on household finances. As shown in Chart 2, 56% of respondents reported a significant negative impact on their family budget, while an additional 28% experienced moderate effects. Only 16% reported minor or no impact, indicating that the crisis affected the vast majority of households. These results confirm the widespread nature of energy-related financial stress, particularly among low-income households and pensioners.

Chart 2.

Effects of Energy Crisis on Family Budget Spending



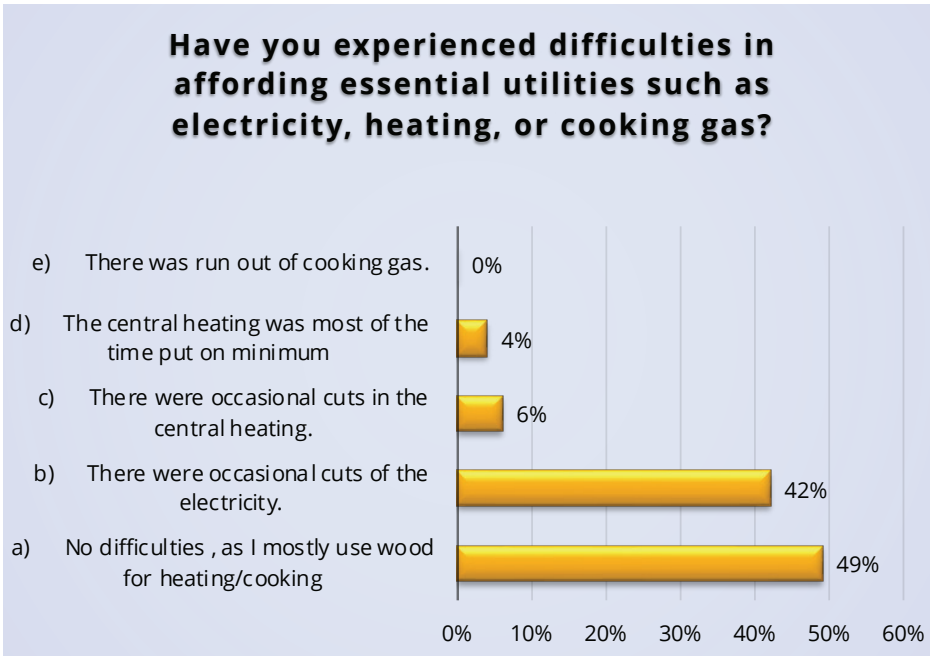
Source: Own research

Affordability of Essential Goods and Services

Difficulties in affording basic necessities intensified during the crisis period. According to results summarized in (Chart 3), 42% of respondents faced challenges in paying for electricity and heating, 76% struggled with food and basic goods, and 78% reported increased transportation costs. These findings demonstrate that rising energy prices generated indirect inflationary effects across household consumption, extending beyond utilities to core living necessities.

Chart 3.

Difficulties in Affording Essential Utilities



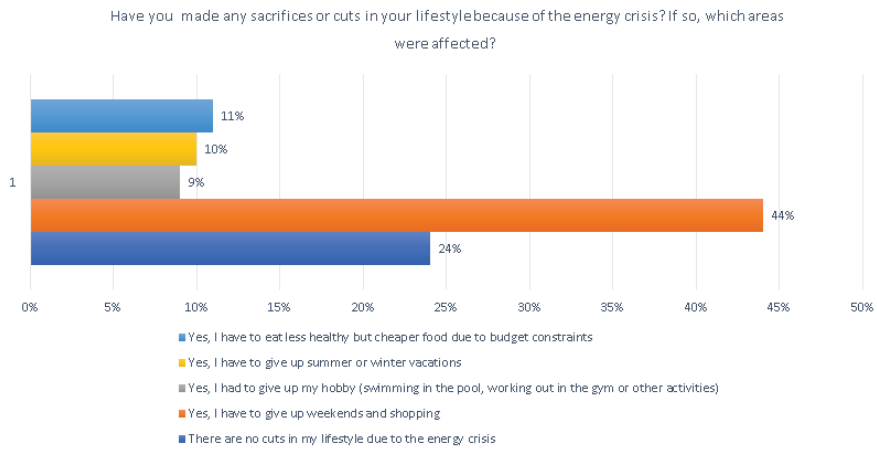
Source: Own research

Lifestyle Adjustments and Social Well-Being

Households responded to financial pressure by adjusting consumption patterns and lifestyle choices. As summarized in (Chart 4), 44% of respondents reduced leisure and social activities, while an equal share cut non-essential spending. These behavioral changes reflect not only economic hardship but also declining social participation and overall well-being.

Chart 4.

Sacrifices for cutting lifestyle because of energy crisis



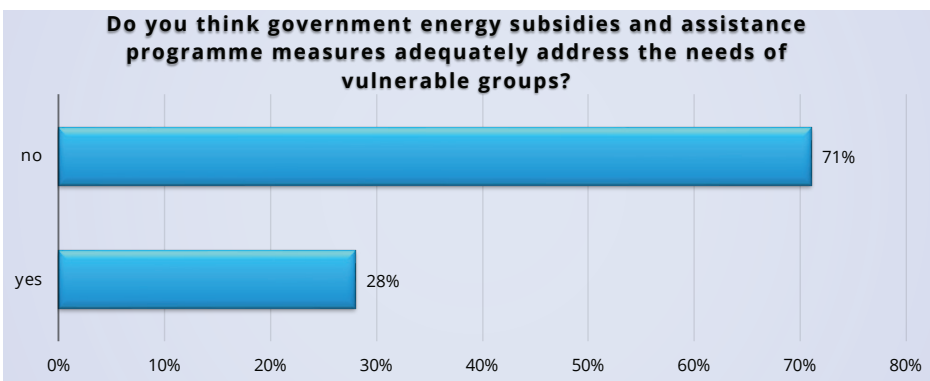
Source: Own research

Inequality and Vulnerable Groups

The survey reveals pronounced inequalities in the distribution of crisis impacts. (Chart 5) indicates that low-income households, older citizens (50–65 and 65+), individuals with lower educational attainment, and residents of rural and semi-rural areas were the most affected. These findings confirm that the energy crisis amplified pre-existing socioeconomic vulnerabilities.

Chart 5.

Inequality and Vulnerable Groups



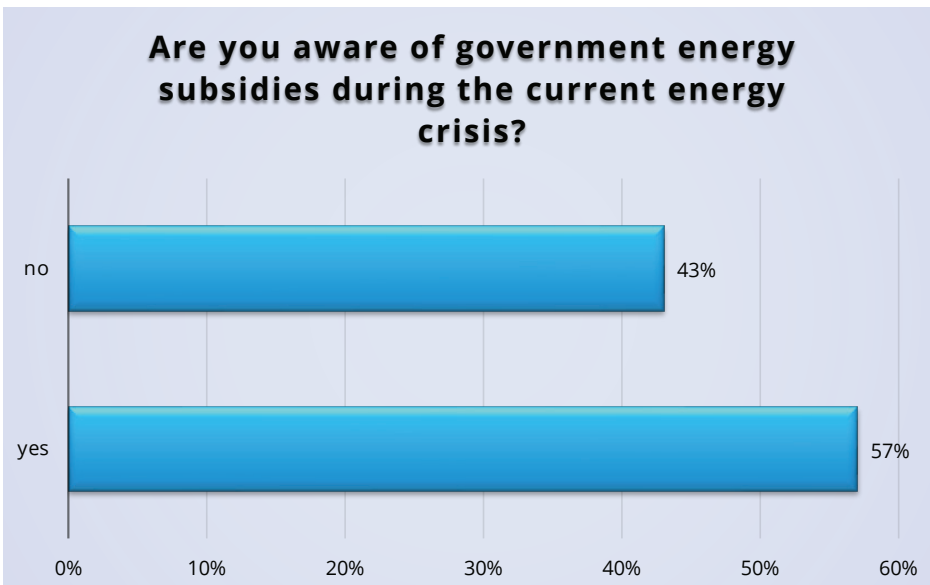
Source: Own research

Perceptions of Government Support Measures

Public perceptions of government interventions were largely negative. As shown in (Chart 6), 47% of respondents assessed subsidies as ineffective, while dissatisfaction with transparency and access reached 84%. Moreover, 71% of respondents believed that support measures failed to adequately address the needs of vulnerable groups. These perceptions highlight a significant gap between policy design and citizen expectations.

Chart 6.

Perceptions of Government Support Measures



Source: Own research

Inequality and Differentiated Impacts

Regional Differences

Urban residents (especially in Skopje) faced higher bills but benefited more from subsidies and reliable services. Rural areas suffered more from unreliable supply, limited heating options, and poorer access to government support.

Socioeconomic Factors

- Income: Low-income households faced the greatest strain.
- Age: Older citizens, especially pensioners, were highly vulnerable.
- Education: Higher-educated citizens were more aware of subsidies and energy-saving options; lower-educated groups were less informed.

These results confirm that the crisis deepened existing social and economic inequalities. Below are presented the tables related to the survey above and secondary sources:

Table 1.

Synthesis of Key Literature Findings

Impact Area	Evidence from Literature
Household Economics	Rising energy and food costs strained household budgets, especially for vulnerable groups (IMF, 2023).
Energy Poverty	One-third of the population struggles to heat homes adequately (OECD, 2022).
Fiscal Cost	Subsidies and crisis measures increased public expenditures (IMF, 2023).
Social Well-Being	Higher living costs contributed to public dissatisfaction and protests (MAPP, 2023).
Policy Effectiveness	Relief measures were temporary; structural reforms are required (OECD, 2022).

Table 2.

Impact of Energy Crisis on Household Budgets (Citizen Survey, n=500)

Level of Impact	Percentage of Respondents
Significant negative impact	56%
Moderate impact	28%
Minor or no impact	16%

Table 3.

Difficulties in Affording Essential Goods and Services

Category	Respondents Reporting Difficulty
Electricity and heating bills	42%
Food and basic goods	76%
Transportation costs	78%

Table 4.

Perceptions of Government Support Measures

Assessment	Percentage of Respondents
Subsidies considered ineffective	47%
Dissatisfied with transparency and access	84%
Support failed to reach vulnerable groups	71%
Overall mechanisms not effective enough	78%

Table 5.

Company Responses to Energy Crisis (n=80)

Company Action	Percentage of Companies
No energy saving initiatives	36%
Energy efficiency improvements	34%
Electricity savings measures	20%
Loans or alternative energy investments	10%

Perceptions of Government Measures

Public perceptions of energy support measures were largely negative. Nearly half of respondents (47%) viewed subsidies as ineffective, and 78% found government actions insufficient. Dissatisfaction was particularly high regarding transparency (84%) and coverage of vulnerable groups (71%). Respondents called for clearer communication, better targeting, and fairer access to assistance.

Discussion

The energy crisis significantly deteriorated living standards in North Macedonia. Beyond economic losses, it affected food security, psychological well-being, and social stability. Citizens' limited trust in government responses underscores the need for improved transparency and long-term resilience.

Short-term fiscal measures, though helpful, are insufficient to address structural vulnerabilities. Stronger investments in renewable energy, improved energy efficiency, and social protection mechanisms are essential for sustainable recovery.

Conclusion and Policy Implications

As a country heavily reliant on energy imports and facing challenges in diversifying its energy sources, North Macedonia is particularly vulnerable to fluctuations in energy prices and supply disruptions. The energy crisis created socioeconomic disparities, affecting households, businesses, and public services alike. The research is aimed to explore how the energy crisis has reshaped daily life, economic stability, and future prospects in North Macedonia, emphasizing the critical need for sustainable energy solutions to safeguard the nation's standard of living.

The aspects of living standards most affected by the energy crisis include increased household expenditures, challenges in utility affordability and reliability, heightened transportation costs and disruptions, changes in lifestyle and consumption patterns, and widespread dissatisfaction with government responses. These impacts vary across demographic groups but collectively highlight significant economic strain and dissatisfaction among the population of North Macedonia.

Conducted survey on population indicate varying degrees of impact from the energy crisis across different regions, income ranges, educational levels, and age groups in North Macedonia. Urban areas like Skopje may face different challenges compared to rural regions, with disparities in access to subsidies, transportation disruptions, and coping strategies. Higher income and education levels correlate with better coping mechanisms and awareness of available support, while lower-income groups and those with lower education levels tend to be more affected and less informed about support measures. Addressing these disparities requires targeted policies that consider regional differences and socioeconomic factors to effectively mitigate the impact of future energy crises on living standards.

The survey highlights that the energy crisis in North Macedonia has indeed had a significant negative impact on companies across various sectors and regions. Increased energy costs, supply chain disruptions, and lack of government support have affected profitability, operational efficiency, and product availability. The dissatisfaction among businesses regarding government measures underscores the need for more transparent and effective policies to mitigate future energy crises. Addressing these issues comprehensively is crucial not only for stabilizing businesses but also for indirectly improving the standard of living for the population by ensuring economic stability and affordable access to goods and services.

Governments can implement a range of measures to help population and companies to mitigate the negative impacts of an energy crisis on population's standard of living and companies' performance and profitability.

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