EVOLUTION OF ENERGY VULNERABILITY COMPENSATION SYSTEM IN THE REPUBLIC OF MOLDOVA

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Abstract

Gas prices' high increases hit hard the population of Republic of Moldova which determined the government to implement a system of compensations based on energetic vulnerability of the household. Each household is ascribed a category of energetic vulnerability, on the basis of its income and its expenditures, in particular, energy expenditures. It includes compensations on various energy sources: gas, electricity, centralized heating system. In this paper the particularties of this system are described, the data on last heating seasons are analyzed, changes in the current heating season are discussed. Although costly, the program of compensations for household energy expenditures during heating season is still helpful for the socioeconomic support of population of Republic of Moldova.

Keywords: *energetic vulnerability, resilience, household, expenditure, income, compensation, Republic of Moldova.*

JEL: *H53, H75, I31, I38.*

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Introduction

A strong resilience of population at challenges of any type is an indicator of sustainability of the society the part of which is that population. Accumulated crises, medical, economic, social or of other nature, test the resilience or ability to cope with challenges of a society. In order to support the population to maintain and increase their resilience, usually the government implements corresponding measures in this regard.

The Republic of Moldova's population was severely impacted by the recent sharp rise in gas prices, which prompted the government to establish a compensation scheme based on the household's energy vulnerability [3]. Based on its income and expenses, especially energy costs, each home is assigned to a category of energetic vulnerability. It covers payments for a range of energy sources, such as electricity, gas, and central heating. This paper describes the specifics of this system, analyzes data from the previous heating season, discusses changes from the current heating season.

1. Literature review

Even though there are studies that analyze partly energy vulnerability, compensations or energy resources peculiarities without regard to the socioeconomic support (specifically for gas following works can be consulted: [8-10]) there is a lack or insufficiency of works in the area of energy vulnerability compensation systems.

Hachem-Vermette & Singh (2023) [11] in a study examine how neighbourhood design can mitigate energy vulnerability in the event of power outages. The design of a neighborhood encompasses the many building kinds and their purposes, in addition to the land use and overall spatial layout of the neighborhood. They discover that schools and other buildings with shelter energy intensities of 9.5 kWh can be given priority during power outages when it comes to evacuation. The shelter to population ratio can be greatly raised by circa 80% by changing the normal design requirements for shelters, which call for 5.6 m^2/person to 4 m^2/person. This, according to them, will improve community resilience.

Noka & Cludius (2021) [12] in their study provided a general understanding of the European Union's strategies and experiences regarding energy poverty, energy vulnerability and energy affordability. In recent years, the European Union has made efforts to include energy vulnerability

and poverty in its energy and climate policies. However, in the last five years this effort has become more important, for example through the Just Transition Mechanism in the Green Deal and more recently through the proposal of the Social Climate Fund. An essential element of the system is energy efficiency. In terms of the European Union's energy policy, energy efficiency is a key area in which households facing energy deficiency are addressed. The Member States of the European Union take responsibility for implementing energy vulnerability and poverty policy, despite the fact that the European Union is responsible for the energy vulnerability and poverty strategy at a higher level. Particularly evident is how energy poverty indicators are developed at EU level and applied to varying degrees in each of the Member States, which shows how these issues are addressed in different Member States. Discussions of energy poverty are placed in the broader context of the distributional effects of energy and climate policy. These costs often place a greater burden on low-income households and other vulnerable consumers. Countries themselves primarily deal with the effects of unwanted distribution, and there are a number of measures and tools available to help households that are vulnerable, such as those that have a low energy rate. This includes ensuring a socially fair implementation of energy and climate policy itself, as well as protecting vulnerable households through regulatory tools, ensuring the participation of a wide range of households in the energy transition and increasing household resilience to changes in costs and prices through energy efficiency and direct financial support. Energy poverty has become increasingly important in national decision-making as a result of EU energy and climate policy. From measuring and capturing levels of energy poverty to implementing tools and measures to mitigate and combat the problem, as well as evaluating the success of these policies, a wide range of approaches has emerged in energy and social policy.

When prices peaked at the end of 2021, Sweden had a problem with energy poverty, according to von Platten's (2022) [14] study on the subject. Flexibility capital can be used to characterize a household's capacity to avoid price peaks. Geographical and sociodemographic factors affect vulnerability and energy flexibility. The notion of flexibility capital was incorporated into the energy vulnerability framework because it affects households' capacity to avert price peaks and mitigate the financial consequences of energy poverty. The notion of flexibility capital bears

significance for the allocation of advantages and drawbacks in forthcoming intelligent energy systems that rely primarily on demand flexibility. The self-perceived flexibility capital and the self-perceived ability to pay for heating of Swedish households could be utilized in a special framework to look into and identify the kind and level of dangers related to energy poverty. Integrating energy vulnerability and flexibility capital into homes could help achieve this. It was discovered that in addition to household income, other variables that affected self-perceived ability to pay for heating included a person's health and where they lived in the city. This supports the energy vulnerability idea. Higher levels of digital inclusion and the presence of more adults in the household were found to positively correlate with longer periods of time spent at home, such as retirement or unemployment. It has been scientifically demonstrated that having children in the home has a detrimental impact on both gender dynamics of flexibility—where women are seen as more flexible than men—and flexibility capital [1-2].

2. Data and methodology

As sources of data for the energy vulnerability compensation system were used the Ministry of Labour and Social Protection of the Republic of Moldova, the website of the system platform and the legislative and normative acts of the Republic of Moldova regarding this energy vulnerability compensation system. It should be noted that there are available data for the first heating season since the implementation of the program, but since the second heating season didn't yet finish no publicly available data can be found on the characteristics of the beneficiaries, but the data of tariffs in force are available so can be used for comparison. As methods of research induction, deduction, statistical analysis of data were used.

3. Analysis of results

In an effort to mitigate the effects of the increase in energy resource prices, the "Help at the meter" („Ajutor la contor") initiative was introduced by the Government of Republic of Moldova in October 2022 for the heating season 2022-2023 (first heating season) [13]. Additionally, the government provides households heat with wood or coal with a monetary payout in addition to reimbursement on the invoice for natural gas, thermal energy,

and electricity. The Energy Vulnerability Reduction Fund (EVRF) is supported by the state budget as well as by contributions from the US, the EU, and other development partners, from which the compensations are given out, totalling 3443.5 million MDL. In the first season all household consumers were assigned a degree of energy vulnerability whether the household consumers did register or not in the Informational System „Energy Vulnerability" (ISEV) („Vulnerabilitate Energetică"), which was created specifically in the form of a website and also as smartphone application for registering the beneficiaries of compensations for the used energy, even though they were encouraged to register.

The Government Program „Help at the meter" for the year 2022 had funds of 870 million MDL; this covered compensations for the month of November 2022, paid in December 2022; for the year 2023 - 5 billion MDL; this covered compensations for the period December 2022 to March 2023, which was paid in 2023, as well as compensation for November 2023.

There are two ways of writing the request for compensation, to create an online account on the ISEV website (https://compensatii.gov.md/) or to get help in creating one through the support of a social worker or librarian. The personal cabinet on the ISEV platform, created after registering an account contains the energy vulnerability category and instructions for assigning it. The decision about an applicant's eligibility for monetary payment can be viewed in their personal cabinet. The beneficiary can get in touch with the registrar if he/she applied through them to find out the level of vulnerability set or if he/she qualifies for the financial payout.

In the second heating season (2023-2024) only registered household consumers are assigned a category of energy vulnerability and given compensations of corresponding sizes. For each season household consumers, whether or not they registered in the system the previous year, must submit the online application by November 25, in order to be eligible for energy compensation. During the colder months of November through March, energy compensations are given based on the household's energy vulnerability category: extreme, very high, high, average, low, primary, and without energy vulnerability. During the 2023–2024 winter season, the program offers two forms of reimbursement: financial payments for homes that heat with wood, coal, or other solid fuel, and invoice-based reimbursements for natural gas, thermal energy, and electricity. The government has defined characteristics such as income, number of family

members, share of home energy expenditure, type of heating system utilized, etc., which are used to automatically allocate energy vulnerability categories [4-6]. Due to high energy prices in 2022, more than 70% of the population fell into the second category of vulnerability - "very high".

Owing to lower energy prices in 2023 compared to previous one, it is usual for some people to be in a more favorable category this year than they were before. However, the degree to which energy vulnerability categories, volumes, and compensation rates have been adjusted will ensure, on the one hand, that support for low-income households is more prevalent and, on the other hand, that the majority of beneficiaries of compensation will receive energy at a price comparable to that of the previous year. During this cold season, a similar tariff will be paid by almost 90% of household consumers who fall into the extreme-average vulnerability groups as they did in the previous year. For instance, in the scenario mentioned above, they will actually pay less for electricity than they did in the previous year.

If the beneficiary's bank account is listed in the National House for Social Insurance information system, beneficiary will receive a transfer of 800 MDL monthly payment to it via the government-run electronic payment service MPay. Alternatively, the payment can be picked up in person from any postal office in the country on the 15th of each month, provided the beneficiary presents an identity document.

The person is not qualified for energy compensation in the following situations: The non-vulnerability test has not been completed by the beneficiary, and it requires the following requirements: According to data held by the authorized institution on November 1 of this 2023, the household members own real estate shares with a cumulative cadastral value greater than 4 million MDL; in the year prior to this one, the household members registered income from dividends greater than 1 million MDL.

In the event that it is determined that the energy vulnerability category was incorrectly determined due to circumstances outside the applicant's control, the energy suppliers recalculate the compensations using the updated vulnerability category found in the "Energy Vulnerability" Information System for the months in which the errors were discovered. I

The applicant who pays child support must indicate its average value for the month of May through October of 2023 on the application. The

average amount is deducted from the global monthly income (GMI) in order to determine the household's energy vulnerability category and determine the disposable income for energy payments (DIEP). It is not necessary for applicants who do not pay child support to amend their application if they have received an extra verification notification. In this instance, the computation of the degrees of vulnerability will be modified appropriately, and this sum will not be subtracted from the total monthly revenue. The beneficiary has until the 25th of the next month to see the registrar if he/she was unable to do so within the allotted time. He/she will be able to receive the previous month's compensation retrospectively if the system finds that he/she are qualified for financial reimbursement once the registrar validates his/her application. In 2023 the aid for the year's cold season was incorporated into the pay structure. Previously, households had to register with the social worker and undertake home checks in order to get aid for the colder months of the year.

The applicants who heat with wood but did not receive cold period aid last year (2022) or were not determined to be eligible for cold period aid at least for November of 2023 must visit the local social worker, librarian to validate the request in order to ensure a level of fraud prevention comparable to that of prior years. If the household is eligible for compensation, the application is evaluated by the system following the registrar's validation.

The information submitted by applicants is carefully verified to ensure a just distribution of compensation. The number of household members as well as the income and expenses of the household are examined. To ensure the accuracy of the data, the State Fiscal Service, the National House for Social Insurance, and other state institutions, as well as banks, credit bureaus, and other financial institutions, provide the authorities with access to information on the income of the individuals they hold. Additionally, families who satisfy specific requirements are automatically assigned to a reduced vulnerability group by the system.

The household may fall into the category of average vulnerability if any of the following applies: household consumers whose energy costs during the winter months exceed the cost of 350 m^3 of natural gas at the price set by the National Agency for Energy Regulation and effective as of November 15, 2018, including VAT; consumers with an energy cost for the household in the cold period of the year estimated equal to the cost of 175

m^3 of natural gas at the price approved by the National Agency for Energy Regulation in effect on November 15, 2018, inclusive of VAT, that indicated in the request a global family income of less than 25% of the estimated energy cost and for which no data regarding family income in state systems and information resources have been identified; household consumers of which the household's dividend income exceeded 300 million MDL in the previous year.

Families that do not use electricity as their primary source of heat are not entitled to get electricity reimbursement. Families with small children will receive additional compensatory help during the 2023–2024 cold season. Fixed amount child allowances granted by the National House for Social Insurance will not be included when determining the total family income in order to safeguard families with children. These benefits consist of the following: the state social allowance for children in the event of the loss of the breadwinner; the single allowance at the time of the child's birth (split into six); the monthly child care allowance; the monthly support allowance for twins or multiple children born from a single pregnancy. Additionally, the impact of the maternity allowance will be factored into the household's overall monthly income. The maternity allowance's income will be allocated based on the months during which it was determined and awarded for.

Individuals who failed to register on the compensatii.gov.md platform by November 25, 2023, will have the opportunity to do so in the future, but they will not be eligible for reimbursement for November 2023. Compensation will begin to be awarded the following month if the application was received after the 25th of the current month.

The beneficiaries will have the option to amend their request in two situations during the cold season: to add newborns to their application or to remove deceased individuals from their application that has been submitted to the system. The beneficiary won't be qualified for energy compensation in the case when although solid fuel is the primary source of heating in the home, he/she does not fit the definition of extreme or extremely high energy vulnerability; if natural gas is the principal energy source, and she/he falls into either the primary energy vulnerability or no vulnerability group. The average monthly volume of energy used by the family during the previous

year's cold period is multiplied by the non-compensated energy tariffs of this year to estimate the cost of energy during the cold season.

The amount of money available for energy payments is calculated by deducting the amount equal to the National Bureau of Statistics' minimum expense estimate from the total monthly income of the household, then reducing that amount by the energy costs incurred by the household. The calculating formula uses a differential application of this minimal expenditure threshold to identify the households with the greatest monthly expenditure:

- The minimum amount of expenses per application in an urban area is 4532.74 MDL, while in a rural area it is 3406.83 MDL.
- The minimum amount of expenses per applicant in a rural area with a severe impairment is 5110.24 MDL.
- The minimum amount of expenses per applicant in an urban area with a severe impairment is 6799.11 MDL.

*70% of the value of the aforementioned sums is deducted from each additional application (except from those with severe disabilities).

As a result, homes with people who live in metropolitan areas or who have severe disabilities are expected to bear greater expenses, and these households will receive higher compensation.

For natural gas the ”extreme” energy vulnerability category had a price paid within the ceiling in the current cold season of 12 MDL/m^3 (no such category in previous cold season), for ”very high” – 12.2 MDL/m^3 (12 MDL/m^3 in previous cold season), for ”high” – 12.4 MDL/m^3 (14 MDL/m^3 in previous cold season), ”average” – 12.6 MDL/m^3 (17 MDL/m^3 in previous cold season), ”low” – 17 MDL/m^3 (24 MDL/m^3 in previous cold season), ”primary” – regulated price/supplier price (no such category in previous cold season) [7]. For thermal energy the ”extreme” energy vulnerability category had a price paid within the ceiling in the current cold season of 1450 MDL/Gcal (no such category in previous cold season), for ”very high” – 1475 MDL/Gcal (1450 MDL/Gcal in previous cold season), for ”high” – 1500 MDL/Gcal (1700 MDL/Gcal in previous cold season), ”average” – 1525 MDL/Gcal (1950 MDL/Gcal in previous cold season), ”low” – 2100 MDL/Gcal (2500 MDL/Gcal in previous cold season), ”primary” – regulated price (no such category in previous cold season). For electricity (main heating source) the ”extreme” energy vulnerability category had a price paid within the ceiling in the current cold season of

1.54 MDL/kWh (no such category in previous cold season), for "very high" – 1.74 MDL/kWh (3.3 MDL/kWh in previous cold season), for "high" – 1.94 MDL/kWh (3.7 MDL/kWh in previous cold season), "average" – 2.14 MDL/kWh (regulated price in previous cold season), "low" – 2.34 MDL/kWh (regulated price in previous cold season), "primary" – 2.54 MDL/kWh or the regulated price if it is lower than the compensated price (no such category in previous cold season).

The Vulnerability Index is note by R%.

R% = Cost of energy in the cold period of the year (non-compensated)/Disposable income for the energy purchasing

R >90% - very high energy vulnerability;

R = 35% - 90% - high energy vulnerability;

R = 35% - 15% - average energy vulnerability;

R <15% - low energy vulnerability;

R <10% - non-vulnerable consumers.

Approximately 763 561 households applied for compensation through the Energy Vulnerability Information System (EVIS) during the cold period of 2022–2023, from these applications, 303 885 were registered with the assistance of roughly 2487 social workers and librarians.

In November 2022 81.7% of beneficiaries were assigned a degree of vulnerability "very high", 11,47% - "high", 4,36% - average, 1,84% - low, non*vulnerable – 0,63%. In March 2023 78.13% - "very high", "high" - 12.89%, "average" – 7.22%, "low" - 1.75%, "non-vulnerable" – 0.01%. Depending on the degree of vulnerability the allocation of the budget was the following in cold season of 2022-2023: low – 21.6 million MDL or circa 0%, average – 232.0 million MDL or 6%, high – 528.0 million MDL or 14%, very high – 2488.2 million MDL or 66%, indirect (unregistered) – 404.9 million MDL or 11%, disconnected (natural gas) – 98.2 million MDL or 3%.

Average compensation for electricity from November 2022 for "high" degree of vulnerability reduced from 85 to 11, for "very high" it increased reduced from 106 to 17. Average compensation for electricity from November 2022 for "high" degree of vulnerability reduced from 85 to 11, for "very high" it increased reduced from 106 to 17. For thermal agent for unregistered beneficiaries it increased from 392 to 684, for "low" vulnerability increased from 219 to 845, "average" – from 517 to 1193,

"high" – from 647 to 1394, "very high" – from 789 to 1568, disconnected – from 566 in December 2022 to 630 in March 2023. For natural gas for unregistered beneficiaries reduced from 449 to 204, "low" vulnerability – from 306 to 296, "average" – from 657 increased to 749, "high" – from 742 increased to 939, "very high" – from 746 increased to 971. Gas compensations on average were 49% of the bill in November 2022 and reduced to 45% of the bill in March 2023. The compensation for the thermal agent on average increased from 39% of the bill in November 2022 to 47% of the bill in March 2023.

Conclusions

The recent sharp rise in gas prices severely affected the population of the Republic of Moldova. This prompted the government to establish a compensation scheme based on household energy vulnerability, aiming to mitigate the financial burden on citizens.

The "Help at the Meter" initiative from the Energy Vulnerability Reduction Fund was introduced by the Government of the Republic of Moldova to provide compensations for energy expenditures during the heating season. The funds came both from the state budget and contributions from international partners.

The compensation system requires households to register on the Energy Vulnerability Information System to determine eligibility and vulnerability categories. Eligible households can receive compensations based on their energy vulnerability level, which is determined by factors such as income, family size, and energy expenditure.

Analysis of data from previous heating seasons suggests that the compensation program has been effective in providing support to vulnerable households. Adjustments in compensation rates and categories aim to ensure that support reaches those most in need while maintaining fairness and sustainability.

The compensation system demonstrates efforts to address energy vulnerability and poverty at the national level. However, challenges such as ensuring accurate data verification, preventing fraud, and reaching all eligible households remain areas for improvement.

Continuous monitoring and evaluation of the compensation system's effectiveness will be crucial for its sustainability and success. Additionally, efforts to enhance energy efficiency and promote alternative energy sources

may help mitigate the impact of future energy price fluctuations on vulnerable populations.

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