

IDENTIFYING VULNERABILITY TO THE ETS 2 IN THE CEE REGION BASED ON THE EXAMPLE OF ROMANIA AND POLAND

RECOMMENDATIONS FOR SOCIAL CLIMATE PLANS

POLICY BRIEF 3

DECEMBER 2023



1. KEY MESSAGES:



Central and Eastern European countries have their own patterns of energy and transport vulnerabilities. Lower incomes than the EU average, a large building stock that is old and energy inefficient, and reliance on polluting fuels for heating are all common features across the region.



Conducting national analysis and understanding the local vulnerabilities are cornerstone for developing tailored Social Climate Plans.



The policy making process requires not only a good understanding of the national realities, but also institutional coordination and cooperation among various layers of governance.

2. WHY ETS 2 MAY BE ESPECIALLY CHALLENGING FOR CEE COUNTRIES?

Central and Eastern European (CEE) Member States need special attention in the context of ETS 2 and the Social Climate Fund (SCF). These countries share a set of common features, with lower disposable incomes than the EU average, and an old and inefficient housing stock formed largely from panel type building blocks – a legacy of the communist past. Inefficient energy consumption behaviours together with old appliances represent two another features common for this region. Moreover, these countries still have a large share of their population living in rural areas, in thermally inefficient houses without financial resources to insulate them and trapped in using inefficient fuels for heating. For example, around 80% of the rural Romanian households use wood for heating that is procured often through irregular practices.

Across the CEE region, households use a variety of fuels for heating, from coal to wood, gas, or other solid materials, including district heating for the ones connected to centralized systems, and this generates specific patterns of vulnerabilities across geographies that need to be addressed particularly. For example, Poland and Czech Republic rely heavily on coal and gas for heating, Hungary on gas and marginally wood pellets, while Romania and Bulgaria use a mix of wood, gas and even coal, with profound divides across urban and rural areas. Moreover, based on both EU-SILC and HBS indicators, countries from CEE have high levels of energy poverty and therefore are particularly vulnerable to energy carriers price fluctuations. For example, Bulgaria (23.7%), Romania (15.2%), and countries from the South-Eastern Europe register a higher percentage of households



unable to keep the house warm during winter in comparison to countries from Northern and Western Europe – Sweden (3.3), Belgium (5.1%)¹.

In addition, countries in CEE still have reduced administrative capacity in implementing complex strategic programmes. Romania, for example, has a reduced EU funds absorption capacity which translates into fewer structural projects implemented². While Poland might be better situated in this respect, Social Climate Plans still require significant administrative coordination efforts that may be a challenge for governments considering existing limited capacities. At the same time, both Poland and Romania will be among the largest beneficiaries of the SCF with a share in the total budget of 17.6 and 9.25 percent, respectively³. This provides an important financial, which, if utilized wisely, can help mitigate the ETS 2 burden and support the countries in low-carbon transition.

This combination of factors makes CEE region especially vulnerable to the impact of ETS2. Therefore, CEE countries are recommended to:

1. Identify the vulnerable households that will be directly and indirectly impacted by the ETS2.
2. Design tailored policies, with a focus on programmes for rural population and medium income households, that address the patterns of vulnerabilities in accordance with national realities.
3. Develop working structures across level of governance that can coordinate the process of designing and implementing the SCF plans.
4. Strengthen the administrative capacity of the relevant national and local authorities, either by seeking additional financial support from the EU or through national mechanisms for the SCF implementation.

3. PATTERNS OF VULNERABILITY IN ROMANIA AND POLAND

Although both Romania and Poland belong to the CEE region and can be considered its representatives, an in-depth analysis reveals certain differences in their patterns of vulnerability, which highlights the need for national characteristics to be taken into account while designing Social Climate Plans. It should also be noted that while there is a link between being vulnerable to the carbon price and vulnerable to energy and transport poverty, as both are influenced by income

¹EU-SILC, (2022), *Inability to keep household adequately warm*, https://ec.europa.eu/eurostat/databrowser/view/ilc_mdcs01/default/table?lang=en

²Țigănașu, Ramona, Încalțărău, Cristian, & Pascariu, Gabriela Carmen (2018). *Administrative Capacity, Structural Funds Absorption and Development. Evidence from Central and Eastern European Countries*. http://rjea.ier.gov.ro/wp-content/uploads/articole/RJEA_vol.18_no.1_June2018_art.3.pdf; Neculai-Cristian Surubaru (2021), *European funds in Central and Eastern Europe: drivers of change or mere funding transfers? Evaluating the impact of European aid on national and local development in Bulgaria and Romania*, *European Politics and Society*. <https://www.tandfonline.com/doi/full/10.1080/23745118.2020.1729049>

³ Regulation (EU) 2023/955 establishing a Social Climate Fund

level, captivity to specific fuels or high consumption due to energy inefficient buildings, there are also factors that could potentially distinguish them, such as share of high-emission fuels used. However, based on SCF definition, those in energy and transport poverty are vulnerable to the ETS 2. Therefore, one of the most important tasks is to identify and profile the households that will be most impacted, highlighting patterns of both energy and transport poverty.

3.1 VULNERABILITY TO ENERGY POVERTY



From the moment of joining the European Union, in 2007, **ROMANIA** experienced one of the highest rates of economic growth among the other newly joined CEE countries. While this steady growth has translated into a general increase of living standards, Romania still registers one of the highest socio-economic disparities across the EU. The Covid 19 pandemic and the Russian invasion in Ukraine had a destabilizing effect on the economy in general and generated an increase in energy prices in particular. At household level, high inflation rates matched with a soar in energy prices and coupled with pre-existing poor housing conditions, reduced the disposable income, and led to an increase in energy poverty levels.

In terms of heating, there are striking divisions across Romania. Around 80% of the rural households use wood for heating⁴, that is procured largely from the irregular market.⁵ In terms of income distribution, the first deciles are the ones that use mainly wood stoves for heating and are extremely vulnerable to any fluctuation of the energy market⁶. In terms of energy poverty indicators, M/2 (the household spends half the national median on energy) was at the level of 20% in 2022, with a slight increase from 2020 onwards. Showcasing patterns of hidden energy poverty, this indicator has very high values in the rural areas (74%) and the first income deciles (Figure 1). Hidden energy poverty means that households (especially the ones located in rural areas) tend to practice underconsumption, live in inefficient houses and cannot meet their heating needs.

The urban areas are generally connected to the gas grid, or in process of being connected. Therefore, household either use individual boiler gas for heating or are connected to the district network (the latter applies to ca. 11% of the households and only in large and medium cities). Most of these households live in blocks of flats that are thermally inefficient and are sensitive to gas price increases.

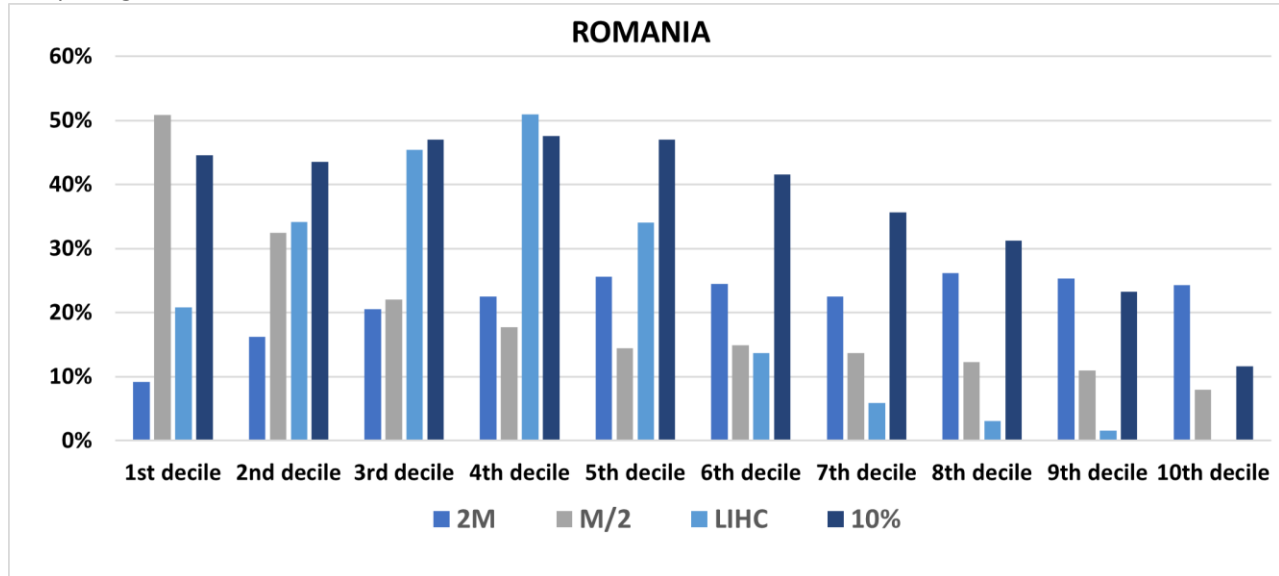
⁴Anca Sinea, George Jigla, Andreea Vornicu (The Center for the Study of Democracy) (2021), *Energy poverty in the rural context*, policy brief,

https://mail.democracycenter.ro/application/files/5316/2686/1388/energy_poverty_rural.pdf

⁵EurActiv Romania, (2023), *Legea care plafonează prețul lemnului de foc până la 31 martie, adoptată și promulgată după acest termen* <https://www.euractiv.ro/politic-intern/legea-care-plafona-pretul-lemnului-de-foc-pana-la-31-martie-adoptata-si-promulgata-dupa-acest-termen-34137>

⁶Jessica Bateman (2021), *Prices for firewood and wood pellets almost double due to energy crisis* <https://www.cleanenergywire.org/news/prices-firewood-and-wood-pellets-almost-double-due-energy-crisis>

Figure 1. The distribution of energy poverty indicators across income deciles. The values are computed based on the HBS dataset from 2022. Both expenditures and incomes have been equalized in the process of computing the indicators.



In 2022, the LIHC (low-income high cost) indicators has doubled in comparison to the previous years, reaching a 21% at national level. This means that one in five households falls below the poverty line after is paying the energy bills⁷. Looking at the income distribution, even households located in the third, fourth and fifth decile (low to medium income) have been mostly impacted by the spike of energy prices – more than 40% of these households fall below the poverty line after paying their energy bills (Figure 1). Even if the government has adopted compensation and cap price subsidies that covered the entire population, the households were still affected by the energy crisis which translated into high energy bills. Moreover, this indicator (LIHC) highlights that even medium income households are vulnerable to energy price increases. **Vulnerability to ETS 2 in Romania thus extends to medium income households** and this needs to be reflected in the scope and type of the measures under the SCF.

The increased vulnerability to energy poverty in the last few years is also reflected by the 10% indicator which shows the percentage of households that spend more than 10% of their income on energy bills. The percentage is increasing steadily from 2020, and in 2022, 37% of the households spent more than 10% on their energy bills.

Despite Romania passed a law on the vulnerable consumers in 2021 and adopted energy price cap schemes in 2022, the energy poverty has increased looking at the LIHC and 10% indicators. One explanation resides in the fact that energy prices were higher in 2022 compared to the previous years and for keeping the houses warm households spent more on energy bills. Another part of the reason comes from the fact that many are still living in thermally inefficient buildings, which forces

⁷ Analysis based on 2022 HBS (Household Budget Survey).

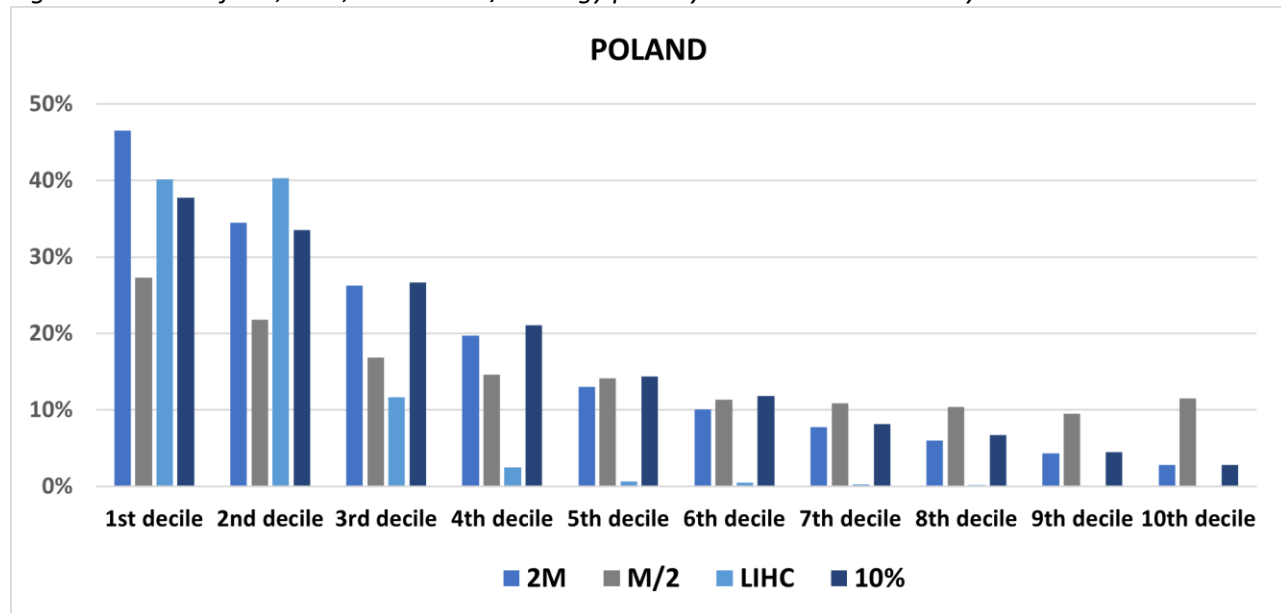
them to overconsume energy. Moreover, socially vulnerable people including pensioners, people with various illnesses or disabilities and single-parent households may need extra attention as they have their own patterns of vulnerabilities, as they may bear extra financial and social burden.



Although the living standard in **POLAND** is steadily on the rise, it still remains below the EU average,⁸ increasing the risk of energy poverty. The national level of energy poverty reported by the Central Statistical Office (GUS) is measured using indicators such as 2M and LIHC, calculated based on data from the Household Budget Survey, and responses to the questions about thermal comfort, building condition and arrears in media payments from the EU-SILC survey. Although the values of these measures differ significantly, based on indicators taking into account both income and energy expenditure levels (LIHC and 2M), the proportion of energy poor households in Poland in 2021 ranged from 10.5 to 18.8 percent⁹.

Analysis of energy poverty indicators reveals that households in difficult financial situation, belonging to the first three decile groups, are most vulnerable to this issue (Figure 2). However, energy poverty does not strictly align with economic poverty, as it also affects lower middle-income households, although the issue is more prevalent in regions where the average monthly disposable income per person is below the national average.

Figure 2. Values of 2M, LIHC, 10% and M/2 energy poverty indicators in Poland by income deciles in 2020.



⁸ Eurostat, 2023: <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20230620-2>

⁹ GUS, 2023: *Zużycie energii w gospodarstwach domowych w 2021 roku*

Energy poverty in Poland is most common among retirees and pensioners, individuals relying on non-employment sources, and farmers¹⁰. In the case of the first two groups, this is primarily due to low disposable income, meaning that while energy expenses may not be that high, their share in income of this groups significantly exceeds the national average. The occurrence of energy poverty is also influenced by condition of the building inhabited by the household, which is approximately reflected by the period in which it was built. Based on the results, it can be concluded that the older the building, the greater the risk of energy poverty (holding other factors constant). This highlights the need for allocation of the funds from SCF in Poland towards thermal modernisation and renovation of old and thermally inefficient buildings.

The recent years have been particularly challenging for the Polish economy due to the consequences of the COVID-19 pandemic and the war in Ukraine. Energy market destabilization, linked to concerns about energy supply, has led to an increase in energy prices and, consequently, final consumer expenses¹¹. Due to the energy crisis, the issue of energy poverty has returned to public debate in Poland, leading to the first legal definition of this phenomenon. It is characterized as a situation where a household cannot afford an adequate level of warmth, cooling, and electricity for appliances and lighting, provided that it meets certain conditions: low income, high energy-related expenses, and residing in a building with low energy efficiency¹².

BOX 1. ENERGY POVERTY - COMPARATIVE INSIGHTS

While manifestations of energy poverty may be different across Romania and Poland, there are some similarities worth mentioning. In both countries, the indicators used for assessing energy poverty show that the first income deciles are the most vulnerable to any energy price increase. Moreover, energy poverty permeates even the middle-income households, indicating that there are more causes than just income that can influence the vulnerability of a household. These could be energy inefficient buildings, the type of fuel used for heating, consumption patterns or other social characteristics. Although an in-depth understanding of the national contexts is critical for identifying and profiling the vulnerable households, there are some common groups that should receive increased attention, such as retirees and pensioners, people with disabilities or single-parent households.

¹⁰ WiseEuropa. Piotr Gutowski, Krzysztof Głowacki, Country report. 2024, *Study of the Impact of EU ETS 2 on Household Welfare in Poland in the Context of Energy and Transport Poverty* <https://wise-europa.eu/en/2024/03/07/country-report/>

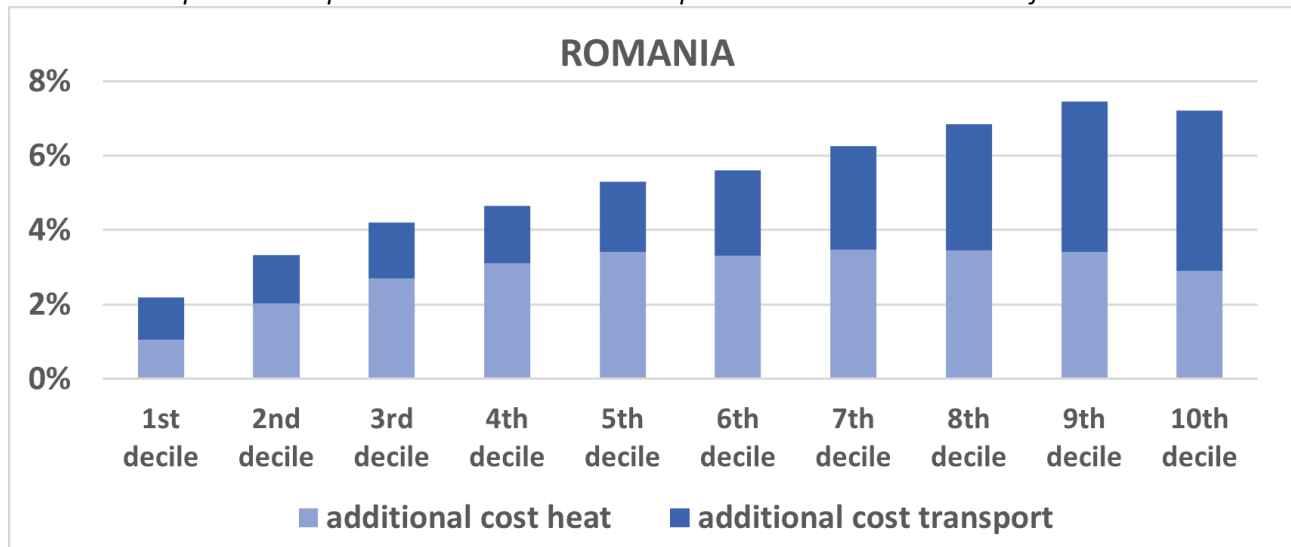
¹¹ WiseEuropa (2022), *Inflationomics*. <https://wise-europa.eu/2022/06/13/inflationomics/>

¹² Dz.U. 2022 poz. 1: <https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20220000001>

3.2 VULNERABILITY TO CARBON PRICE

According to HBS data, in 2022, 37% of the **Romanian households** spent more than 10% of their income on energy bills (electricity and heating), with important variations across income deciles. Therefore, any additional price on gas, as the one generated by the ETS 2 would bring an additional cost that will be reflected on the energy bills. According to estimations modelled on 2022 HBS, the new carbon price, will add more than 3% to the total existing expenditures within a household (see Figure 3)¹³. As Figure 3 indicates, that additional expenditure across lower-middle income deciles in case of Romania will be largely related to heating. The first two income deciles are the least impacted, as these households use mainly wood for heating, a fuel not included in the ETS 2. However, these households will be indirectly impacted as any gas price increase will lead to increased demand and therefore increased prices for alternative fuels, including wood. This effect was recorded in Romania in the winter of 2021/2022 when wood prices spiked and governmental attempts to mitigate the effects remained ineffective (cap price of legal wood led to a spike of prices from the irregular market). Medium income households will be mostly impacted directly by ETS2 as these are the households that don't have too much economic leverage and every change in prices impacts their income directly. Moreover, these households cannot afford big investments and need governmental support for switching to low-carbon heating options, retrofitting buildings and other long-term measures.

Figure 3. Additional expenditure for heat (gas) and transport due to ETS 2 (70E/tCO₂) in relation to the total households' expenditure equalized. The data were computed based on the HBS data from 2022.



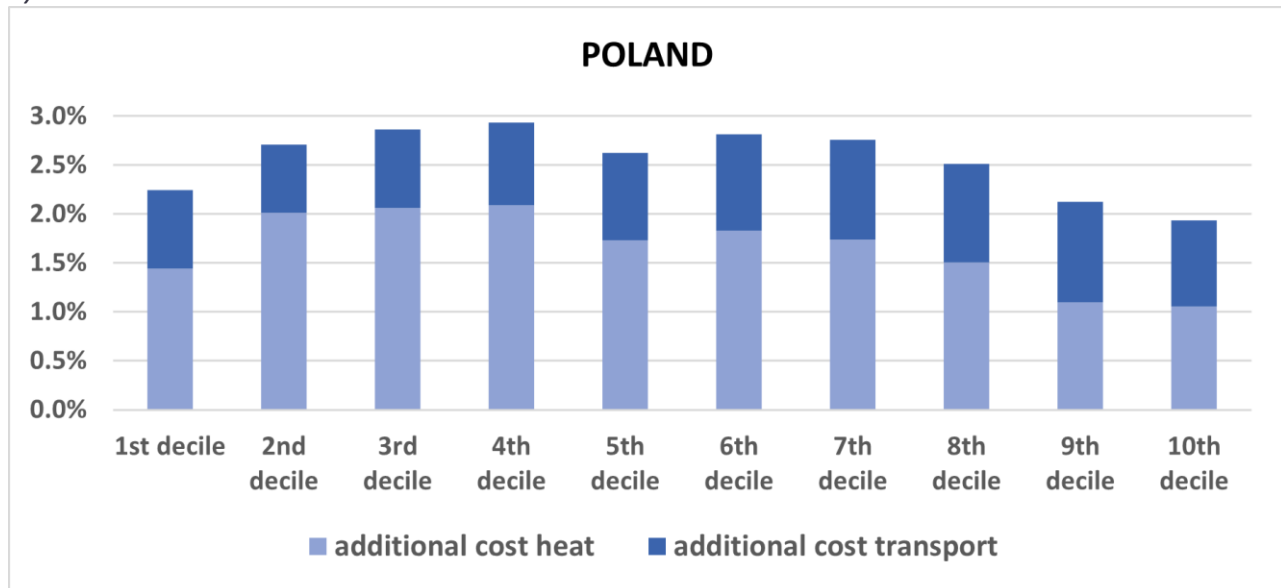
In terms of transport, the highest impact, around 4% to the total expenditures, would be felt by households in highest income deciles. This result is consistent with the fact that high income households tend to use personal cars for daily commute more than the low- and medium-income households. However, a special focus should be given to the mobility of the first deciles, as this

¹³ No behavioral interventions were considered in the process of calculating the additional expenditure of the ETS 2.

reduced impact may hide a limited mobility and a need for better infrastructure and public transport services.

Similarly to Romania, households' spendings on energy and heating fuels in **POLAND** constitute approximately 10% of their total expenditures. On average, the welfare of Polish households, without considering any form of direct support, will decrease by approximately 1.2-2.5 percent with the introduction of EU ETS 2¹⁴. Impact of additional cost on increased expenditure will be higher among low- and middle-income households (Figure 4).

Figure 4. Increase in household expenditures (as % of total) in Poland due to an ETS 2 carbon price of €70/tCO₂ by income deciles.



The most vulnerable to the negative effects of the new system are low- and middle-income households, rural and small-town residents, farmers, retirees, and pensioners. The results align with previously identified factors influencing energy and transport poverty, related to lower income levels, and structure and quantity of fuels used by these groups. For poor households, additional costs primarily stem from high consumption of coal, while for wealthier ones, it is mainly a result of higher usage of transport fuels. There are also specific factors influencing the situation of the respective groups, e.g. insufficient public transportation networks in rural and small-town areas, and unnecessarily large-area houses that many pensioners live in.

¹⁴ Provided figures depend on the reference value, with the lowest impact on households' welfare compared to net receipts, the highest to total expenditures, while for disposable income the average impact amounts to about 2 percent. This estimation does not include any support measures or future positive effects of ETS 2 on emission reduction, and the values are calculated based on HBS data with assumed carbon price of €70/tCO₂.

BOX 2. CARBON VULNERABILITY - COMPARATIVE INSIGHTS

Although both Romania and Poland represent CEE region, their patterns of vulnerability to carbon price, represented as increase in household expenditures due to introduction of the EU ETS 2, differ significantly from each other. In Romania, the households from the low-income deciles will not be directly impacted as they use generally wood for heating and have reduced mobility. However, this hidden energy and transport poverty may be exacerbated by the price increase of other fuels, as it happened before. Middle-income households will have the highest increase in expenditures and will be the most exposed to additional costs for gas and petrol. In Poland, both low- and middle-income households will be most affected by carbon price in terms of increase in total expenditure. However, differences in impact between decile groups in Poland are minor compared to Romania. What can be considered a common characteristic of both countries is that in general share of additional cost in transport increases with income. This highlights the need for taking into account country-specific factors in the analysis of possible negative impacts of the ETS 2 and in development of counteracting support measures.

4. NATIONAL SOCIAL CLIMATE PLANS INTO ACTION

Designing and implementing the Social Climate Plans represent the two key aspects the national states must deliver in the foreseeable future. By mid-2025, clear and comprehensive action plans need to be developed, identifying vulnerable households and transport users, and indicating a set of policy measures that will cushion the regressive effect of ETS 2. Equally important, Member States have to put in place the institutional infrastructure for implementing the policies and constantly assessing the effectiveness of the policies. This should also include measures to develop public administration capacity.

While the patterns of energy and transport vulnerability show some differences between Poland and Romania, both countries are representative of the CEE region in that they are more exposed to the regressive effects of the ETS 2 than Western Europe and are home to large demographic groups that are at a particular risk. The logic for managing the Social Climate Plans is expected to be similar in both countries. At a strategic level, such a logic should involve three key elements. First, both the design and the implementation of the SCPs should be based on an optimal “division of labour” between the respective stakeholders. The public, private, and non-governmental sectors have unique competencies, knowledge, finances, networks, and other assets, that complement each other and should all be used. Specifically, while the public sector provides the financing, overall direction and implementation of reform, the private sector is needed to identify relevant modernisation opportunities and provide technological solutions, and civil society organizations are

indispensable for communicating the rationale for reform to society at large and for ensuring public oversight over the use of funds.

Broad social acceptance of the reform is necessary for its success. In both Poland and Romania, the issue of the ETS is highly politicized. Many households, including the most vulnerable, are still insufficiently informed about the rationale and expected impacts of the reform, leaving them vulnerable to uncertainty and political manipulation. For this reason, the preparation of the Social Climate Plans should be accompanied by broad consultation and honest, informative public communication. In this context, the challenge of involving all the relevant stakeholder groups will need to be addressed – given that for some, especially regional and local actors, it may be a non-trivial cost to participate in the consultations.

Finally, the identification of the most vulnerable groups will largely determine the success of the reform as a whole. In this context, the division of labour mentioned above becomes highly relevant. Local governments, for example, are better equipped to identify – and subsequently serve – the relevant beneficiaries. Local social services providers – for instance, schools and municipal welfare centres – have direct access to local communities, which is a key asset that should be utilized. A form of "regional contracting" can be used in the design and implementation of the SCPs. In this scenario, local governments negotiate the objectives, instruments, and financing of the policy with the central government and then implement it on the ground accordingly.

BOX 3. OUR RECOMMENDATIONS

1. Identify vulnerable households that will be directly and indirectly affected by the ETS2.
2. Design tailored policies, with a focus on programmes for rural populations and covering also middle-income households, addressing vulnerability patterns according to national circumstances.
3. Develop working structures across level of governance that can coordinate the process of designing and implementing the SCF plans.
4. Strengthen the administrative capacity of the relevant national and local authorities, either by seeking additional financial support from the EU or through national mechanisms for the SCF implementation.
5. Consultations on the Social Climate Plans must take place as soon as possible and involve a wide range of stakeholders to increase social awareness and commitment to making the best use of the funds.
6. Ensure transparency of funds disbursement and an effective monitoring mechanism of their use.

Bibliography:

1. Anca Sinea, George Jigla, Andreea Vornicu (The Center for the Study of Democracy), Energy poverty in the rural context, policy brief, 2021. Accessed on 20 February 2024, available at: https://mail.democracycenter.ro/application/files/5316/2686/1388/energy_poverty_rural.pdf.
2. Central Statistical Office of Poland (GUS). (2023). 'Household Energy Consumption in 2021' (original title in Polish: 'Zużycie energii w gospodarstwach domowych w 2021 roku')
3. EurActiv Romania. 11 May 2023, 'Legea care plafonează prețul lemnului de foc până la 31 martie, adoptată și promulgată după acest termen.' Accessed on 20 February 2024, Available at: <https://www.euractiv.ro/politic-intern/legea-care-plafona-pretul-lemnului-de-foc-pana-la-31-martie-adoptata-si-promulgata-dupa-acest-termen-34137>
4. European Union. (2023). Regulation (EU) 2023/955 of the European Parliament and of the Council of 10 May 2023, establishing a Social Climate Fund. Official Journal of the European Union. Available at: <http://data.europa.eu/eli/reg/2023/955/oj>
5. Eurostat. (2023). 'Actual individual consumption per capita in 2022.' Eurostat News, 20 June 2023. Accessed 4 March 2024. Available at: <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20230620-2>
6. Eurostat. (2024). 'Income and Living Conditions: Inability to Keep Home Adequately Warm (Code: ilc_mdse01).' Accessed 16.03.2024, Available at: https://ec.europa.eu/eurostat/databrowser/view/ilc_mdse01/default/table?lang=en.
7. Grossmann, K., Jigla, G., Dubois, U., Sinea, A., Martín-Consuegra, F., Dereniowska, M., Franke, R., Guyet, R., Horta, A., Katman, F., Papamikrouli, L., Castaño-Rosa, R., Sandmann, L., Stojilovska, A., & Varo, A. (2021). The critical role of trust in experiencing and coping with energy poverty: Evidence from across Europe. *Energy Research & Social Science*, 76, 102064. Elsevier.
8. Neculai-Cristian Surubaru (2021) European funds in Central and Eastern Europe: drivers of change or mere funding transfers? Evaluating the impact of European aid on national and local development in Bulgaria and Romania, *European Politics and Society*, 22:2, 203-221, DOI: [10.1080/23745118.2020.1729049](https://doi.org/10.1080/23745118.2020.1729049)
9. Polish Sejm. (2022). Dz.U. 2022 poz. 1, Internetowy System Aktów Prawnych. Accessed on 16 March 2024. Available at: <https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20220000001>
10. Țigănașu, Ramona, Încalțărău, Cristian, & Pascariu, Gabriela Carmen. (2018). 'Administrative Capacity, Structural Funds Absorption and Development. Evidence from Central and Eastern European Countries.' *Romanian Journal of European Affairs*, 18(1). Available at: http://rjea.ier.gov.ro/wp-content/uploads/articole/RJEA_vol.18_no.1_June2018_art.3.pdf
11. WiseEuropa. (2022). 'Inflationomics.' Accessed on 16 March 2024, Available at: <https://wise-europa.eu/2022/06/13/inflationomics/>
12. WiseEuropa. (2024, March 7). Piotr Gutowski, Krzysztof Glowacki, Country report. Study of the Impact of EU ETS 2 on Household Welfare in Poland in the Context of Energy and Transport Poverty – Recommendations for the Social Climate Plan <https://wise-europa.eu/en/2024/03/07/country-report/>

Authors:

Andreea Vornicu-Chira – [Center for the Study of Democracy](#)

Piotr Gutowski, Krzysztof Głowacki – [WiseEuropa](#)

Iryna Holovko – [adelphi](#)

For more information, please contact Andreea Vornicu-Chira at vornicu@fspac.ro, and Krzysztof Głowacki at krzysztof.glowacki@wise-europa.eu



This report was produced under the project “Facilitating Socially Just Carbon Pricing in Central and Eastern Europe”, a part of the [European Climate Initiative \(EUKI\)](#) of the German Federal Ministry for Economic Affairs and Climate Action (BMWK).

The opinions put forward in this policy report are the sole responsibility of the author(s) and do not necessarily reflect the views of the Federal Ministry for Economic Affairs and Climate Action (BMWK).

Supported by:



on the basis of a decision
by the German Bundestag