Energy performance in buildings and the vulnerable consumers: the cases of Romania and Bulgaria in tackling energy poverty

By
Andreea-Maria Ianoșiu

Submitted to
Central European University
School of Public Policy

In partial fulfiment for the degree of *Master of Arts in International Public Affairs*

Supervisor: *Mihaly Fazekas*

Vienna, Austria

2023

I, the undersigned Andreea-Maria Ianoșiu hereby declare that I am the sole author of this thesis. To the best of my knowledge this thesis contains no material previously published by any other person except where proper acknowledgement has been made. This thesis contains no material which has been accepted as part of the requirements of any other academic degree of non-degree program, in English or in any other language.

This is a true copy of the thesis, including final revisions.

Date: 02/06/2023

Name (printed):

Signature:

Abstract

Energy poverty represents a crucial problem in Eastern Europe. Romania and Bulgaria are among the states across the EU which reveal high levels of energy vulnerability and insecurities among millions of households. The fragmentation in the legislative attempts to tackle the issue is one of the causes that negatively impact the phenomenon. Energy poverty is a complex situation which creates difficulties in being tackled in the absence of evidence-based policy. Dimensions of energy poverty are energy performance in buildings, the concept of vulnerable consumer and sociodemographical characteristics. In the context of Romania and Bulgaria, the poor performance in energy efficiency of buildings, the lack of definition and regulatory frameworks around the concept of vulnerable consumer, and the low levels of awareness towards energy sources, represent major impediments that drive the levels of energy poverty. Despite the legislative efforts put in place in the last decade to address and alleviate the issue, numerous barriers challenge the process. Therefore, this thesis provides a comparative perspective on the two countries to describe and analyze the legislative developments and explore how they contribute to the alleviation of energy poverty. Energy performance in buildings is chosen as a dimension of the poverty issue, as daily lifes of individuals depend on it, and building stock with high energy efficiency standards could significantly reduce energy expenses.

Acknowledgements

I am grateful to my family, my friends, my supervisor, and to all my professors who supported and helped me.

Table of Contents

Abstract 3

Acknowledgements 4

Table of Contents 5

Chapter I: Introduction 6

Chapter II: Literature Review 12

Energy efficiency, energy performance in buildings and energy poverty 12

Vulnerable consumer 23

Romania 25

Bulgaria 27

Chapter III: Methodology 29

Research design, research question, hypothesis 29

Data collection and research objectives 30

The case of Romania 31

The case of Bulgaria 41

Chapter IV: Analysis 49

Chapter V: Conclusion 54

Bibliography 56

Chapter I: Introduction

Energy poverty and energy efficiency in buildings are closely related in Romania and Bulgaria, as addressing energy efficiency, and providing the resources for an infrastructure that prioritizes alternative sources of energy would alleviate energy poverty significantly. First, in Romania and Bulgaria, the high energy costs represent a predominant factor that contributes to the high magnitude of the energy poverty.[1] Therefore, contributing to the improvement of energy efficiency in buildings aiming at alleviating energy consumption and lowering energy bills would significantly increase the affordability of energy services for households. A common feature for the buildings in Romania and Bulgaria, mainly found in the residential sector, is the poor energy performance, including both legislative and technical standards. Furthermore, the buildings generally have lower levels of lack of insulation, outdated heating systems, and other inefficient features of the energy, due to their construction before 1985 and the neglect to upgrade them to the current climate reality.[2][3] These aspects translate into excessive amounts of energy consumption by these settlements, which consequently contribute

[1] Lenz, Nela V., and Ivana Grgurev. 2023. ".Assessment of Energy Poverty in New European Union Member States: The Case of Bulgaria, Croatia and Romania." . - YouTube. https://dergipark.org.tr/en/download/article-file/361713.

[2] Environment Ministry. 2013. "Strategia naţională a României privind schimbările climatice 2013 - 2020." Ministerul Mediului. http://mmediu.ro/app/webroot/uploads/files/Strategia-Nationala-pe-Schimbari-Climatice-2013-2020.pdf.

[3] Racka, Izabela, Stawomir Palicki, and Ivo Kostov. 2013. "State and Determinants of Real Estate Market Development in Central and Eastern European Countries on the Example of Poland and Bulgaria." Sciendo. https://sciendo.com/article/10.1515/remav-2015-0017.

to the increase in the energy costs and expenses for residents. Integrating a plan that addresses the retrofitting and renovation of the buildings, to create an energy efficient residential ecosystem, is a fundamental step to take action in the reduction of energy consumption, and their costs. Additionally, an increase in the quality of life is another effect of such undertaken steps. A regulatory framework put in place to include measures aimed at addressing energy poverty is the cornerstone in targeting this phenomenon as a first step. These measures concentrate on providing support and assistance for vulnerable consumers with the objective of improving the energy efficiency of their households. For example, subsidies, grants, or financial assistance are used as mechanisms across the EU to assist the consumers with resources aimed at covering the costs of energy-efficient renovations, insulation, or upgrading heating systems. By targeting energy efficiency solutions towards low-income and vulnerable households, energy poverty can be significantly alleviated - especially since energy efficiency is treated as a dimension of energy poverty that contributes heavily to the welfare of individuals.[4]

According to the EU Energy Poverty Observatory,[5] Bulgaria performs poorly, compared to the EU average on the population-reported indicators, on the situation of energy poverty. Roughly 35% of Bulgarian individuals reported the inability to heat their households inadequately in 2018, around 31% was in difficulty to accommodate the utility expenses, while this percentage on the EU average stands at around 6.6%. The regulatory advancements in the field of energy proved to bring progress from 2005, when 70% of the households were unable to heat their home adequately, to 2018, when this percentage fell to 34% of the households.[6]

[4] Al-Tal, Raad, Muntasir Murshed, Palman Ahmad, Abdelrahman Alfar, Mohga Bassim, Mohammed Elheddad, Mira Nurmakhanova, and Haider Mahmood. 2021. "The Non-Linear Effects of Energy Efficiency Gains on the Incidence of Energy Poverty." MDPI. https://www.mdpi.com/2071-1050/13/19/11055.

[5] EPBD Bulgaria. 2018. "EPBD implementation in Romania." Concerted Action EPBD. https://epbd-ca.eu/wp-content/uploads/2018/08/CA-EPBD-IV-Romania-2018.pdf.

[6] Al-Tal, "The Non-Linear Effects of Energy Efficiency Gains on the Incidence of Energy Poverty"

Energy poverty is a complex phenomenon, caused by factors, such as low incomes, low energy efficiency standards in the case of residential buildings, and high energy costs,[7] and it implies reduced or inexistent access to affordable, reliable, and sustainable energy services, which negatively affect the quality of life and socioeconomic opportunities for entire communities.[8] Energy poverty has been posing prominent issues and risk factors, with a sizable proportion of the population experiencing difficulties in accessing energy services, especially among the rural community. At least 3.5 million people in Romania do not have access to electricity, being energetically poor in 2021, while at least 40% of those households are living in the rural areas. Energy poverty highly impacts the living standards of individuals, decreasing educational perspectives, labor market opportunities, and mitigating the potential of access to basic commodities.[9]

Nearly 23% of the Romanian households report the obstacles and financial impediments in meeting energy costs in 2017, representing a fraction of a total of 150 million of households living in energy poverty at the EU level. Less than 30% of the vulnerable households entitled to benefit from financial assistance actually receive these benefits. Moreover, in 2017 the allocated sum for covering the financial benefits for vulnerable households which are not able to meet the energy costs is roughly 0,33% of the total budget of the Ministry of Labor. The approach has been remaining similar for the next following years. [10]

A prominent direction of action is constituted through the arrangement of the normative and legislative framework in the building sector. The contemporary analysis of pressing energy

[7] Nazare, Laura. 2022. "Producția descentralizată a energiei, o soluție pentru sărăcia energetică." Bankwatch România. https://bankwatch.ro/wp-content/uploads/2022/05/raport_saracie-energetica-energia-regenerabila.pdf.
[8] Karpinska, Lilia, and Slawomir Smiech. 2020. "Invisible energy poverty? Analysing housing costs in Central and Eastern Europe." Science Direct. https://www.sciencedirect.com/science/article/abs/pii/S2214629620302450.
[9] Karpinska, "Invisible energy poverty? Analysing housing costs in Central and Eastern Europe"
[10] Energy Center. 2023. "Legea consumatorului vulnerabil a fost votata in Parlament, dupa mai bine de zece ani de amanari. Ea va intra in vigoare de la 1 noiembrie." Energy Center Romania. https://energy-center.ro/piata-energiei-din-romania/legea-consumatorului-vulnerabil-a-fost-votata-in-parlament-dupa-mai-bine-de-zece-ani-de-amanari-ea-va-intra-in-vigoare-de-la-1-noiembrie/.

policy issues related to energy efficiency in buildings is crucial. This topic is of critical importance in addressing climate change and reducing greenhouse gas emissions, as buildings are a major source of energy consumption and contribute significantly to carbon emissions. Across EU member states, the buildings generate by themselves about 35% of the greenhouse gases and consume about 41% of the total final energy. As a central component in individuals' daily lives, the buildings and construction sector are considered a crucial energy-related aspect. The EU institutions enforced a legislative framework through the Energy Efficiency Directive, Energy Performance of Buildings Directive, the Thermal Building Regulations, and other Energy Efficiency Policies to contribute to the endorsement of energy efficiency standards in buildings, and consequently alleviate energy poverty.[11]

According to the findings of the Romanian Observatory of Energy Poverty, roughly 33% of households in Romania are considered to be energetically poor, translating into the inability to afford adequate and modern heating, cooling, and lighting.[12] Furthermore, nearly one-third of households in Romania experience difficulties in meeting their energy bills and utility costs, with electricity and gas bills being particularly challenging for low-income households.[13]

The European Commission notes that energy poverty is particularly prevalent in rural areas of Romania, where many households rely on solid fuels such as wood or coal for heating, which can raise severe health risks as a result of indoor pollution. The report of the European Commission also highlights that vulnerable categories such as the elderly and low incomes or

[11] Matos, Ana M., João M.P.Q., and Ana S. Guimarães. 2022. "Linking Energy Poverty with Thermal Building Regulations and Energy Efficiency Policies in Portugal." MDPI. https://www.mdpi.com/1996-1073/15/1/329.
[12] Eurostat. 2023. "Living conditions in Europe - poverty and social exclusion." European Commission. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Living_conditions_in_Europe_-_poverty_and_social_exclusion.
[13] Energynomics. 2022. "e third of Romanian consumers, marked by energy poverty." Energynomics. https://www.energynomics.ro/en/one-third-of-romanian-consumers-marked-by-energy-poverty/.

disabled groups are more likely to experience heavily negative effects caused by energy poverty (EU Energy Poverty Observatory 2020.[14]

Therefore, given the current context of energy security, the housing stock and energy efficiency standards disparities across EU, and the situation of energy poverty risks in the Eastern Europe, the present paper proposes to analyze the legislative and regulatory frameworks in Romania and Bulgaria, through a comparative case study, and explore the similarities and dissimilarities in their paths. The objective of the paper resides in answering the following research question: how is energy poverty addressed through buildings, construction and renovation sectors in Romania and Bulgaria? Secondary research objectives include how the legislative and social portrayal of the vulnerable consumer interferes with the provision of solutions for the reduction of energy poverty, and how appropriate policymaking in the field of energy efficiency targets for the housing stock contributes to the alleviation of consumers' vulnerability. The hypotheses explored within the research are the following:

1. A regulatory framework that prioritizes the renovation of the housing buildings to adhere to higher energy efficiency standards contributes significantly to the mitigation of energy poverty. The mechanism behind this thesis is that buildings benefitting from high energy efficient standards pose lower energy expenses for the vulnerable consumer and increase their resilience and stability over time.
2. The main barriers against the improvement of energy efficiency standards in buildings are the legislative and normative barriers, which impede the enforcement of better legislation.

[14] EU Energy Poverty Observatory. 2023. ".Member State Report Romania." European Commission. https://energy-poverty.ec.europa.eu/system/files/2021-10/epov_member_state_report_-_romania.pdf.

The choice of the topic is justified by the situation of energy poverty in Eastern Europe, where Romania and Bulgaria convey interesting trends in overcoming poverty, exclusion, and energy security risks. Given the socialist past of the countries, the legislative impediments that they face, the energy poverty levels, and the housing stock originating in buildings created before the period of transitioning to democracy, it is useful to investigate what are implications of the regulatory frameworks on the reality of energy vulnerability of consumers. Furthermore, both cases are researched individually in the academic literature and empirical research. Therefore, including a comparative case study design to explore their legislations and compare their trends represent a novelty, and it might be useful for future policy and regulations aimed at overcoming the complex dimensions of energy poverty.

Chapter II: Literature Review

Energy efficiency, energy performance in buildings and energy poverty

Nazare (2022) discusses the situation of energy poverty in Romania in relation to potential solutions and recommendations that target the vulnerable consumers, addressing the challenges and opportunities for the development of renewable energy in Romania. Highlighting the potential for developing renewable energy sources, the article suggests that barriers such as regulatory and administrative challenges, lack of financial and investment resources, and resistance to fulfilling energy goals require to be overcome as an initial phase. The paper argues over three types of measures aimed at enhancing the capacity for energy transition and for mitigating energy poverty: measures for energy efficiency, for low-income households, and measures against the increase in energy prices.[15]

Roughly 87% of the residential buildings were created before the 1990s, while around 6% of these buildings were renovated after this period, neglecting the energy efficiency standards. Regarding the situation of the vulnerable households, the only measures refer to financial assistance, partly covering the heating related actions and the social tariff for electricity, but the solution is not sustainable or either feasible in the long run. As the energy sector is highly centralized in Romania, the subsidiarity principle does not hold at this level, because the energy system is based on grand plants and transmission lines which covers all the households. Alternatively, the decentralized energy systems aim at placing the energy sources in the

[15] Nazare, Laura. 2022. "The solution to Romania's energy poverty is decentralised, renewable energy." Bankwatch. https://bankwatch.org/blog/the-solution-to-romania-s-energy-poverty-is-decentralised-renewable-energy.

proximity of the households, maximizing efficiency in terms of transportation and distribution. Therefore, the report emphasizes the importance of involving local communities in the development of renewable energy, particularly in rural areas where energy poverty is most prevalent. The potential to enhance energy development in this case resides in solar, wind and water energy.[16]

Alternatively, the decentralized energy systems aim at placing the energy sources in the proximity of the households, maximizing efficiency in terms of transportation and distribution. Therefore, the report emphasizes the importance of involving local communities in the development of renewable energy, particularly in rural areas where energy poverty is most prevalent. The potential to enhance energy development in this case resides in solar, wind and water energy.[17]

Murafa (2022) explores the energy poverty and the concept of vulnerable households in the Romanian policy context, focusing on how the policy environment addresses these concepts, how this aspect is related to the citizens' support, and whether policy prioritization of energy poverty generates increasing support for vulnerable energy households. Between 2011 and 2020 the governmental support provided to the vulnerable households is on a descending slope, from 440 million RON in 2011 to 49 million RON in 2020. The decreasing trend persisted until 2021, when financial assistance was provided due to the implementation of Law 226/2021, stipulating the recalculation of heating benefit for wood, as the price of firewood highly decreased in 2021, compared to the price in 2020. Among the categories of beneficiaries of governmental support, the wood heating subsidies exceed the centralized heating, the natural gas heating, and the electricity heating subsidies.[18]

[16] Nazare, "The solution to Romania's energy poverty is decentralised, renewable energy."
[17] Nazare, "The solution to Romania's energy poverty is decentralised, renewable energy."
[18] Murafa, Corina. 2022. "Energy poverty and the vulnerable energy consumer in Romania." IDEAS/RePEc. https://ideas.repec.org/a/agr/journl/v4(633)y2022i4(633)p57-68.html.

The article draws the line between the policy prioritization of energy poverty and the vulnerable energy consumers, concluding that the higher the policy prioritization, the lower the actual coverage and benefits for vulnerable categories. The findings of the author are relevant for the present paper because it has an impact on exhibiting the size of compensation for the carbon tax, allocated to the vulnerable consumers. As policy prioritization and subsidies are not enough in order to reduce energy poverty, this aspect might imply that a tax compensation, in this case, is limited by the scope of its coverage and the target category of beneficiaries.[19]

Bogdanov & Zahariev (2022) investigate the extent to which the governmental agenda of alleviating the energy poverty in Bulgaria and the actual undertaken efforts align to produce salient outcomes. The public agenda addresses energy poverty within the Bulgarian social inclusion policy since 2021, under the governance of the new Bulgarian government. The indicators measuring the energy poverty in Bulgaria improved in 2010, referring to the capacity of the households to benefit from adequate heating. The most recent data from the EU Statistics on Income and Living Conditions depict that roughly 27.5% of the households do not benefit from the ability of keeping adequate heating, while more than 1.5 million Bulgarians live below the poverty line of 230.60 euro per month. [20]

The paper argues that there is not any official definition of energy poverty, so that the problem could be addressed with proper evidence in terms of indicators, levels, programmes and targets. Nevertheless under the Recovery and Resilience Plan approved by the European Commission in 2022, around 59% of the total amount is allocated to enhance climate goals and clean energy

[19] Murafa, "Energy poverty and the vulnerable energy consumer in Romania."
[20] Bogdanov, George, and Boyan Zahariev. 2022. "Bulgaria: energy poverty is the foremost challenge for social inclusion policy, due to the war in Ukraine." *ESPN Flash Report* (Brussels), June, 2022.

developments, including the objective to renovate the building sector by prioritizing the energy efficiency standards.[21]

Another aspect that is to be considered in the energy transition is the 75% reliance on the natural gas provided by Russia, notably due to shortages, rising prices, and other factors that might impede the process (Bogdanov & Zahariev 2022). The research is relevant for the present paper, showing that the period of 2010 represented a significant point in addressing the energy poverty for both Bulgaria and Romania, followed by an updated regulatory framework. Furthermore, the lack of effective data and indicators aimed at contributing to evidence-based and concrete measures to mitigate the energy poverty phenomenon is another element which accounts for the similar trends between the two Eastern European countries.[22]

Harold (2013) provides a cultural perspective on the energy policy and energy consumption, concentrating on the potentials for altering energy-consuming practices and enhancing the acquisition of alternative and complementary energy devices. The paper stresses the fact that the cultural aspect is neglected in energy research and policy, and yet relevant as a catalyst in changing the individual perception, the collective consensus and agency on energy transition. The theory is exemplified through the building principles in India in the beginning of the twentieth century, where the design principles aimed at reducing heat gain and encouraging drafts. This aspect suggests that the skills were associated with building principles designed for warm climates, which currently shifted towards a commercial alternative that reorganized consumption practices.[23]

[21] Bogdanov, "Bulgaria: energy poverty is the foremost challenge for social inclusion policy, due to the war in Ukraine."
[22] Bogdanov, "Bulgaria: energy poverty is the foremost challenge for social inclusion policy, due to the war in Ukraine."
[23] Harold, Wilhite. 2013. *Cultures of Energy: Power, Practices, Technologies*. 1st ed. N.p.: Sarah Strauss.

This approach to energy policy is relevant, notably for the present paper, as it formulates a localized approach to energy policy and research, and it allows a better identification of consumers, such as vulnerable consumers, and how to transit to an approach that prioritizes them.

To provide a theoretical background on the gas and electricity situation at the EU level with respect to the accomplishment of the targets set in 2030, the WETO report (2003) projects an incremental growth for the gas demand in the EU compared to Asia, North and Latin America, and Asia. If in the 1990s, the EU area experienced a fast increase in the market of natural gas for the production of electricity, and in the 2000s roughly 20% of the total electricity was produced with natural gas from 12% in 1990 (WETO 2003), until 2010 the share of electricity generated from natural gas increased to around 27%, and by 2022, this share decreased, as 40% of the EU produced electricity is generated by renewable sources.[24]

A retrospective view in the recent history of energy developments is relevant in assessing the current trends of energy efficiency and energy poverty mitigation, especially since thermal energy use per household is projected to remain constant in terms of individual consumption, mostly for the EU and Japan. [25]

The rapid rise in energy efficiency improvements in the EU represents a great opportunity for the leading states in this sector to enhance the capacity of development, and a risk or a threat to states such as Romania, Bulgaria and the Eastern Europe in particular, where the percentage of renewable energy use is roughly 45% in Romania and 20% in Bulgaria.[26]

[24] European Council of the European Union. 2023. "How is EU electricity produced and sold?" Consilium.europa.eu. https://www.consilium.europa.eu/en/infographics/how-is-eu-electricity-produced-and-sold/.
[25] European Commission. 2003. "World energy, technology and climate policy outlook 2030." Fusion Ciemat. http://www-fusion.ciemat.es/New_fusion/en/Fusion/documentos/weto_final_report.pdf.
[26] European Council of the European Union, "How is EU electricity produced and sold?"

Vlasceanu (2017) provides thoughtful insights when researching the judicial and regulatory considerations of the energy poverty in Romania, providing a comparative perspective to the European imposed levels. The paper stresses that the energy poverty and the vulnerable consumer, in theory and practice, are not approached at a unitary level across the EU states.[27]

Even if Romania is categorized as an energy efficient country according to the World Bank reports, the measures are not complete when addressing the social aspects of the phenomenon, the market implications for the participating actors, and the concept of energy poverty. Energy poverty requires a holistic approach towards its complex understanding, especially because energy efficiency in buildings, construction and renovation is discussed at the level of public agenda from the perspective of three pillars: vulnerable consumer, energy poverty, and energy transition[28].

Despite the increasing rates of energy poverty, the mitigation of this phenomenon does not seem a priority on the legislative and political agenda. Peneva (2023) investigates how energy poverty in Bulgaria is estimated at the national level and at the individual level. The most frequent source for providing statistics concerning the levels of energy poverty is Eurostat, nevertheless the measurement is based on individual assessment of the household, an aspect which does not integrate the complexity of the real situation of poverty. The paper explores four methods of indicating rates of energy poverty: the Low-Income High Cost (LIHC) method, the "Poverty after fuel cost" method, the "Minimal Income Standard" method, and the "Ten percent rule" method. Peneva (2023) proposes to analyse objectivelly the energy poverty in

[27] Vlasceanu, Daniel. 2017. "Sărăcia energetică. Consideratii juridice privind cadrul legislativ national. – Vlăsceanu & Partners." Vlăsceanu & Partners. https://vnpartners.ro/saracia-energetica/.
[28] Vlasceanu, "Sărăcia energetică. Consideratii juridice privind cadrul legislativ national".

Bulgaria by using data from the Household Budget Survey of the National Statistics Institute from 2014.[29]

The findings conclude that 10% of the population is classified as living under energy poverty according to the LIHC method, 35% after the "Poverty after fuel cost method", 52% using the "Minimal income standard" method, and 64% according to the "Ten percent rule" method. The results suggest that the reality of analysing such a complex phenomenon implies integrated efforts from its identification, and the method of choice to measure it is affected by various factors. For instance, due to the proposed methodology, it is suggested that the type of heating and the number of household members are the most important factors when it comes to creating policies aimed at reducing energy poverty.[30] The paper of Peneva provides insightful details on the shades the energy poverty could take in theory and, notably, in practice, which is relevant for cases such as Romania and Bulgaria, which confront issues of identification, definition, and solutions in terms of policy making.

Clodnitchi & Busu (2017) discusses the driving factors, effects and potential measures aimed at mitigating energy poverty. As a result of meta-analysis, it is revealed that about 40% of Romanian households are affected by energy poverty, with rural areas and households with low incomes being the most affected. Among the factors that drive the individuals into energy poverty are the low incomes in asymmetry with the high costs of energy, insufficient coverage of social protection by policy, and inefficient buildings. The paper addresses some of the negative aspects induced through the lack of access to basic energy products, such as precarious state of health, diminished opportunities in terms of education and economic aspects, and it

[29] Peneva, Teodora. 2023. ".ENERGY POVERTY IN BULGARIA." EconPapers. https://econpapers.repec.org/article/skoyrbook/v_3a17_3ay_3a2019_3ai_3a1_3ap_3a187-210.htm.
[30] Peneva, Teodora. 2023. "Energy poverty and challenges in Bulgaria." University of Sofia. http://www.feba.uni-sofia.bg/sko/yrbook/Yearbook17-11.pdf.

accounts for climate characteristics, deaths resulting from the extreme temperature conditions in the winter.[31]

Clodnitchi & Busu (2017) suggests a set of recommendations and solutions which might contribute to the mitigation of energy poverty in Romania, such as the use of social tariffs for vulnerable consumers of electricity, the improvement of social mechanisms aimed at increasing energy efficiency, the promotion of sources of renewable energy, and measures that would increase the public awareness in energy poverty related aspects.[32]

Constantin (2023 stresses the importance of investment in the rehabilitation of buildings and heating systems as a measure to mitigate energy poverty in Romania. The main reason to prioritize rehabilitation in the heating systems and in the construction, sector is justified by the fact that primary roots of energy poverty reside in high heating prices. The rural households are primarily exposed to high rates of energy poverty in Romania, as they lack the access to heating systems. Nonetheless, given the current developments in the field of heating and electricity, the vulnerable households require access to modern forms of heating and renewable energy sources, because poor energy efficiency represents a crucial factor that leads to energy poverty. Solutions such as the replacement of the heating and cooling systems in the vulnerable households exhibit an efficient manner to reduce energy poverty.[33]

Zamfir et al. (2015) address the issue of energy prices reform and their social impact on the living standards. Following the energy reform in the period of the years 2013/2014, the paper

[31] Clodnitchi, Roxana, and Cristian Busu. 2017. "(PDF) Energy poverty in Romania –drivers, effects and possible measures to reduce its effects and number of people affected." ResearchGate. https://www.researchgate.net/publication/319326392_Energy_poverty_in_Romania_-drivers_effects_and_possible_measures_to_reduce_its_effects_and_number_of_people_affected.
[32] Clodnitchi, "Energy poverty in Romania –drivers, effects and possible measures to reduce its effects and number of people affected."
[33] Constantin, Aurel. 2023. "ORSE: Romania must invest in the rehabilitation of buildings and heating systems to reduce energy poverty, through REPowerEU." Business Review. https://business-review.eu/energy/power/orse-romania-must-invest-in-the-rehabilitation-of-buildings-and-heating-systems-to-reduce-energy-poverty-through-repowereu-245934.

discusses the actions undertaken by the Romanian policymakers to reduce energy poverty. Energy poverty is defined in this case as a dimension of social and academic exclusion, deprivation from civic life, and biological subsistence. In order to classify individuals as having energy welfare, several interdependent factors are to be accomplished, such as sufficient income to cover the energy expenses and the investments in the energy of the household, the energy quality of the household, the access to different types of sources, shaping a collective culture that encourages the citizens to take advantage of the benefits produced by the use of natural resources, and the stability of macroeconomic and political elements at the national level. At the EU level, the state of energy poverty is treated as a social priority with severe implications unless managed properly.[34]

Among the causes of the high levels of energy poverty, there are the increased prices for natural gas and electrical energy, the low levels of energy efficiency, and the social polarization which generates an abundant stratum of households living with an insufficient income for decent living standards. The rapid increase of energy prices between 2016 and 2018, along with the decreased living standards for roughly 50% of the population, and the low levels of energy efficiency, pushed even higher levels of households into poverty. The authors stress the importance of treating energy poverty as a dimension of poverty overall, in order to have a systemic approach to multiple fields that revolve around this concept, besides social, economic, educational and civic. Main findings suggest the necessity of creating a solid legislative background, backed by evidence, to protect the vulnerable consumers, to enhance the energy efficiency, especially in the buildings sector, in order to mitigate the phenomenon of poverty, and to improve the energy characteristics of the existent residential sector and to ensure the

[34] Zamfir, Catalin, Mihai Dumitru, Adina Mihailescu, Mariana Stanciu, Elena Zamfir, Ilie Badescu, Ion Glodeanu, and Adela Serban. 2015. "View of Sărăcia energetică: impactul social al reformei preţurilor ..." Revista Calitatea Vietii. https://www.revistacalitateavietii.ro/journal/article/view/77/56.

implementation of rules and laws that prioritize energy efficiency and access for the future buildings - notably in the case of the residential sector.[35]

Streimikiene & Balezentis (2019) describe the energy poverty as fuel poverty, as a particular case in former socialist countries, where residential districts have low levels of insulation and quality of buildings. These features of the buildings push the households into energy poverty and act as barriers against the innovation in the field of energy efficiency. Therefore, the paper conducts policy assessment of the regulatory framework which addresses the renovation of multi-flat residential buildings and tackling energy poverty in former socialist countries with aging populations. These post-socialist countries face specific impediments due to their aging building stock, which often lacks energy efficiency measures, generating increased energy consumption and financial burden for residents, particularly for low-income households. The article explores innovative policy schemes that have been implemented to address these issues. The policies assessed include financial benefits and support mechanisms provided by governmental entities and international organizations to promote energy-efficient renovations, such as grants, subsidies, and low-interest loans. Furthermore, public-private partnerships and cooperation between stakeholders are found to be effective to mobilize resources[36].

Targeted solutions aimed at alleviating energy poverty and solving the issue of inefficient buildings require tailored approaches that take into account the socio-economic context of each country, as well as the involvement of local communities and residents in the decision-making process. Energy education could be a crucial step in building resilience for the human capital, notably for post-socialist countries where the element of raising awareness is still lacking.[37]

[35] Zamfir, "View of Sărăcia energetică: impactul social al reformei prețurilor ..."
[36] Streimikiene, Dalia, and Tomas Balezentis. 2019. "Innovative Policy Schemes to Promote Renovation of Multi-Flat Residential Buildings and Address the Problems of Energy Poverty of Aging Societies in Former Socialist Countries." MDPI. https://www.mdpi.com/2071-1050/11/7/2015.
[37] Streimikiene, "Innovative Policy Schemes to Promote Renovation of Multi-Flat Residential Buildings and Address the Problems of Energy Poverty of Aging Societies in Former Socialist Countries."

Anchoring the energy situation to the very present context, Murarasu & Bujor (2022) argue how the unpredictability of the gas supplies by Russia and the post-pandemic effects that pushed a significant number of people into poverty create tense effects for energy stability in Europe. Energy crisis intensified, and with the sharp increase in the utility expenses, half of the Romanian residents and third of the Bulgarian residents report having difficulties in dealing with unforeseen changes in prices and services. The main findings of the paper suggest that the current energy crisis contributes to the amplification of energy poverty in Europe, in the lack of governmental support and funds for the vulnerable consumers.[38]

While the amount of governmental spending on the efforts to alleviate energy poverty remains at low levels, the side effects such as increase in social inequalities do not cease to emerge. Furthermore, the competition is diminished due to the high regulatory barriers and heavy administrative requirements.[39] In the case of Romania, the development stratification at the regional levels remains a challenge. The issue originates in the labor productivity, which for instance in the Southwest and Eastern side of Romania, experiences lower levels in growth compared to the other regions. Concerning the energy directly, the disparities are salient when coming to poor and inefficient infrastructure in the same areas.[40]

Relevant contributions provided by the governmental entities reside in solid social policies, because the capacity of those households to have decent living standards highly depends on those policies, at least in the short term. Additionally, given the fact that the energy security

[38] Murarasu, Ion C., and Razvan Bujor. 2022. "The Energy Crisis as a Factor of Aggravating Poverty in Bulgaria and Romania. State's Social Expenditures Evolution." Romanian Economic Journal. http://www.rejournal.eu/sites/rejournal.versatech.ro/files/articole/2022-12-13/3708/8ymurarasu.pdf.
[39] OECD. 2022. "OECD Economic Surveys: Romania 2022." OECD Library. https://www.oecd-ilibrary.org/economics/oecd-economic-surveys-romania-2022_e2174606-en.
[40] OECD, "OECD Economic Surveys: Romania".

risks are expected to increase in the long run, it is necessary for the states in the Black Sea region to keep developing and investing in alternative sources of energy.[41]

The researchers and social scientists have been looking for answers and evidence to better explore why energy poverty is specifically rising among low-income households. Nazaruk & Pedersen develop the same hypothesis, when studying how vulnerable families are affected even more by energy poverty in the European Union, primarily due to the poorly insulated and less energy efficient housing spaces. A sharp increase and overall prices and utility expenses is felt heavily by these households, therefore while some experts argue that the problem should be fixed within social policies, according to the European Commission's assessment by the Dutch NECP, the situation is more complex than that. The target aiming at alleviating energy poverty lies between climate and social issues and not only, because the quality of housing stock prevails in the end.[42]

Vulnerable consumer

The vulnerability of energy consumption stands in a complex spectrum of factors and issues, such as sociodemographic factors, cultural aspects, household composition, and includes processes of civic participation and governmental accountability.[43]

[41] Murarasu, Ion C., and Razvan Bujor. 2022. "The Energy Crisis as a Factor of Aggravating Poverty in Bulgaria and Romania. State's Social Expenditures Evolution." Romanian Economic Journal. http://www.rejournal.eu/sites/rejournal.versatech.ro/files/articole/2022-12-13/3708/8ymurarasu.pdf.
[42] Nazaruk, Zuza, and Malene Pedersen. 2022. "Why is energy poverty rising so sharply in the EU?" Euronews. https://www.euronews.com/green/2022/02/23/why-energy-poverty-is-rising-among-low-income-households-in-the-eu.
[43] DellaValle, Nives, and Veronika Czako. 2022. "Empowering energy citizenship among the energy poor." Science Direct. https://www.sciencedirect.com/science/article/pii/S221462962200158X.

There is not a unified version upon the definition and identification of vulnerable consumers worldwide, therefore the vulnerable households are at the risk of underrepresentation in the discussions and decisions on renewable energy projects and communities. Between 2015 and 2020, the European institutions developed an upgraded design of the Energy Union, including the launch of the Clean Energy Package 2018-2019, the implementation of measures to enforce energy transition changes and stimulate competition over global energy markets, and to boost Member States to introduce regulatory frameworks that enhance the renewable energy market, and that protect and empower the vulnerable consumers. Nonetheless, the initiatives revealed technical challenges for the portrayal of the vulnerable consumer, and legislative challenges, such as targeting sectors to address the issue. Social policies, for instance, remain a powerful tool across the EU to regard some aspects of vulnerability, however most likely not in the long term. At the same time, the empowerment policy interferes with the extent of freedom the vulnerable households possess in order to benefit from the empowerment tools. As an example, self-efficacy in choosing specific energy sources and suppliers stand in a high sense of control of the material and cognitive conditions. This can be a dilemma for households living in poverty.[44]

The term has been remaining under debate, at the intersection between conceptual identification, finding adequate statistical measures, and creating common definitions to enhance its recognition. Empowerment through citizens engagement represents a solution through the involvement of vulnerable households in energy poverty-centered projects, to raise awareness and support them in adopting behavioral changes related to energy efficiency and energy consumption practices. Energy poverty remains a dependent variable of the energy efficiency in the housing sector, therefore the disparities in the residential sector across EU

[44] Hanke, Florian, and Jens Lowitzsch. 2020. “Empowering Vulnerable Consumers to Join Renewable Energy Communities—Towards an Inclusive Design of the Clean Energy Package.” MDPI. https://www.mdpi.com/1996-1073/13/7/1615.

states, promote a wide range of policy measures, and support to a higher or to a lower extent the reduction in poverty levels.[45] Therefore, the following section highlights the main developments concerning the portrayal of the vulnerable consumer, conceptually and practically, in the cases of Romania and Bulgaria.

Romania

The period of the years 2020/2021 represents a promising stage for contributing to the improvement of the situation of vulnerable consumers. The Romanian parliament adopted the law on protection of vulnerable energy households, which establishes social protection measures and provides an integrated definition of this type of consumer. Under the law, vulnerable consumers represent the households (single persons or families) who benefit from social protection due to the incapacity of accessing energy sources. This incapacity or inability is defined through factors such as age, illness, insufficient income or geographical isolation. The provision of the social measures include the type of assistance with respect to the heating purposes, the maximum monthly income for the beneficiaries, and the level of assistance by percentage compensation applied to a differentiated reference value depending on the heating system.[46]

Under the draft assessment report of the UNDP/GEF, the fuel poverty is not defined at the level of legality and policy analysis in Romania, concluding that: A large proportion of Romania's population is not able – in general and in normal conditions – to provide itself with sufficient

[45] Longo, Danila, Giulia Olivieri, Rossella Roversi, Giulia Turci, and Beatrice Turilazzi. 2020. "Energy Poverty and Protection of Vulnerable Consumers. Overview of the EU Funding Programs FP7 and H2020 and Future Trends in Horizon Europe." MDPI. https://www.mdpi.com/1996-1073/13/5/1030.
[46] CMS Law Now. 2020. "Renewable energy law and regulation in Bulgaria | CMS Expert Guides." CMS Law. https://cms.law/en/int/expert-guides/cms-expert-guide-to-renewable-energy/bulgaria.

levels of thermal comfort in the home, because of the high cost of heating energy relative to their income.[47]

There are several policies and incentives for the renovation of existing buildings in Romania, the energy strategy 2007-2020 exhibiting the legal foundations for the developments of energy efficiency and for the reduction of energy poverty. The proposed solutions that are related to construction, buildings and renovation imply: continuing the 'Heating 2006-2020: heat and comfort' programme, continuing the improvement of energy efficient block of flats, expanding the national programme of energy efficiency, achieving the energy performance certificate for residential buildings, launching the 'Green House Plus (Casa Verde)' programme financially supported by the Environmental Fund, and promoting the use of renewable energy by final consumers.[48]

The Romanian Parliament adopted the Law of the Vulnerable Consumer in 2021, following a concentrated decade of debate around the topic, political tensions, and delays. The law proposes to work on two different components: provision of subsidies based on energy costs, and based on the type of energy, to mitigate the vulnerability of the low-income consumers of energy (electric, thermal, or solid fuel).[49]

[47] UNDP. 2023. "." Info UNDP. https://info.undp.org/docs/pdc/Documents/ROU/MTE%2520EE%2520Romania%2520Final5.pdf.
[48] EC Energy Europa. 2017. "ROMANIA Strategy for mobilising investments in the renovation of residential and commercial buildings existing at national level." Energy. https://energy.ec.europa.eu/system/files/2018-07/ltrsenromania_0.pdf.
[49] Energy Center. 2023. "Legea consumatorului vulnerabil a fost votata in Parlament, dupa mai bine de zece ani de amanari. Ea va intra in vigoare de la 1 noiembrie." Energy Center Romania. https://energy-center.ro/piata-energiei-din-romania/legea-consumatorului-vulnerabil-a-fost-votata-in-parlament-dupa-mai-bine-de-zece-ani-de-amanari-ea-va-intra-in-vigoare-de-la-1-noiembrie/.

Bulgaria

The highest levels of consumers reporting poor performance in the building stock quality are recorded in Bulgaria in 2012. This fact implies that the poor energy efficiency standards increase the vulnerability of the households poor or prone to be pushed into energy poverty.[50]

As in the case of Romania, there is no official definition for energy poverty, but according to the Social Assistance Act under the supervision of the Ministry of Labor and Social Policy, the vulnerable consumer represents the category of households who receive targeted aid for electricity, heat, or natural gas. This definition is in accordance with Directive 2009/72, which stipulates that *households who live in homes supplied with electricity and who, due to age, health or income, are at risk of social exclusion in connection with the supply and consumption of electricity, and benefit from social measures protection, to ensure the necessary supplies of electricity.* Under the National Energy Efficiency Program for Multifamily Residential Buildings' Renovation, the financial and non-financial indicators dimensions of the vulnerable consumer are taken into account to bring the energy consumption of residential buildings designed before 1999 from 265 municipalities at the lowest energy expenses.[51]

According to the Empowering Energy Poor Citizens through Joint Energy Initiatives programme in 2020, under the European Commission, Bulgarian institutional entities not only lack the comprehensive and coherent definition of concepts such as energy poverty or vulnerable consumer, but they also fail to produce monitoring and identification measures. Even though under the Energy Act the vulnerable households are defined in accordance with the Directive 2009/72, monitoring and measuring strategies are necessary in order to better

[50] PowerPOOR. 2023. "Empowering Energy Poor Citizens." PowerPOOR. https://powerpoor.eu/sites/default/files/2022-07/INSIGHT_E_Energy%2520Poverty%2520-%2520Main%2520Report_FINAL.pdf.
[51] Kulevska, Tsvetomira. 2023. "Energy Poverty in Bulgaria." Sustainable Energy Development Agency in Bulgaria. https://www.ca-eed.eu/wp-content/uploads/2021/10/WG4.2-Energy-poverty-Bulgaria.pdf.

formulate policies aimed at supporting all the categories supported through the definition, such as elder communities, low-income, persons with limitation of work capacities. Families that highly rely on social assistance, and households who already benefit from financial aid for heating purposes.[52]

[52] PowerPOOR. 2021. “Bulgaria.” POWERPOOR. https://powerpoor.eu/about/locations/bulgaria.

Chapter III: Methodology

Research design, research question, hypothesis

The methodology section describes and analyses the legislative framework of both countries, and it provides details on the method of analysis of the two chosen cases. The legislative framework which is analyzed presents the legal mechanisms on energy efficiency from Bulgaria and Romania, the effective laws, programs for energy efficiency in buildings, national action plans and national strategies. The format is a comparative study, which proposes to bring in light a various spectrum of sources for the chosen cases. Firstly, under this section, the legislative situation of Romania is described, starting with the beginning of the post-socialist period, in the 2000s. The same situation is applied to describe and analyze the situation of Bulgaria. The data is used to answer the research question: how is energy poverty addressed through buildings, construction and renovation sectors in Romania and Bulgaria? The main hypotheses of the paper are:

1. A regulatory framework that prioritizes the renovation of the housing buildings to adhere to higher energy efficiency standards contributes significantly to the mitigation of energy poverty. The mechanism behind this thesis is that buildings benefitting from high energy efficient standards pose lower energy expenses for the vulnerable consumer and increase their resilience and stability over time.
2. The main barriers against the improvement of energy efficiency standards in buildings are the legislative and normative barriers, which impede the enforcement of better legislation.

Conducting a comparative case study provides the methodology with a series of benefits for the quality and diversity of the content. Furthermore, this method allows the researcher to identify potential emerging hypotheses, attain increased potential of construct validity, and to explore mechanisms that provide historical explanations.[53] This is relevant for the present paper, as the future legislative development in the energy efficiency in buildings require an in-depth analysis of the past and current settlements, and it offers the opportunity to address in a flexible manner the functions and application of those legal frameworks. The analysis of a comparative case study also provides the capacity to explore a wide topic through a variety of lenses of the phenomenon, and it provides useful insights for the policymaking realm, where a rigorous analysis of both qualitative and quantitative methods is necessary in order to provide evidence-based and efficient policies.[54]

Data collection and research objectives

Data is collected by conducting desk research to gather documents, reports, papers, published laws, national strategies and other publicly available materials that are useful for this topic. Data is qualitatively analyzed, meaning that the gathered documents, which are the ones consisting of legislative and regulatory frameworks, are explored in order to compare the cases of the two countries and how they do perform to alleviate energy poverty and enforce well established plans which enhance the energy performance. The objectives of the research reside furthermore in exploring whether the legislative developments of the concept of vulnerable consumer affects or contributes to the provision of strategies and recommendations for the

[53] Bennett, Andrew. 2023. "CaseStudyMethods:Design,Use, and Comparative Advantages." https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=7d11098671a75e7b289fd65adab2eb236c5cf580.
[54] Bennett, "CaseStudyMethods:Design,Use, and Comparative Advantages."

mitigation of energy poverty, and how similar or dissimilar are the trends of Romania and Bulgaria regarding these processes.

The case of Romania

The Romanian government has implemented several policies and programs aimed at addressing energy poverty, including the provision of subsidies for low-income households and investments in measures that prioritize alternative sources of energy and energy efficiency. Nevertheless, more needs to be done to ensure that all citizens have access to affordable, reliable, and sustainable energy services. Regarding the Romanian Energy Efficiency Legislation, the National Energy Efficiency Action Plans set targets for reducing energy consumption and improving energy efficiency in various sectors of the economy.

A major legislative development in energy policy occured in 2021 in Romania, when numerous amendments were added to the electrical section of the Energy Law 123/2012.[55] A first relevant amendment for addressing energy poverty through construction and renovation is to supplement the investments responsible for the production of flexible and renewable energy. This legislative point is accompanied by the re-definition of terms and concepts aligned with the European regulatory framework on energy poverty, energy efficiency and vulnerable households, such as dispatchable consumption, citizen energy community, prosumers, dynamic electricity price contract, imbalance settlement period and regional coordination center.[56]

[55] Cordea, Vlad. 2022. "Overview Of The Recent Amendment Of The Energy Law By The Government Emergency Ordinance No. 143/2021 - Energy Law - Romania." Mondaq. https://www.mondaq.com/energy-law/1151340/overview-of-the-recent-amendment-of-the-energy-law-by-the-government-emergency-ordinance-no-1432021.
[56] Cordea, "Overview Of The Recent Amendment Of The Energy Law By The Government Emergency Ordinance No. 143/2021 - Energy Law - Romania."

Under the National Authority for Energy Regulation (NAER), these points are implemented as new obligations for this legal entity, which consequently re-defined the concept of vulnerable consumer, "prosumer", and technical regulations concerning the standards for the transit to renewable energy (https://anre.ro/consumatori/consumatori-legislatie/). Nevertheless, the latest developments under the NAER do not address the energy poverty in the context of construction and buildings, nor the gap between the poor households and the transit to energy efficiency. For instance, since 2018, the modified regulatory frameworks mainly address the activity of prosumers with respect to commercial renewable energy through the ordinance 228/2018, approving the methodology for establishing the rules for the sale of electricity produced in power plants from renewable sources with an installed electric power of no more than 400 kW per place of consumption belonging to prosumers, until the adoption of the ordinance 95/2022, which mention the technical conditions for connection to public interest electrical networks for prosumers with active power injection into the network.[57]

Under the report on the member states progress in climate action in 2021, Jensen (2021) compares the developments conducted in Romania in terms of national climate policy, renewable energy, and adaptation and resilience, to the targets established by the EU institutions for 2030.[58]

The residential sector in Romania has a prominent background of construction of the buildings in the period between 1960 and 1990. Consequently, having low levels of thermal insulation due to the energy crisis in the 1970s, a framework of regulations regarding the thermal protection and perimeter sealing elements has not existed since.[59]

[57] Tomoiaga, Bogdan. 2023. "Consumatori Legislatie – anre.ro." ANRE. https://anre.ro/consumatori/consumatori-legislatie/.
[58] Jensen, Liselotte, and Ville Seppälä. 2021. "Climate action in Romania." European Parliament. https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/696185/EPRS_BRI(2021)696185_EN.pdf.
[59] Development Ministry. 2017. "RENOVAREA ROMÂNIEI –." Energy.ec.europa.eu. https://energy.ec.europa.eu/system/files/2017-12/ro_building_renov_2017_ro_0.pdf.

The Social Housing Program (114/1996), modified in 2006, represents the only regulatory framework on social housing in post-socialist Romania, stipulating the necessary conditions and objectives of the construction of buildings for low-income individuals. The program defines the low-income individuals as individuals who earn less the national minimum income, and it is financed mostly from the local budgets. The mechanism in this case is direct subsidy to vulnerable households, however the number of private ownership increased from 68% in 1990 to 98% in 2017.[60] The Social Housing Program was modified again in 2023, under the pressure from the European Commission to enhance social housing, as a crucial factor pushing individuals into energy poverty. The modifications include the rehabilitation of the existing buildings, the removal of several legislative barriers in such a way to allow the construction of social housing anywhere in Romania under the administrative territory, and limits for the rent costs.[61]

The Law on Energy Performance in Buildings from 2005 (372/2005) establishes the regulatory conditions for the improvement of energy performance in the buildings (residential, public, private, and *other types of buildings that require significant amounts of energy consumption*), taking into account the climate conditions, the optimum level of comfort and expenses, and the aesthetical requirements of the urban planning. The law stipulates the application of minimum requirements of energy performance in the buildings, and the creation of standards of energy performance in the old buildings, with the possibility of removal/renewal of the technical systems, where it is the case. This law was modified in 2020, becoming the main regulatory framework of energy performance in the buildings at the national level. The new modifications include the re-definition of the type of the buildings subjected to energy performance criteria,

[60] Habitat for Humanity. 2017. "Social Housing in Romania: The Need for Decent, Affordable Homes." Habitat for Humanity GB. https://www.habitatforhumanity.org.uk/blog/2018/01/social-housing-romania/.
[61] 114/1996 actualizată 2023." Lege5. Accessed June 3, 2023. https://lege5.ro/Gratuit/ge3dgmru/locuinta-sociala-lege-114-1996?dp=geydcnbwge3dc.

the identification of harmful energy impact and the categorization of different levels of impact, the prioritization of high impact buildings on energy consumption, and the increase in the construction of buildings with neutral emissions.[62]

The Law on Energy Efficiency adopted in 2007 (Law 13 09/01/2007) establishes the regulatory framework for carrying out activities in the electricity and thermal energy sector produced in cogeneration, in line with the optimal use of primary energy resources in the conditions of accessibility, availability and affordability and in compliance with safety, quality and environmental protection. The law does not mention either objectives, or provisions to reduce energy poverty, however its main goal stands in improving the energy efficiency in buildings and setting requirements for energy performance certificates. There are few explicit objectives to be achieved as a result of this law: ensuring a sustainable development of the national economy, diversifying the base of primary energy resources, and creating the functioning of competitive electric markets, ensuring the non-dicriminatory access of all participants to the electricity market, ensuring the operational safety, ensuring environmental protection at the local level, in accordance with the legal regulations in force, and establishing the interconnected functioning of the national power system of the Union for the Coordination of Electric Energy Transport (UCTE).[63]

The Law on Social Assistance has been implemented since 2008 with the purpose of approving the Government Emergency Ordinance 116/2007, which includes the principles of functioning of the National Agency on Social Services. The law includes provisions and measures related to social assistance programs, such as support for vulnerable groups and low-income

[62] Romanian Legislation. 2020. "LEGE 101 01/07/2020." Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocumentAfis/227538.
[63] Romanian Legislation. 2007. "LEGE 13 09/01/2007." Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocumentAfis/78851.

households, and it provides the foundations to address social issues, nonetheless energy poverty is not directly addressed. On the other hand, the principles are the protection of social solidarity, the efficiency of the administration of social services provision, the facilitation of the access to the social benefits, the legal access to social rights, and transparency and public accountability. Given the high percentage of beneficiaries reporting the lack of access to social benefits, despite their entitlement to it, these provisions address indirectly the energy poverty, from the perspective of financial support for households with no resources to access energy.[64]

The Government Emergency Ordinance on the Improvement of Energy Performance of Buildings was implemented in 2009 after the Directive 2006/32/EC of the European Parliament and Commission on energy efficiency for end-users and energy services. Therefore, it tranposes the EU Energy Performance of Buildings Directive at the level of national legislation. The main principle consists of the promotion of energy efficiency improvements aimed at alleviating energy costs for households. The urgent adoption of this normative act was meant to counteract the negative effects of the financial crisis on the energy buildings sector, and on the energy resources. By applying the provisions of this normative act, in the short and medium term, the state budget is relieved of the expenses for the fuel used, the expenses for the maintenance of housing blocks are reduced by reducing heating bills, the economic operators in the field of construction are supported and new jobs are created for work. By applying the provisions of this act, in the short and medium term, the state budget is relieved of the expenses for the fuel, the costs of the maintenance of housing blocks are reduced by reducing heating

[64] Romanian Legislative Portal. 2008. "LEGE (A) 220 27/10/2008." Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocument/204839.

bills, the economic operators in the field of construction are supported and there are incentives for new jobs to be created for work.[65]

The Government Emergency Ordinance on Energy Efficiency promulgated in 2012 acts as a supplement for the previous one adopted in 2009, promoting the improvement of energy efficiency in buildings. It included provisions for supporting low-income households through financial incentives, grants, and subsidies to improve their energy efficiency and reduce energy costs. This act sets the intervention details to increase the energy performance of the residential buildings, built according to projects developed in the period 1950-1990, the necessary stages to carry out the working processes, the finance method, and the obligations and the responsibilities of public administration authorities and property owners' associations. The implementation of the ordinance aimed at increasing the energy performance of the residential buildings, respectively reducing the energy consumption for heating the apartments, by maintaining the internal thermal climate and aesthetical features. The purpose of increasing the energy performance of residential blocks is to reduce energy consumption from conventional sources, reduce greenhouse gas emissions and introduce alternative sources of energy generation. The supplemented points included in this act refer to the delegation of the public authorities with the task of monitoring and reporting. Furthermore, it distinguishes between historical, cultural and residential buildings, by targeting the last category.[66]

This long-term strategy set out the energy policy guildelines, objectives, and measures to decrease the gas emissions in Romania and to enhance sustainability standards in the development of alternative energy sources. While it did not specifically target energy poverty,

[65] Romanian Legislative Portal. 2009. "OUG 18 04/03/2009." Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocument/103284.
[66] Romanian Legislative Portal. 2012. "OUG 63 30/10/2012." Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocumentAfis/142598.

it aimed to increase energy efficiency and promote renewable energy among multiple sectors including the housing sector, which could indirectly benefit vulnerable consumers by alleviating energy-related expenses. One of the specific objectives include the improvement of thermal performance of the buildings, which sets an increase by 25% in energy efficiency compared to the initial situation. A main legislative and technical impediment is the fact that the technical standards of the thermal installation in the residential buildings are based on climate data from the period 1965-1985, which translates into inadequate in-house temperature once the set standards of energy efficiency are met. Therefore, primary measures include the rehabilitation of the technical standards in residential buildings to make sure that they reflect the current climate reality. Furthermore, the resilience criteria require to be adapted to the current times, as they represent another component of the legislative and technical impediments that the energy strategies confront with in the attempt of introducing energy efficiency standards in the present in Romania.[67]

Energy efficiency has been conveyed as a strategic objective on the political agenda since 2014, at the implementation of the Law on Energy Efficiency, with new provisions which focus on energy security, development, and sustainability. The principles of this regulatory framework include *the elimination of barriers that impede the promotion of energy efficiency, t*he *promotion of mechanisms of energy efficiency*, raising awareness among consumers about the importance of renewable energy, enhancing research in the field of energy efficiency, providing social benefits, and introducing technologies that function after high energy efficiency standards.[68]

[67] Environment Ministry. 2013. "Strategia naţională a României privind schimbările climatice 2013 - 2020." Ministerul Mediului. http://mmediu.ro/app/webroot/uploads/files/Strategia-Nationala-pe-Schimbari-Climatice-2013-2020.pdf.
[68] Romanian Legislative Portal. 2014. "LEGE 121 18/07/2014." Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocument/160331.

The National Strategy on Social Inclusion and Poverty Reduction promotes the social inclusion of the vulnerable communities and the improvement of their living standards. The sectors which are targeted as key interventions in the alleviation of poverty are the labor market, education, social services, health, housing, and social participation. Under the housing section, the government proposes to elaborate and finance a social housing program for vulnerable groups. The program intends to provide partial financial support for housing and utility costs for low-income households. The provision with financial benefits remains the main mechanism for the other mentioned sectors, therefore not integrating a systemic approach to identify, measure, and reduce punctually energy poverty, despite its identification as a strategic objective. Regarding the vulnerable households, the strategy proposes the following solutions: direct subsidy for low-income households and the elimination of the social tariff. Concerning the energy efficiency in buildings, the measures include: the obligation to operate after European energy efficiency standards in the case of the new buildings, the improvement of these standards for the public buildings, and the improvement of thermal insulation standards for the rural residential area.[69]

The Law on the Promotion of Renewable Energy Sources from 2010 includes the modifications brought to the law from 2008. The law creates the conditions for the investment in durable development at the local and regional level, and it also ensures the necessary finance sources for renewable energy projects.[70]

The National Energy Strategy 2007-2020 outlines the country's energy goals and priorities, including efforts to address energy poverty and improve energy efficiency. It emphasizes the necessity to enable all the citizens with access to affordable energy and ensure that the

[69] Lege5. 2015. "Strategia naţională privind incluziunea socială şi reducerea sărăciei pentru perioada 2015-2020." Ministerul Muncii. http://www.mmuncii.ro/j33/images/Documente/Familie/2015-DPS/2015-sn-is-rs.pdf.
[70] Romanian Legislative Portal. 2008. "LEGE (A) 220 27/10/2008." Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocument/204839.

vulnerable households benefit from higher living standards. The strategy mentions as prioritary objectives the following: the importance of social protection offered to vulnerable households through direct mechanisms of support, of the improvement of energy price policy, and the obligation of developers to adhere to the European energy efficiency standards.[71]

The Law on Energy Vulnerable Consumers (226/2021)stipulates for the first time the necessary conditions of granting benefits to vulnerable consumers, and of protecting their rights and interests. It includes provisions to prevent disconnections, establish social energy tariffs, and provide financial assistance to vulnerable households. The law establishes the criteria to create the category of vulnerable consumers of energy, and defines levels to include the households and individuals under this category. The law distinguishes between the financial and non-financial support allocated for these persons: support for heating purposes, support partially covering the heating expenses within a year, support for the acquisition of technical household equipment in line with energy efficiency standards, and support to enable the households with access to efficient energy sources.[72]

The National Program for Thermal Rehabilitation of Residential Buildings (2019) program aimes at improving the thermal performance and energy efficiency of residential buildings, being regulated through the Law 163/2009. The objectives of the program are the improvement of hygiene and comfort conditions, the alleviation of utility expenses through efficient standards, and the reduction of gas emissions from the residential sector of buildings.[73]

[71] Environment Ministry. 2011. "STRATEGIA ENERGETICĂ A ROMÂNIEI PENTRU PERIOADA 2007 – 2020 ACTUALIZATĂ PENTRU PERIOADA 2011 - 2020 Varianta 20 a." Ministerul Mediului. http://mmediu.ro/new/wp-content/uploads/2014/01/2012-07-31_evaluare_impact_planuri_proiectstrategiaenergeticaromania.pdf.
[72] Romanian Legislative Portal. 2021. "LEGE 226 16/09/2021." Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocument/246430.
[73] Development Ministry. 2009. "Programul național multianual privind creșterea performanței energetice a blocurilor de locuințe." mdlpa. https://www.mdlpa.ro/pages/pncrestereperformanta.

The National Plan for the Renovation of Buildings (2017) outlines a comprehensive strategy for the enhancement of energy efficiency in the buildings sector in Romania. The priorities reside in reducing energy consumption, lowering energy bills, and improving living conditions for vulnerable households. In 2017, the research associated with the residential sector in Romania found that at least 48% of the households use wood as the main source of heating. Also, as more than 58% of the residential buildings were built before 1985, the plan is necessary for their renovation and rehabilitation.[74]

The Emergency Ordinance on Energy Social Aid (2022) introduces measures to provide financial benefits to vulnerable households facing difficulties to cover the energy expenses. It aimed at computing the financial benefits in a proportional manner, accounting for the size of the households, the consumption of energy, and the adaptation to decent living standards.[75] According to the report on the Energy Performance of Buildings (EPBD), whose transpositions are implemented by Law 372/2005 (update 2017), related to the standards of energy performance in buildings, the Nearly Zero-Energy Buildings (NZEB) requirements for new single- and multi-family houses were defined through the Law 386/2016. For the local developments, it is suggested that the plans include financial policy recommendations and measures to promote the NZEB and use of renewable energy sources in the buildings, especially in the case of buildings that undergo significant renovations. Additionally, renewable energy sources should represent at least 10% of the total primary energy necessities of NZEB. Concerning the finance-related measures, the following have been used: structural funds and funds from public finance institutions, state budget allocations to enhance investments in energy efficiency objectives, local budgets, and multi-annual programmes that

[74] EC Energy Europa. 2017. "ROMANIA Strategy for mobilising investments in the renovation of residential and commercial buildings existing at national level." Energy. https://energy.ec.europa.eu/system/files/2018-07/ltrsenromania_0.pdf.
[75] Romanian Legislative Portal. 2022. "ORD DE URGENTA 166 08/12/2022." Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocument/262296.

provide financial support. The financial measures for major renovation activities are regulated through the Government Emergency Ordinance 18/2009, the Government Emergency Ordinance 69/2010, the EU regulations related to Structural and Cohesion Funds, and the local dedicated programmes.[76]

The case of Bulgaria

According to the EU Energy Poverty Observatory, Bulgaria performs poorly, compared to the EU average on the population-reported indicators, on the situation of energy poverty. Roughly 35% of Bulgarian individuals reported the inability to heat their households inadequately in 2018, around 31% was in difficulty to accommodate the utility expenses, while this percentage on the EU average stands at around 6.6%. The regulatory advancements in the field of energy proved to bring progress from 2005, when 70% of the households were unable to heat their home adequately, to 2018, when this percentage fell to 34% of the households.[77]

The significant decrease is recorded between the years 2010 and 2011, because of solid measures in terms of policy and legislation. From 2017, at both the EU level and in the Bulgarian context, the concept of energy poverty and vulnerable consumers lack a clear and precise definition, which represent an impediment for the policy recommendations as well. If in the present the debate still revolves around the definition and conceptualization of these terms for energy policy making, it is insightful to assess the developments that took place in the period between 2010 and 2012, when this definition was outlining a regulatory and conceptual realm with less capacity for proper functioning of policies.[78]

[76] EPBD Bulgaria. 2018. "EPBD implementation in Romania." Concerted Action EPBD. https://epbd-ca.eu/wp-content/uploads/2018/08/CA-EPBD-IV-Romania-2018.pdf.
[77] EU Energy Poverty Observatory. 2023. "Member State Report Bulgaria." European Commission. https://energy-poverty.ec.europa.eu/system/files/2021-10/epov_member_state_report_-_bulgaria.pdf.
[78] EU Energy Poverty Observatory, "Member State Report Bulgaria."

Hajdinjak & Asenova (2019) focus their research on sustainable energy consumption and energy poverty trends in Bulgaria. They look at the energy consumption of the households, notably sustainable energy consumption, and investigate why Bulgarian households do not take initiative or measures to adopt a sustainable energy behavior. The main findings suggest that the legislative and regulatory burdens discourage the consumers to act energetically efficiently, and the low incomes set the priority for households to live at subsistence, because they seek to have lower prices rather than clean energy. The residential sector accounts for about 25% of the final energy consumption, representing the third largest sector in this respect. In rural areas, the main heating resource is firewood or coal. Furthermore, about 60% of the residential sector buildings and not only are not built efficiently from the energy point of view, which is a result of legislation and regulations that have been existing since the construction of those.[79]

As a timeline of key developments concerning the energy performance in buildings and measures aimed at targeting the efficiency and costs of the vulnerable consumers after the socialist period, the year 2002 represents the ratification of the Kyoto Protocol by the Bulgarian government, with the objective of reducing the greenhouse gas emissions and promote the transition to cleaner and sustainable energy. The Energy Performance of Buildings Act and the Renewable and Alternative Energy Sources and Biofuels Act, which came into force in 2007, proposed the establishment of a system that produces electricity from alternative sources and favor the investment climate in such a way to create the conditions for renewal in the residential sector and contribute to energy poverty. In 2009, under the Directive 2009/28/EC of the European Parliament and European Council, Bulgaria was assigned with the target of achieving 16% of total energy consumption from renewable sources by 2020, focusing on the residential

[79] Hajdinjak, Marko, and Desislava Asenova. 2023. "Sustainable Energy Consumption and Energy Poverty: Challenges and Trends in Bulgaria." Energy Demand Challenges in Europe. https://library.oapen.org/bitstream/handle/20.500.12657/41750/2019_Book_EnergyDemandChallengesInEurope.pdf?sequence=1#page=123.

sector – being the sector highly responsible for the most emissions as final energy consumption.[80]

In 2011, the Bulgaria government introduced the Energy from Renewable Sources Act (ERSA) to push for a favorable investment climate in line with the achievement of EU targets. As the period between 2010 and 2012 represents a crucial period for the energy reform in Romania and Bulgaria, the step in 2011 is followed by the implementation of regulatory measures and recommendations to reduce further investment in renewable sources of energy, as it would reach its target ahead of schedule – especially in solar and wind power. Between 2011 and 2013, Bulgaria was ranked as one of the top emerging markets for renewable and alternative sources of energy. The advancements in the legislative initiatives continued to flourish, however in 2012 the policy makers introduced a fee on the income of PV and wind farms at 20% of their feed-in-tariff (FiT), and eventually revoked the FiT for renewable energy projects. The Bulgarian government adopted several measures to encourage small roof-top power plants between 2016 and 2018, but FiT applications were limited to these small producers. In 2018, legislation was adjusted in such a way to allow producers with an installed capacity above 4MW to enter into feed-in premium agreements instead of long-term power purchase agreements (PPAs) - the initiative would be financed by the Bulgarian Energy Security Systems Fund (ESSF). The renewables sector in Bulgaria faced instability due to the measures in 2012 that negatively altered the incentives scheme for RES projects. The measures resulted in legal tensions, with investors and entrepreneurs initiating international arbitration proceedings against the Bulgarian government. The operation of a balancing market has been introduced since the beginning of 2014, requiring RES producers to be part of a balancing group and

[80] CMS Law Now. 2020. "Renewable energy law and regulation in Bulgaria | CMS Expert Guides." CMS Law. https://cms.law/en/int/expert-guides/cms-expert-guide-to-renewable-energy/bulgaria.

pursue monthly settlements. Despite the challenges, the stability of existing renewable energy sources improved after 2015, leading to rising M&A activity in the market.[81]

The forthcoming opportunities in the renewables sector include the implementation of the Bulgarian Energy Strategy (2020-2030), which concentrates on the further development of electric cars, energy storage systems, and smart grid systems. Other priorities include the refinance of RES projects, the stimulation of M&A activity, and the developments of projects on the market.[82]

The Bulgarian integrated plan on energy and climate for 2021-2030 sets a target of 27% of gross end consumption from renewable sources, planning to triple the PV installed capacity by 2030. Furthermore, the amendments to strategy aim at enabling the entry of smaller PV projects into feed-in premium agreements and to further liberalize the energy market.[83]

According to the European Parliamentary Research Service (ERSE) (2022), the main factors responsible for the increasing rates of energy poverty are low-income, high-energy expenses, and poor energy efficiency in buildings. The European Union has been addressing energy poverty through various initiatives, particularly in the context of climate policies and the energy transition. Legislative measures such as the Gas and Electricity Directives aim to protect vulnerable consumers, while the Energy Efficiency and Energy Efficiency of Buildings Directives require efforts to alleviate energy poverty alongside efficiency improvements. The 'renovation wave' initiative under the European Green Deal promotes renovation in buildings, and the Social Climate Fund includes households in energy poverty as beneficiaries. Even if a binding and coherent definition of energy poverty is missing at the EU level, the European

[81] CMS Law Now, "Renewable energy law and regulation in Bulgaria | CMS Expert Guides."
[82] Gotev, Georgi. 2022. "Think-tank: Bulgaria will be a net importer of electricity after 2030 – EU-SysFlex." EU-SysFlex. https://eu-sysflex.com/think-tank-bulgaria-will-be-a-net-importer-of-electricity-after-2030/.
[83] CMS Law Now, "Renewable energy law and regulation in Bulgaria | CMS Expert Guides."

Commission recommendation defines it as the inability of households to access essential energy services – especially since 2020. Indicators such as inadequate home warmth, utility bill arrears, and a high share of income spent on energy bills are used to assess energy poverty. The latest challenges facing worldwide affect the EU as well, facing challenges and impediments related to energy supply, rising energy prices, and the transition to climate neutrality, making energy poverty a crucial issue. Energy poverty has negative impacts on health, well-being, social inclusion, and quality of life. It leads to inadequate living conditions, health problems, and psychological stress due to unaffordable energy bills.[84]

The EU has been offering and adopting legislative measures to tackle energy poverty, including the obligation for the Member States to evaluate and monitor constantly the number of energy-poor households and include solutions and measures to mitigate energy poverty in their national energy and climate plans. Directives such as the revised Electricity Directive and the Gas Directive provide provisions for protecting vulnerable customers and address energy poverty through measures such as social security systems, prohibition of disconnection, and energy efficiency improvements. Other directives, such as the Energy Efficiency Directive and the Energy Performance of Buildings Directive, also contribute to addressing energy poverty through energy efficiency measures and the renovation of buildings. The Renewable Energy Directive addresses the necessity of providing the low-income and vulnerable households with means to access the alternative sources of energy, this measure being one of the few solutions to be put in place for this phenomenon. Several proposals on the public agenda include the regulation on a social climate fund, targeting to compensate for the cost of extending the emissions trading system and include vulnerable households in energy poverty schemes as beneficiaries.[85]

[84] Gotev, "Think-tank: Bulgaria will be a net importer of electricity after 2030 – EU-SysFlex."
[85] Gotev, "Think-tank: Bulgaria will be a net importer of electricity after 2030 – EU-SysFlex."

The revised Energy Taxation Directive implemented target-based tax reductions and exemptions to protect vulnerable households from the social impact of energy taxes. The EU has been facilitating the work objectives towards a more unified and coherent approach through legislative measures and guidance from the European Commission for impeding further negative impacts of energy poverty and reducing its levels, despite the current different definitions and approaches undertaken by the Member States.[86]

The National Energy Efficiency Action Plan of Bulgaria (2014-2020) was promulgated in the context of the pressure posed by the European Commission, through the EU Directive 2012/27/EU. The European Commission required each member state to take action and set national energy efficiency targets, through a plan or strategy. Compared to 2016, energy consumption in all major sectors increased in 2017. Therefore the first sector targeted within the National Energy Efficiency Plan was the buildings sector. In this case, the objectives include: energy savings obligations for public buildings until 2016, energy audits obligations for all buildings with floor area more than 25 m2, mandatory inspection of water heating boilers, the promulgation of the National Residential Buildings Renovation Program, and the mandatory renovation of the total floor area of the state-owned buildings.[87]

As 65% of the 3.9 million residential units in Bulgaria were built before 1990, the Bulgarian housing stock has the feature of very low levels of energy efficiency performance, as in the case of Romania. The transition towards a liberalized, decentralized energy system has been challenging, as evidenced by mass demonstrations over rising energy expenses in 2013. The government's efforts are focused on energy efficiency, renewable energy, and the development of smart grids. The Bulgarian energy sector heavily relies on coal and nuclear power, with

[86] Widuto, Agnieszka. 2022. "Energy poverty in the EU." European Parliament. https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733583/EPRS_BRI(2022)733583_EN.pdf.
[87] Tsankov, Nikola. 2020. "National Energy Efficiency Action Plan of Bulgaria." Energy Charter. https://www.energycharter.org/fileadmin/AZ_-_NEEAP_-_Nikola_TSANKOV-19.09.2019.pdf.

limited diversification towards other sources. Renewable energy has nevertheless experienced growth, particularly in solid biomass, wind, and solar power, but administrative procedures and lack of support have hindered their further development. National campaigns of raisinfgawareness in Bulgaria aim to reduce energy consumption, promote green transport, and cut greenhouse gas emissions.[88]

The National Programme for Energy Efficiency of Residential Buildings provides grants for improving the energy efficiency of multifamily residential buildings.[89] Non-governmental organizations play a significant role in energy campaigns, and community-based initiatives face challenges such as bureaucracy, administrative procedural impediments for installation and exploitation of small PV capacities, and rising investment costs.[90]

The Energy Performance of Buildings (EPBD) is a report that highlights the application of the principles that comply with the Directives 2002/91/EC and 2010/31/EC. Kulevska & Markovski (2020) argue that the minimum energy performance requirements have been incrementally tightened since the promulgation of the EPBD, and those requirements integrate specific energy efficiency indicators to specify energy consumption in buildings. Furthermore, the National Plan for Nearly Zero-Energy Buildings (NZEB), implemented in 2015, aligns with the national definition and technical parameters of the national annual targets for construction. The plan also includes the national targets responsible to increase the number of NZEB depending on the category of the buildings, and policies and strategies aimed at stimulating the construction of NZEB.[91]

[88] Hajdinjak, "Sustainable Energy Consumption and Energy Poverty: Challenges and Trends in Bulgaria."
[89] Tsankov, "National Energy Efficiency Action Plan of Bulgaria."
[90] Hajdinjak, "Sustainable Energy Consumption and Energy Poverty: Challenges and Trends in Bulgaria."

[91] Kulevska, Tsvetomira. 2023. "Energy Poverty in Bulgaria." Sustainable Energy Development Agency in Bulgaria. https://www.ca-eed.eu/wp-content/uploads/2021/10/WG4.2-Energy-poverty-Bulgaria.pdf.

The plans and targets to improve the energy performance increase incrementally in the period of 2016-2020. Regarding the Energy Efficiency Act, the used schemes and mechanisms to enforce energy efficiency-related practices are energy performance contracts, energy savings certificates, financing sources from the Renewable Sources Fund or other financial intermediaries, and other national or European support schemes. Despite these major steps, the monitoring process still records poor energy efficiency performance in the buildings due to the lack of maintenance in the building stock - notably because 90% of it was built before the 1990s. However, the legal framework developed in Bulgaria has been expanded in accordance with EU instruments and agenda on energy efficiency and energy poverty.[92]

[92] Kulevska, "Energy Poverty in Bulgaria."

Chapter IV: Analysis

Analyzing the legislative framework, the trends of the two countries, and the factual practices taken to alleviate energy poverty through energy efficiency in construction and renovation, there are multiple similarities and dissimilarities which highlight a potential uniformity generated as EU member states through energy policy. On the other hand, the heterogeneity encountered might reveal the legislative and normative impediments at the national and local level.

It is salient that both Romania and Bulgaria implemented laws and regulations aimed at enforcing energy efficiency standards, with the ultimate goal of reducing energy poverty levels. During the period of transitioning to democracy, both countries engaged themselves in the commitment towards policies that prioritize the climate data and gas emission alleviation, especially in the period of the years 2001-2002, with the ratification of Kyoto protocols. While the regulatory environments adopted by the two countries contributed to a certain extent to the support for low-income households and renovations of buildings to meet high energy performance, the differences in the social housing programs.

In Romania, the Social Housing Program from 1996, recasted only in 2006,[93] still provides the same provisions for the past and present reality of social housing, even though the demographic situation changed drastically. In Bulgaria, through the Operational Programme *Regions in Growth* 2014-2020, with the main objective of reducing poverty and segregation via building

[93] Lege5. n.d. "Social Housing| Law 114/1996 actualizată 2023."

new social houses adapted to energy-efficient standards, inadequate conditions of housing are still spread across the country.[94]

Especially in the case of minorities, such as Roma communities, a significant amount of houses are connected to a sewer system.[95] Therefore, as a strategy with high potential to tackle some of the issues for the energy and housing expenses in times of energy crisis, there are similarities when overlooking the policy aimed at stimulating this sector.

Between 2007 and 2009, a series of important developments happened at the national level in Romania, in the attempt of reducing poverty as a general issue, and overcoming the financial crisis. The laws such as the Law on Energy Efficiency, the Law on Social Assistance, and the Improvement of Energy Performance of Buildings stimulated the investments in the energy efficiency for the residential field, and the government engagement to provide financial support for the vulnerable groups.[9697] The same period in Bulgaria is represented by the adoption of normative frameworks such as the Energy Performance of Buildings Act, and the Renewable and Alternative Energy Sources and Biofuels Act, with less focus on the schemes aiming at providing social benefits for individuals in poverty.[98]

This comparison reflects another similarity between the trends of the countries, because they got engaged in actions to reduce energy poverty, especially by targeting the residential sector. The dissimilarity in this period resides in the fact that Bulgaria was more invested, and

[94] Peneva, "ENERGY POVERTY IN BULGARIA."
[95] Fahy, Frances, Gary Goggins, and Charlotte Jensen. 2023. "Energy Demand Challenges in Europe Implications for policy, planning and practice." Palgrave Macmillan. https://library.oapen.org/bitstream/handle/20.500.12657/41750/2019_Book_EnergyDemandChallengesInEurope.pdf?sequence=1%23page=123.
[96] Romanian Legislative Portal. 2008. "LEGE (A) 220 27/10/2008."
[97] Romanian Legislative Portal. 2009. "OUG 18 04/03/2009."
[98] Lenz, Nela V., and Ivana Grgurev. 2023. ".Assessment of Energy Poverty in New European Union Member States: The Case of Bulgaria, Croatia and Romania." . - YouTube. https://dergipark.org.tr/en/download/article-file/361713.

therefore, more successful in enhancing the development of alternative sources of energy, and improving the situation of energy performance in buildings.

An interesting example is reflected by the period of the years 2010, 2011 and 2012, where similarities tend to be present between the approaches taken by Romania and Bulgaria. With the implementation of the Energy from Renewable Sources Act (ERSA) in 2011 in Bulgaria, the implementation of measures and indicators to alleviate investment in alternative sources of energy due to the fact that it was going ahead the target, Bulgaria was ranked one of the most complex markets, at the emergent stage, in developing and applying alternative sources of energy. Nonetheless, the energy poverty as a national problem kept being emergent after this period as well.[99]

In Romania, the Law on the Promotion of Renewable Energy Sources from 2010, the Energy Efficiency Ordinance in 2012, and the efforts to guarantee universal access to modern forms of energy under the National Energy Strategy, several conditions of investment in renewables emerge, however not in a prosperous manner as in Bulgaria[100]. It is interesting to note how the promotion of acts that prioritize renewable sources occurred as a result of both European Directives and guidelines, and both as a potential mechanism for competition.

The narrative in the field of energy poverty, vulnerable consumers, and energy performance in buildings became prevalent through other means after 2013. Romania started to develop the National Strategy on Social Inclusion and Poverty Reduction for the 2015-2020 period, the National Plan for the Renovation of Buildings in 2017, a new version for the Law on Energy Efficiency in 2014, and the promulgation of the National Energy Strategy for the 2013-2020

[99] CMS Law Now. 2020. "Renewable energy law and regulation in Bulgaria | CMS Expert Guides."
[100] Romanian Legislative Portal. 2012. "OUG 63 30/10/2012."

period[101][102] The crucial steps were taken directly to address energy poverty through setting feasible energy efficiency standards in the construction and renovation sector. Prioritary measures implied the rehabilitation of technical standards for the housing sector, eliminating the barriers against the promotion of energy efficiency, elaborating schemes for social and financial support to mitigate vulnerability, and creating better living standards, through energy performance standards, besides the minimum approach to addressing poverty.

Comparing to the same period in Bulgaria, the measures encouraged small roof-top power plants, the restabilization of the fragile situation of the energy markets met in 2012, the M&A activity in the market, which is important for the competition and investments, and included the vulnerable households directly in the energy poverty schemes.[103] In this frame, Bulgaria recorded a higher level of progress, because the vulnerable consumer situation remains central in addressing both energy performance in buildings and energy poverty, therefore the trends towards energy market stabilization might be justified in the country. The period of 2015-2016 in Romania lacks to even mention, or to a very little extent, the concepts and the complex situations of energy poverty and vulnerable consumers in legislation,[104] which clearly shows a different path that the country is oriented towards in terms of these aspects. Moreover, even though the policy prioritization increased to address these complex social phenomena, the use of subjective indicators of the ability to keep the house warm, and the tendency to introduce fragmented strategies under unstable governments, contribute negatively to the vulnerability status of the consumers.[105]

[101] Romanian Legislative Portal. 2014. "LEGE 121 18/07/2014."
[102] Lege5. 2015. "Strategia națională privind incluziunea socială și reducerea sărăciei pentru perioada 2015-2020." Ministerul Muncii. http://www.mmuncii.ro/j33/images/Documente/Familie/2015-DPS/2015-sn-is-rs.pdf.
[103] CMS Law Now. 2020. "Renewable energy law and regulation in Bulgaria | CMS Expert Guides."
[104] Murafa, Corina. 2022. "Energy poverty and the vulnerable energy consumer in Romania." IDEAS/RePEc. https://ideas.repec.org/a/agr/journl/v4(633)y2022i4(633)p57-68.html.
[105] Murafa, Corina. 2022. "Energy poverty and the vulnerable energy consumer in Romania."

This success can be measured in one way by looking at the progress monitored by EPBD, as an organism that conducts monitoring processes in the field of energy performance in buildings. While in Bulgaria, the findings suggest that at the level of national legislation, the developed principles align with the EU Directives, there are still suggestions and guidelines to be carried out, in oreder to stimulate a higher capacity for the National Plan for Nearly Zero-Energy Buildings (NZEB).[106][107]

Concerning the potential to tackle energy poverty through solid energy efficient projects, the predictions, and recommendations in this respect, it is notable that due to the lack of a coherent and unified approach to alleviate the complex issue of energy poverty, it is not possible currently to draw conclusions in this respect. The findings illustrate how homogeneity and heterogeneity in the legislative approaches between Romania and Bulgaria stand at the intersection of current data on climate, sociodemographics, and legislative barriers. Moreover, as the journey towards neutral energy consumption, at least in the housing sector, continues to emerge across Member States, an optimistic scenario might be likely for the case of the Black Sea region as well. On the other hand, the political motives behind the legislative investments, the fragmentation and polarization, and the civic participation might stimulate generous results for the public agenda.

[106] EU Energy Poverty Observatory. 2023. "Member State Report Bulgaria." European Commission. https://energy-poverty.ec.europa.eu/system/files/2021-10/epov_member_state_report_-_bulgaria.pdf.
[107] EU Energy Poverty Observatory. 2023. ".Member State Report Romania." European Commission. https://energy-poverty.ec.europa.eu/system/files/2021-10/epov_member_state_report_-_romania.pdf.

Chapter V: Conclusion

Investigating the legislative, social and even political challenges and developments in Romania and Bulgaria, the paper described and analyzed how energy poverty was conveyed through the sector of buildings, construction and renovation. The research demonstrated that a stable regulatory framework is responsible for creating the preliminary foundations in addressing the complex elements of a social issue, that requires more than that to be quantified and backed by evidence. The cases of Romania and Bulgaria in relation to the goals and objectives of alleviating these phenomena depend heavily on more dimensions than social policy programs, and social benefits, which tend to be useful in the short term, but the question is raised about the effectiveness in the long run.

The thesis consists of a wide range of legislative sources, national plans, strategies, schemes, EU recommendations and guidelines, and policies at the national and regional level, which provide a comprehensive understanding of the comparative framework. Qualitative analysis allows the researchers to analyze this type of content from a perspective which depicts the elements valued by the governmental entities. This could be relevant in the discussion about citizens' trust, accountability, civic participation, and continuity and committment towards the plans on the public agenda. The open question remains related to the improvement of the housing stock.

The legislative barriers, the rudimentary regulations on the housing stock, and the discrepancy between addressing current issues that include sociodemographics and climate data anchored to reality, and needing new regulations to fix those factors, which are the source of the problem, constitute a policy puzzle. The mechanisms behind the two stated hypotheses represent situations that policymakers confront when a complex phenomenon emerges, but the lack of data and other technical barriers challenge the process and result in negative effects for the overall population. The situation is even more fragile in Eastern Europe, where the fragmentation at the level of population and ruling governments can reveal strong political motives, and twist the public agenda.

The thesis explored a current topic, including a new comparative perspective on the analysis of energy poverty, and how this is related to the other dimensions (energy performance in buildings, vulnerable consumers). The debate still continues in addressing the complex range of such concepts, transpose them at the policy level, and provide useful measures. The particularity of the cases of Romania and Bulgaria stands in the socialist past, which exposes salient challenges to the political culture, the administrative approaches, and the civic fragmentation, and in similar trends adopted, voluntarily or not, in their roles as Member States. The geopolitical context could provide thoughtful insights in the attempt of tackling less quantifiable aspects, such as the cultural ones, but deeply related to phenomena which require anchoring to empirical reality for evidence-based policy, such as the energy poverty.

In conclusion, the thesis provides a relevant case for the present context of energy security challenges, regional disparities, dimensions of energy poverty, and the importance of coherent and complex legislative frameworks. The high levels in energy poverty continue to emerge in the two countries, but the comparison to the past proves a slightly declining trend. Therefore, the paper shows that legislative contributions in multiple fields represent a necessity in tackling

energy poverty, and the housing stock design still requires many changes, such as renovations, adaptation to energy efficiency standards, re-construction, and development of social housing.

Bibliography

Al-Tal, Raad, Muntasir Murshed, Palman Ahmad, Abdelrahman Alfar, Mohga Bassim, Mohammed Elheddad, Mira Nurmakhanova, and Haider Mahmood. 2021. "The Non-Linear Effects of Energy Efficiency Gains on the Incidence of Energy Poverty." MDPI. https://www.mdpi.com/2071-1050/13/19/11055.

Bennett, Andrew. 2023. "CaseStudyMethods:Design,Use, and Comparative Advantages." https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=7d11098671a75e7b289fd65adab2eb236c5cf580.

Bogdanov, George, and Boyan Zahariev. 2022. "Bulgaria: energy poverty is the foremost challenge for social inclusion policy, due to the war in Ukraine." *ESPN Flash Report* (Brussels), June, 2022.

Cazenave, Emilie, Carissa Munro, and Giulio Nessi. 2021. "ECONOMIC ASSESSMENT OF BULGARIA 2021." OECD. https://www.oecd.org/economy/surveys/bulgaria-2021-OECD-economic-survey-overview.pdf.

Clodnitchi, Roxana, and Cristian Busu. 2017. "(PDF) Energy poverty in Romania – drivers, effects and possible measures to reduce its effects and number of people

affected.” ResearchGate. https://www.researchgate.net/publication/319326392_Energy_poverty_in_Romania_-drivers_effects_and_possible_measures_to_reduce_its_effects_and_number_of_people_affected.

CMS Law Now. 2020. “Renewable energy law and regulation in Bulgaria | CMS Expert Guides.” CMS Law. https://cms.law/en/int/expert-guides/cms-expert-guide-to-renewable-energy/bulgaria.

CMS Law Now. 2021. “Romania passes law on protection of vulnerable energy consumers.” CMS LAW-NOW. https://cms-lawnow.com/en/ealerts/2021/09/romania-passes-law-on-protection-of-vulnerable-energy-consumers.

Constantin, Aurel. 2023. “ORSE: Romania must invest in the rehabilitation of buildings and heating systems to reduce energy poverty, through REPowerEU.” Business Review. https://business-review.eu/energy/power/orse-romania-must-invest-in-the-rehabilitation-of-buildings-and-heating-systems-to-reduce-energy-poverty-through-repowereu-245934.

Cordea, Vlad. 2022. “Overview Of The Recent Amendment Of The Energy Law By The Government Emergency Ordinance No. 143/2021 - Energy Law - Romania.” Mondaq. https://www.mondaq.com/energy-law/1151340/overview-of-the-recent-amendment-of-the-energy-law-by-the-government-emergency-ordinance-no-1432021.

DellaValle, Nives, and Veronika Czako. 2022. “Empowering energy citizenship among the energy poor.” Science Direct. https://www.sciencedirect.com/science/article/pii/S221462962200158X.

Development Ministry. 2009. “Programul național multianual privind creșterea performanței energetice a blocurilor de locuințe.” mdlpa. https://www.mdlpa.ro/pages/pncrestereperformanta.

Development Ministry. 2017. “RENOVAREA ROMÂNIEI –.” Energy.ec.europa.eu. https://energy.ec.europa.eu/system/files/2017-12/ro_building_renov_2017_ro_0.pdf.

Development Ministry. 2019. “Programul de construcții de locuințe sociale conform legii nr. 114/1996.” mdlpa. https://www.mdlpa.ro/pages/constructiidelocuintesocialeconformlegiinr1141996.

EC Energy Europa. 2017. “ROMANIA Strategy for mobilising investments in the renovation of residential and commercial buildings existing at national level.” Energy. https://energy.ec.europa.eu/system/files/2018-07/ltrsenromania_0.pdf.

Energy Center. 2013. “Romanian households are affected by energy poverty.” Energy Center. https://energy-center.ro/actualitate-news/nababii-corporativi-si-au-stabilit-prioritatile-pe-primul-loc-veniturile/.

Energy Center. 2023. “Legea consumatorului vulnerabil a fost votata in Parlament, dupa mai bine de zece ani de amanari. Ea va intra in vigoare de la 1 noiembrie.” Energy Center Romania. https://energy-center.ro/piata-energiei-din-romania/legea-consumatorului-vulnerabil-a-fost-votata-in-parlament-dupa-mai-bine-de-zece-ani-de-amanari-ea-va-intra-in-vigoare-de-la-1-noiembrie/.

Energynomics. 2022. “e third of Romanian consumers, marked by energy poverty.” Energynomics. https://www.energynomics.ro/en/one-third-of-romanian-consumers-marked-by-energy-poverty/.

Environment Ministry. 2011. “STRATEGIA ENERGETICĂ A ROMÂNIEI PENTRU PERIOADA 2007 – 2020 ACTUALIZATĂ PENTRU PERIOADA 2011 - 2020 Varianta 20 a.” Ministerul Mediului. http://mmediu.ro/new/wp-

content/uploads/2014/01/2012-07-31_evaluare_impact_planuri_proiectstrategiaenergeticaromania.pdf.

Environment Ministry. 2013. “Strategia naţională a României privind schimbările climatice 2013 - 2020.” Ministerul Mediului. http://mmediu.ro/app/webroot/uploads/files/Strategia-Nationala-pe-Schimbari-Climatice-2013-2020.pdf.

Environment Ministry. 2023. “Strategia naţională a României privind schimbările climatice 2013 - 2020.” Environment Ministry. http://mmediu.ro/app/webroot/uploads/files/Strategia-Nationala-pe-Schimbari-Climatice-2013-2020.pdf.

EPBD. 2018. “EPBD implementation in Bulgaria.” Concerted Action EPBD. https://www.epbd-ca.eu/wp-content/uploads/2018/08/CA-EPBD-IV-Bulgaria-2018.pdf.

EU Energy Poverty Observatory. 2023. “Member State Report Bulgaria.” European Commission. https://energy-poverty.ec.europa.eu/system/files/2021-10/epov_member_state_report_-_bulgaria.pdf.

EU Energy Poverty Observatory. 2023. “.Member State Report Romania.” European Commission. https://energy-poverty.ec.europa.eu/system/files/2021-10/epov_member_state_report_-_romania.pdf.

European Commission. 2003. “World energy, technology and climate policy outlook 2030.” Fusion Ciemat. http://www-fusion.ciemat.es/New_fusion/en/Fusion/documentos/weto_final_report.pdf.

European Council of the European Union. 2023. “How is EU electricity produced and sold?” Consilium.europa.eu. https://www.consilium.europa.eu/en/infographics/how-is-eu-electricity-produced-and-sold/.

European Council of the European Union. 2023. “How is EU electricity produced and sold?” Consilium.europa.eu. https://www.consilium.europa.eu/en/infographics/how-is-eu-electricity-produced-and-sold/.

Eurostat. 2023. “Living conditions in Europe - poverty and social exclusion.” European Commission. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Living_conditions_in_Europe_-_poverty_and_social_exclusion.

Fahy, Frances, Gary Goggins, and Charlotte Jensen. 2023. “Energy Demand Challenges in Europe Implications for policy, planning and practice.” Palgrave Macmillan. https://library.oapen.org/bitstream/handle/20.500.12657/41750/2019_Book_EnergyDemandChallengesInEurope.pdf?sequence=1%23page=123.

Gotev, Georgi. 2022. “Think-tank: Bulgaria will be a net importer of electricity after 2030 – EU-SysFlex.” EU-SysFlex. https://eu-sysflex.com/think-tank-bulgaria-will-be-a-net-importer-of-electricity-after-2030/.

Habitat for Humanity. 2017. “Social Housing in Romania: The Need for Decent, Affordable Homes.” Habitat for Humanity GB. https://www.habitatforhumanity.org.uk/blog/2018/01/social-housing-romania/.

Hajdinjak, Marko, and Desislava Asenova. 2023. “Sustainable Energy Consumption and Energy Poverty: Challenges and Trends in Bulgaria.” Energy Demand Challenges in Europe. https://library.oapen.org/bitstream/handle/20.500.12657/41750/2019_Book_EnergyDemandChallengesInEurope.pdf?sequence=1#page=123.

Hanke, Florian, and Jens Lowitzsch. 2020. “Empowering Vulnerable Consumers to Join Renewable Energy Communities—Towards an Inclusive Design of the Clean Energy Package.” MDPI. https://www.mdpi.com/1996-1073/13/7/1615.

Harold, Wilhite. 2013. *Cultures of Energy: Power, Practices, Technologies*. 1st ed. N.p.: Sarah Strauss.

Jensen, Liselotte, and Ville Seppälä. 2021. “Climate action in Romania.” European Parliament. https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/696185/EPRS_BRI(2021)696185_EN.pdf.

Karpinska, Lilia, and Slawomir Smiech. 2020. “Invisible energy poverty? Analysing housing costs in Central and Eastern Europe.” Science Direct. https://www.sciencedirect.com/science/article/abs/pii/S2214629620302450.

Kulevska, Tsvetomira. 2023. “Energy Poverty in Bulgaria.” Sustainable Energy Development Agency in Bulgaria. https://www.ca-eed.eu/wp-content/uploads/2021/10/WG4.2-Energy-poverty-Bulgaria.pdf.

Lege5. 2015. “Strategia naţională privind incluziunea socială şi reducerea sărăciei pentru perioada 2015-2020.” Ministerul Muncii. http://www.mmuncii.ro/j33/images/Documente/Familie/2015-DPS/2015-sn-is-rs.pdf.

Lege5. n.d. “Social Housing| Law 114/1996 actualizată 2023.” Lege5. Accessed June 3, 2023. https://lege5.ro/Gratuit/ge3dgmru/locuinta-sociala-lege-114-1996?dp=geydcnbwge3dc.

Lenz, Nela V., and Ivana Grgurev. 2023. “.Assessment of Energy Poverty in New European Union Member States: The Case of Bulgaria, Croatia and Romania.” . - YouTube. https://dergipark.org.tr/en/download/article-file/361713.

Longo, Danila, Giulia Olivieri, Rossella Roversi, Giulia Turci, and Beatrice Turilazzi. 2020. “Energy Poverty and Protection of Vulnerable Consumers. Overview of the EU Funding Programs FP7 and H2020 and Future Trends in Horizon Europe.” MDPI. https://www.mdpi.com/1996-1073/13/5/1030.

Matos, Ana M., João M.P.Q., and Ana S. Guimarães. 2022. “Linking Energy Poverty with Thermal Building Regulations and Energy Efficiency Policies in Portugal.” MDPI. https://www.mdpi.com/1996-1073/15/1/329.

Murafa, Corina. 2022. “Energy poverty and the vulnerable energy consumer in Romania.” IDEAS/RePEc. https://ideas.repec.org/a/agr/journl/v4(633)y2022i4(633)p57-68.html.

Murarasu, Ion C., and Razvan Bujor. 2022. “The Energy Crisis as a Factor of Aggravating Poverty in Bulgaria and Romania. State's Social Expenditures Evolution.” Romanian Economic Journal. http://www.rejournal.eu/sites/rejournal.versatech.ro/files/articole/2022-12-13/3708/8ymurarasu.pdf.

Nazare, Laura. 2022. “Producția descentralizată a energiei, o soluție pentru sărăcia energetică.” Bankwatch România. https://bankwatch.ro/wp-content/uploads/2022/05/raport_saracie-energetica-energia-regenerabila.pdf.

Nazare, Laura. 2022. “The solution to Romania’s energy poverty is decentralised, renewable energy.” Bankwatch. https://bankwatch.org/blog/the-solution-to-romania-s-energy-poverty-is-decentralised-renewable-energy.

Nazaruk, Zuza, and Malene Pedersen. 2022. “Why is energy poverty rising so sharply in the EU?” Euronews. https://www.euronews.com/green/2022/02/23/why-energy-poverty-is-rising-among-low-income-households-in-the-eu.

OECD. 2022. “OECD Economic Surveys: Romania 2022.” OECD Library. https://www.oecd-ilibrary.org/economics/oecd-economic-surveys-romania-2022_e2174606-en.

Peneva, Teodora. 2023. “Energy poverty and challenges in Bulgaria.” University of Sofia. http://www.feba.uni-sofia.bg/sko/yrbook/Yearbook17-11.pdf.

Peneva, Teodora. 2023. “.ENERGY POVERTY IN BULGARIA.” EconPapers. https://econpapers.repec.org/article/skoyrbook/v_3a17_3ay_3a2019_3ai_3a1_3ap_3a187-210.htm.

PowerPOOR. 2021. “Bulgaria.” POWERPOOR. https://powerpoor.eu/about/locations/bulgaria.

PowerPOOR. 2023. “.Empowering Energy Poor Citizens.” PowerPOOR. https://powerpoor.eu/sites/default/files/2022-07/INSIGHT_E_Energy%2520Poverty%2520-%2520Main%2520Report_FINAL.pdf.

Racka, Izabela, Stawomir Palicki, and Ivo Kostov. 2013. “State and Determinants of Real Estate Market Development in Central and Eastern European Countries on the Example of Poland and Bulgaria.” Sciendo. https://sciendo.com/article/10.1515/remav-2015-0017.

Romanian Legislation. 2007. “LEGE 13 09/01/2007.” Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocumentAfis/78851.

Romanian Legislation. 2016. “LEGE Nr. 17 din 6 martie 2000 *** Republicată privind asistenţa socială a persoanelor vârstnice Act de bază #B: Legea.” Ministerul Muncii. https://mmuncii.ro/j33/images/Documente/Legislatie/Assistenta-sociala-2018/Legea_17_2000_la_18-01-2018.pdf.

Romanian Legislation. 2020. “LEGE 101 01/07/2020.” Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocumentAfis/227538.

Romanian Legislative Portal. 2008. “LEGE (A) 220 27/10/2008.” Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocument/204839.

Romanian Legislative Portal. 2009. “OUG 18 04/03/2009.” Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocument/103284.

Romanian Legislative Portal. 2012. “OUG 63 30/10/2012.” Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocumentAfis/142598.

Romanian Legislative Portal. 2014. “LEGE 121 18/07/2014.” Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocument/160331.

Romanian Legislative Portal. 2021. “LEGE 226 16/09/2021.” Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocument/246430.

Romanian Legislative Portal. 2022. “ORD DE URGENTA 166 08/12/2022.” Portal Legislativ. https://legislatie.just.ro/Public/DetaliiDocument/262296.

Streimikiene, Dalia, and Tomas Balezentis. 2019. “Innovative Policy Schemes to Promote Renovation of Multi-Flat Residential Buildings and Address the Problems of Energy Poverty of Aging Societies in Former Socialist Countries.” MDPI. https://www.mdpi.com/2071-1050/11/7/2015.

Tomoiaga, Bogdan. 2023. “Consumatori Legislatie – anre.ro.” ANRE. https://anre.ro/consumatori/consumatori-legislatie/.

Tsankov, Nikola. 2020. “National Energy Efficiency Action Plan of Bulgaria.” Energy Charter. https://www.energycharter.org/fileadmin/AZ_-_NEEAP_-_Nikola_TSANKOV-19.09.2019.pdf.

UNDP. 2023. “.” Info UNDP. https://info.undp.org/docs/pdc/Documents/ROU/MTE%2520EE%2520Romania%2520Final5.pdf.

Vlasceanu, Daniel. 2017. “Sărăcia energetică. Consideratii juridice privind cadrul legislativ national. – Vlăsceanu & Partners.” Vlăsceanu & Partners. https://vnpartners.ro/saracia-energetica/.

Widuto, Agnieszka. 2022. “Energy poverty in the EU.” European Parliament. https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733583/EPRS_BRI(2022)733583_EN.pdf.

Zamfir, Catalin, Mihai Dumitru, Adina Mihailescu, Mariana Stanciu, Elena Zamfir, Ilie Badescu, Ion Glodeanu, and Adela Serban. 2015. “View of Sărăcia energetică: impactul social al reformei preţurilor ...” Revista Calitatea Vietii. https://www.revistacalitateavietii.ro/journal/article/view/77/56.