

ENERGY TRANSITION AND SOCIAL EQUITY IN ROMANIA: THE IMPACT OF THE EUROPEAN GREEN DEAL ON VULNERABLE POPULATIONS

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Abstract. *The paper analyses the impact of energy policies within the European Green Deal (EGD) on the vulnerable population in Romania, in the context of the elimination of energy price caps and the transition to a green economy. The study highlights the social imbalances generated by the application of European measures in a national context marked by energy poverty, low incomes and outdated infrastructure. Through a qualitative analysis and a case study, it is concluded that the success of the green transition in Romania depends on integrating the social dimension into energy policies to prevent the deepening of inequalities and ensure a just and inclusive transition.*

Keywords: *energy transition; energy poverty; European Green Deal; social justice; Romania.*

Introduction

The climate crisis is one of the most significant contemporary challenges, with complex effects on ecosystems, economies and human societies. The increase in global average temperature, the intensification of extreme weather events, the melting of ice caps and the rise in sea levels are just some of the manifestations of a reality that requires rapid structural changes. The 2023 Intergovernmental Panel on Climate Change (IPCC) report states that "climate change is widespread, rapid and intensifying", adding that humanity is "on a warming trajectory of more than 1.5 °C unless greenhouse gas emissions are drastically reduced" (IPCC 2023, 4).

The European Union (EU) was among the first economic blocs to understand the systemic dimension of this crisis, adopting a leading role in promoting environmental and clean energy policies. According to the European Environment Agency (EEA), the energy sector is responsible for around 75% of the EU's total greenhouse gas emissions (EEA 2023). Consequently, decarbonising the energy system has become a central objective of the European political agenda, understood not only as an ecological necessity but also as an economic and social opportunity.

The energy transition refers to the process of transforming energy production, distribution, and consumption systems from fossil-fuel-based models to renewable energy and clean technology models. The concept involves not only technological change but also a profound restructuring of the economy, the labour market, and social relations.

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According to Sovacool et al. (2020), the energy transition “is not just about energy, but about power, equity and social transformation” (Sovacool et al. 2020, 217). In this sense, it is essential that energy policies are not applied exclusively through the lens of economic efficiency, but include the dimension of social justice, also known as the concept of just transition.

This perspective is also reflected in recent literature. Jenkins, McCauley and Heffron (2021) define just transition as “a process that ensures that the transition to a decarbonised economy does not amplify existing inequalities, but creates new opportunities and protections for all citizens” (Jenkins, McCauley and Heffron 2021, 45). In particular, the energy transition must protect vulnerable groups – low-income households, pensioners, communities in mining regions – from the risk of energy exclusion.

Globally, the energy transition is closely linked to the goals of the 2030 Agenda for Sustainable Development, particularly Goals 7 (“Affordable and Clean Energy”) and 13 (“Climate Action”). The UN estimates that approximately 675 million people lacked access to electricity in 2022 (UNDP 2023), and the lack of access to clean energy directly limits economic development, education and health.

In this global and regional context, the European Commission launched the European Green Deal (EGD) in December 2019, a framework document that defines the Union’s strategic vision for transforming the development model into a sustainable, fair and competitive one. Ursula von der Leyen, President of the European Commission, described the EGD as “Europe’s man on the moon moment” (European Commission 2019).

The EGD sets the headline target of achieving climate neutrality by 2050, later enshrined in law by the European Climate Law (Regulation (EU) 2021/1119). To achieve this goal, the EU has set itself an intermediate target of reducing greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels – a target included in the Fit for 55 legislative package.

More than a climate strategy, the EGD is an integrated development vision that links energy, agriculture, industry, transport, and finance policies. Its central initiatives include: Renovation Wave – accelerating the energy renovation of buildings; Farm to Fork – transforming the European food system; Just Transition Mechanism – providing financial support for regions affected by decarbonisation; and Circular Economy Action Plan – reducing waste and promoting recycling. After Russia invaded Ukraine, the EGD was complemented by the REPowerEU plan, which aims to reduce dependence on imported fossil fuels and accelerate investment in renewable energy (European Commission 2022).

A key dimension of the EGD, often undervalued in public discourse, is the social dimension. The European Commission has explicitly acknowledged that the green transition will entail disproportionate costs for particular social groups. That is why the Fit for 55 package includes the Social Climate Fund (SCF), designed to support vulnerable households during the transition period. According to the study by Bouzarovski and Thomson, “energy poverty is a systemic threat to the EU’s social cohesion” (Bouzarovski and Thomson 2022, 14). In the absence of effective compensatory policies, rising energy prices and the costs of housing modernisation risk exacerbating inequalities. The SCF, with an estimated budget of €86.7 billion (2026–2032), aims to mitigate these effects through subsidies and investments in energy efficiency. Thus, the EGD is not just an ecological strategy, but a project for societal

transformation. It combines technological transition with institutional reforms and redistributive policies, aiming for a fair economic model grounded in the principles of "climate justice" and "leave no one behind".

This paper aims to investigate how the energy policies envisaged by the European Green Deal (EGD) affect vulnerable populations in Romania, in the context of the elimination of the energy price cap and the move towards a fully liberalised green transition. The approach is based on the idea that the decarbonisation process cannot be analysed solely from a technological or economic perspective, but must also be understood through the prism of the social dimension, as the energy transition generates unequal effects across different population groups.

Research design

The general objective of the paper is to assess the compatibility between European environmental policies and Romania's socio-economic realities, with a focus on the extent to which these policies contribute to reducing or, conversely, deepening energy poverty. The paper analyses both the European instruments — the Just Transition Mechanism, the Social Climate Fund, and the Renovation Wave — and their transposition and implementation at the national level. It aims to determine whether the measures adopted actually support vulnerable populations or, in practice, exacerbate the gaps between social groups.

Specifically, the research pursues four objectives: (1) identifying the social categories most affected by the energy transition (families below the subsistence level, pensioners, single-parent families, rural communities and coal-fired industrial regions); (2) analysing Romanian public energy protection policies before and after the removal of the cap; (3) assessing the impact of these policies on the degree of access to clean energy and energy efficiency; and (4) formulating recommendations to ensure a just and inclusive transition, in the spirit of the European principle of leaving no one behind.

The research methodology combines qualitative analysis of public policies with a case study applied to Romania. In the first stage, the paper uses documentary and content analysis to examine European and national legislation (EGD, Fit for 55, REPowerEU, National Integrated Energy-Climate Plan 2023–2030, PNRR) and reports issued by the European Commission, the World Bank, UNDP, and the Ministry of Energy. This analysis allows for outlining the normative and conceptual framework governing the energy transition and for identifying the social components of each policy instrument.

The second stage consists of an in-depth case study on Romania, selected due to the high incidence of energy poverty and structural vulnerabilities: outdated energy infrastructure, dependence on polluting sources and pronounced territorial disparities between urban and rural areas. By correlating recent statistical data (Eurostat 2023; World Bank 2024) with the analysis of current government policies — such as the removal of energy price caps and the introduction of energy vouchers — the direct effects on vulnerable households and the pace of implementation of the green transition are investigated.

The research method adopted is an interpretative-comparative one, based on the qualitative analysis of documents and the triangulation of academic, institutional, and media sources. This approach allows the identification of the gap between the declared intentions of European energy policies and the results observed in practice.

Finally, the paper aims to contribute to understanding the energy transition as a social phenomenon, not just a technical one, by offering a critical perspective on how Romania balances climate objectives with the protection of vulnerable citizens. The case study demonstrates that the success of the European Green Deal depends not only on reducing emissions but also on Member States' capacity to transform the green transition into a social justice project.

Energy Policies within the European Green deal

Launched in December 2019, the European Green Deal (EGD) represents the most comprehensive transformation strategy of the European Union in recent decades, proposing a reconstruction of the European economic model on a sustainable and equitable basis. Energy is at the heart of this project, being both the engine of development and the primary source of greenhouse gas emissions. The overall objective of the EGD is to achieve climate neutrality by 2050, which implies reducing greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels (European Commission 2019). This objective is legally enshrined in the European Climate Law (Regulation 2021/1119), which makes it an obligation for all Member States. Energy policies within the EGD are based on the principle of just transition, recognising that decarbonisation must be achieved without increasing social and regional inequalities. According to the European Environment Agency, around 75% of the Union's total emissions come from energy production and consumption, making the energy transition an indispensable element for achieving climate goals (EEA 2023). From this perspective, the EGD is not only an environmental project, but also a political strategy for redistributing resources, technological modernisation and protecting social cohesion.

European energy policies within the EGD pursue three interdependent dimensions: decarbonisation, energy efficiency and social fairness. Decarbonisation aims to gradually reduce dependence on fossil fuels, increase the share of renewable energy and promote technological innovation. In this regard, the Fit for 55 legislative package, adopted in 2021, outlines the measures needed to achieve the emission-reduction targets by revising the Renewable Energy Directive and the Energy Efficiency Directive, and by introducing the Carbon Border Adjustment Mechanism. The structural reform of the European energy market also aims to ensure energy security and diversify supply sources. This concern has been amplified by the energy crisis triggered by the Russian-Ukrainian conflict.

A key component of these policies is the REPowerEU programme, launched in 2022, which proposes to accelerate the transition to renewables to reduce dependence on gas and oil imports from the Russian Federation (European Commission 2022). The plan aims to develop green hydrogen infrastructure, double photovoltaic production capacity by 2025, and expand smart grids, giving Member States flexibility in using available funds. REPowerEU not only diversifies energy resources but also strengthens the geostrategic dimension of the EGD by positioning the European Union as a global leader in clean energy.

Another major initiative of the EGD is the Renovation Wave, a programme designed to increase the energy efficiency of European buildings, which are responsible for around 40% of total energy consumption and 36% of CO₂ emissions at the EU level (European Commission 2020). The objective of this strategy is to double the annual rate of energy renovations by 2030, with particular focus on social housing and public buildings. By reducing energy losses and improving thermal comfort, Renovation Wave

aims not only to decarbonise the construction sector but also to reduce energy poverty, especially among low-income households. In this way, energy policy becomes, at the same time, a social policy, as it promotes public wellbeing and health while reducing energy bills for vulnerable citizens.

To mitigate the economic and social impact of this transition, EGD is introducing the Just Transition Mechanism (JTM), a financial package for regions dependent on high-emission industries, such as mining or fossil fuel-based ones. The Just Transition Fund (JTF), the main component of the mechanism, has over €100 billion available for the period 2021–2027 and aims to support professional retraining, economic diversification and investment in clean technologies (European Commission 2020). This instrument reflects the recognition that the green transition cannot be purely technological, but must also be fair. In the absence of a social dimension, decarbonisation policies risk generating public resistance, job losses and regional economic tensions.

Another pillar of the EGD social architecture is the Social Climate Fund (SCF), created in 2023 to support households and micro-enterprises affected by the extension of the ETS2 emissions market to the buildings and road transport sectors. With an estimated budget of €86.7 billion for the period 2026–2032, the SCF is intended to compensate for rising energy costs and finance energy efficiency measures for vulnerable households (European Parliament 2023). Unlike the JTM, which supports industrial regions, the SCF directly addresses citizens, providing a redistributive mechanism to prevent an increase in energy poverty during the transition.

Energy policies within the EGD are therefore based on a delicate balance between sustainability, competitiveness and solidarity. On the one hand, they promote innovative technologies – such as green hydrogen, carbon capture, and network digitalisation – and stimulate private investment in clean energy. On the other hand, they recognise the vulnerability of certain social groups and regional economies and propose support instruments to avoid a "two-speed transition". Thus, the European Union is trying to transform energy policy into an instrument of social and territorial cohesion.

However, implementing these policies poses multiple challenges. Some studies highlight gaps among Member States in terms of administrative capacity and resources for the effective implementation of green programmes (Sabato and Vanhille 2024). In Central and Eastern Europe, including Romania, the difficulties are linked to outdated energy infrastructure, dependence on fossil fuels, and low per capita income. Without consistent financial support and local adaptation of measures, the green transition risks becoming an elitist process, inaccessible to the most vulnerable. Another obstacle is social acceptance: in the absence of effective communication and public participation mechanisms, energy policies can be perceived as imposed "from above" rather than collectively assumed (Sovacool et al. 2020).

In essence, the energy policies of the European Green Deal are defined by an integrated vision, which goes beyond the traditional logic of economic efficiency and includes social and moral dimensions. The EGD proposes a new development paradigm in which energy becomes the means by which the European Union redefines its prosperity model, grounded in climate responsibility and social justice. For Member States, the success of these policies depends on the coherence between national strategies and European objectives, as well as on the ability to mobilise financial resources and maintain public trust.

Therefore, the energy policies of the EGD cannot be reduced to a simple emissions-reduction agenda; they must be understood as a strategy for the systemic

transformation of European society. They represent, at the same time, a challenge and an opportunity: a challenge for vulnerable economies and communities, but also a chance to create a new development model based on sustainability, inclusion and intergenerational solidarity.

Energy Poverty in Romania and its Impact on EGD Implementation

The Concept of Energy Poverty

Energy poverty is a complex concept, approached multidimensionally in the literature. Energy – The European Commission provides an operational definition, noting the health impact aspects: “Energy poverty occurs when a household must reduce its energy consumption to a degree that negatively impacts the inhabitants' health and wellbeing.” (European Commission, n.d.) The European Parliament report (2022) underlines the multidimensional character of energy poverty: “Energy poverty is a multidimensional phenomenon, considered to be caused by a combination of low income, high energy expenses, and poor energy efficiency in buildings”. (European Parliament, 2022). The importance of comprehensive definitions is also found in the United Nations Development Programme reports on energy poverty, which defines it as “the lack of access to adequate, reliable and affordable energy for lighting, cooking, heating” (UNDP, 2024) According to a World Bank report, energy poverty is defined as the inability of households to meet essential energy needs — heating, lighting, energy for appliances — with a significant impact on quality of life, health, and economic opportunities. (World Bank, 2024) The Romanian Ministry of Energy and the Romanian Energy Poverty Observatory propose defining energy poverty as “the situation in which households cannot access essential energy services, where adequate heating, cooling, lighting and electricity supply systems are essential services that underpin a decent standard of living and good health” (UNDP, 2024) As we can see, the definitions focus on access to essential energy services (heating, lighting, hot water). There is a clear focus on the impact on the population's health and wellbeing. They also recognise a multidimensional nature, combining three old dimensions: low income, high costs and energy inefficiency.

Energy Poverty in Romania

The energy transition promoted by the European Green Deal (EGD) represents a decisive step in the fight against climate change. However, its effects are not felt uniformly by all social groups. Despite the European Union's declared aim to ensure a just and inclusive transition, some segments of the population remain disproportionately affected by rising energy costs and the economic constraints associated with infrastructure modernisation. In particular, low-income households, pensioners, single-parent families, and rural communities face specific vulnerabilities that risk being further amplified in the absence of adequate support policies (Bouzarovski and Thomson 2022).

First, households below the poverty line are the most exposed to rising energy prices and the indirect effects of the decarbonisation of the economy. For these households, energy is not only an economic resource but also a basic condition for a decent standard of living, health, and social participation. World Bank studies show that approximately 20% of households in Romania are in energy poverty, meaning they cannot afford the minimum costs for heating, lighting, and other essential services (World Bank 2024). This phenomenon is accentuated by low incomes and poorly insulated homes, leading to a structural paradox: the poorest pay proportionally more for energy but experience lower levels of comfort (Clodnitchi and Busu 2017). The increase in

prices, caused by the liberalisation of the energy market and the elimination of caps, has increased the risk that low-income families will resort to reduced consumption or to alternative polluting energy sources, such as firewood or waste, thus perpetuating the vicious circle of energy poverty and social exclusion.

The elderly constitute another segment strongly affected by the current changes in the energy system. In Romania, over 40% of pensioners live on incomes below the subsistence level, and over a third say they cannot afford adequate heating during the cold season (INS 2023). Given that the population is ageing, the lack of access to affordable energy is becoming a public health issue. Healy and Clinch (2020) show that prolonged exposure to cold indoors is associated with increased seasonal mortality and cardiovascular disease incidence. At the same time, energy efficiency policies often require initial investments that pensioners cannot afford, which keeps this category locked into an inefficient and costly consumption pattern. In the absence of direct support mechanisms, such as targeted subsidies for housing modernisation or renovation programs adapted to the needs of seniors, the energy transition risks increasing the vulnerability of this population.

Single-parent families and people living alone also face significant challenges in the context of the energy transition. In Romania, women represent over 80% of single parents, and their incomes are, on average, 25% lower than those of two-parent households (Eurostat 2024). At the same time, fixed expenses — rent, energy, food — do not decrease proportionally with household size, so these families allocate a significant share of their income to cover energy costs. Walker, Day, and Fox (2021) note that single-parent households in Europe are twice as likely to experience energy poverty as the general population. In the absence of constant economic support and affordable renovation programs, these families risk being excluded from the benefits of the green transition and remaining trapped in an inequitable energy system.

A separate segment is represented by communities in mono-industrial regions, such as Valea Jiului, Gorj, and Hunedoara, which are transitioning from coal-based industries to sustainable activities. The closure of mines and the restructuring of power plants, imposed by decarbonisation policies, directly affect thousands of jobs. In the absence of viable economic alternatives and a real process of professional reconversion, these regions risk becoming areas of economic and social exclusion. Koundouri et al. (2024) note that the success of the Just Transition Fund mechanism depends on member states' capacity to combine European funding with local development strategies and community involvement. In Romania, just transition programs are still in their early stages, and direct benefits for the local population are limited, which increases distrust in green policies and central institutions.

Energy poverty is an intersectional phenomenon: it manifests itself where economic vulnerabilities overlap with those of age, gender, education, or location. For example, older rural women—especially those living alone—are among the groups most at risk of energy exclusion in Eastern Europe (Thomson, Snell, and Bouzarovski 2017). This intersectional perspective highlights the need for nuanced public policies that recognise the diversity of forms of vulnerability and propose tailored solutions. In the context of EGD, the energy transition cannot be considered fair if its benefits are concentrated among the middle and upper classes. At the same time, marginalised groups bear the costs of the transformation.

In Romania, the problem is amplified by territorial disparities and the reduced administrative capacity of local authorities. Thermal rehabilitation programs, for

example, are predominantly concentrated in large cities, while small communities remain outside of funding. At the same time, recent government policies—such as the removal of energy price caps—have shifted the economic burden directly onto consumers, without sufficient protection for the disadvantaged. This approach risks amplifying existing gaps and generating social resistance to the green transition. As Sabato and Vanhille (2024) note, climate justice cannot be achieved through technocratic instruments, but requires real citizen participation and an equitable redistribution of resources.

The segments of the population affected by the energy transition in Romania reflect an already existing social hierarchy: those with high incomes can invest in energy efficiency solutions and green technologies, while poor households, the elderly, single parents, and rural residents disproportionately bear the costs of adaptation. EGD policies provide tools to reduce these inequalities—the Just Transition Mechanism and the Social Climate Fund being relevant examples—but their effectiveness depends on how they are translated into national policies. A truly just green transition, therefore, requires the explicit recognition of these vulnerabilities and the design of support mechanisms that transform the energy transition into a process of social inclusion rather than exclusion.

EGD Energy Policies Implementation in Romania

Romania is a revealing case for analysing the implementation of the European Green Deal (EGD) energy policies in the context of socio-economic vulnerabilities and regional disparities. On the one hand, the country benefits from diversified energy resources (natural gas, hydropower, significant wind and solar potential); on the other hand, it suffers from high energy inefficiency, outdated infrastructure, and widespread energy poverty.

According to Eurostat data (2023), approximately 31% of Romanian households reported they cannot afford to heat their homes adequately — the highest rate in the European Union, double the EU average (Eurostat 2023). This indicator reflects a structural, not just a cyclical, problem associated with low incomes, poor housing quality, and a lack of access to modern energy infrastructure.

The implementation of the EGD objectives in Romania must therefore be analysed through the lens of the tension between the European ecological transition and internal socio-economic inequalities.

Romania was, during the communist period, one of the economies with the most extensive energy production networks in Central and Eastern Europe, based on coal, oil, natural gas and hydropower. After 1990, the economic transition led to the decline of heavy industry and a significant reduction in emissions, but the modernisation of the energy system remained partial (World Bank 2024).

In 2022, Romania's energy structure was composed of: 31% natural gas, 17% coal, 29% renewable sources (including hydropower) and 23% nuclear (Ministry of Energy 2023). This diversification provides a favourable basis for the energy transition, but the energy efficiency of residential buildings is among the lowest in the EU.

According to the International Energy Agency (IEA 2023), energy losses in Romanian district heating systems exceed 35%, and over 70% of homes do not meet minimum thermal insulation standards. This context makes the EGD objectives regarding the Renovation Wave essential for reducing household consumption and costs.

According to the National Energy Poverty Report (UNDP and Ministry of Energy 2022), approximately 19% of households were in energy poverty, meaning they could not access essential energy services at a reasonable cost. The real figure could be

even higher, as many rural residents use non-commercial fuels (such as wood and agricultural waste) that are not included in official statistics.

The differences between urban and rural areas are significant: in cities, the leading causes are high prices and outdated district heating infrastructure, whereas in rural areas, the main problem is dependence on firewood—an unsustainable, polluting source.

According to the Energy Poverty in Romania study (Clodnitchi and Busu 2017), low incomes, high costs and the lack of energy efficiency in housing are the determining factors of energy vulnerability. The authors emphasise that "energy poverty cannot be seen only as an income problem, but as an expression of social and infrastructural exclusion" (Clodnitchi and Busu 2017, 139).

The World Bank (2024) confirms this perspective, estimating that approximately 50% of vulnerable households do not benefit from heating subsidies due to restrictive eligibility criteria or a lack of information (World Bank 2024). Romania has transposed Directive (EU) 2018/844 on the energy performance of buildings into national legislation, but implementation has been slow. The "Green House Plus" programme and the "Energy Efficiency in Buildings" sub-programme, financed by EGD and PNRR (National Recovery and Resilience Plan) funds, aim to renovate over 4 million homes by 2030 for thermal renovation (Ministry of Development 2023).

Although these programmes have significant potential, the European Commission Country Report – Romania (2024) reports significant delays, a lack of qualified staff and difficulties in accessing funds at the local level (European Commission 2024).

Furthermore, investments in energy efficiency are unevenly distributed: most projects are concentrated in large cities (Bucharest, Cluj, Timisoara), while rural and small-urban areas remain poorly funded.

Romania benefits from financial support from the Just Transition Fund (JTF), worth approximately €2.14 billion, which mainly targets the counties of Gorj, Hunedoara, Dolj, Galați, Prahova and Mureș (European Commission 2023). These regions have been identified as "coal regions in transition", dependent on high-emission industries.

In the Jiu Valley, the implementation of the JTF is monitored by the World Bank's Just Transition Facility (2024), which emphasises that success depends on local community participation and the workforce's reconversion. The Just Transition in Romania report notes that "the transition will only be sustainable if the people affected are active participants in the decisions, not just passive beneficiaries of the funds" (World Bank 2024, 33).

Romania is set to receive approximately €3.5 billion through the SCF (2026–2032) to compensate vulnerable households for their energy costs. According to the Ministry of Energy (2024), the funds will be used for direct subsidies, the installation of solar panels, and information programs on efficient consumption.

However, critics warn that without a clear institutional framework, these resources risk being used inefficiently. As Sabato and Vanhille (2024) argue, "in states with low administrative capacity, energy justice policies may be formally adopted but unevenly implemented" (Sabato and Vanhille 2024, 42).

In cities, the energy transition is closely linked to the modernisation of district heating infrastructure and thermal rehabilitation programs. Bucharest, for example, started a modernisation plan for its district heating network in 2021, financed by the PNRR (1 billion euros). However, network losses still exceed 30% (Termoenergetica

2024). Also, in large cities, rising energy costs affect tenants and owners of older homes, who cannot access green credits. The Energy Justice in Cities study (Walker, Day and Fox 2021) shows that “urban inequalities in access to clean energy reflect existing socio-spatial inequalities” (Walker et al. 2021, 219). In rural areas, the lack of stable gas and electricity networks generates a continuous dependence on traditional sources. According to a UNDP report (2022), over 55% of Romanian rural households heat exclusively with firewood, and 10% do not have a hot water installation.

This reality has direct consequences on health, air quality and environmental sustainability. In addition, the cost of wood has increased significantly in recent years, increasing the vulnerability of rural households.

The obstacles to implementing EGD at the national level include administrative capacity and bureaucracy, a lack of public information, and cultural resistance and distrust. Romania has limited administrative capacity to manage European funds. The European Court of Auditors' report (2023) notes that only 62% of the energy efficiency funds available during 2014–2020 were effectively absorbed. Many vulnerable citizens are unaware of available support programs. According to a World Bank survey (2024), only 14% of low-income households have heard of energy efficiency programs financed through EGD. In areas affected by the coal transition, local resistance to green projects arises from fears of job losses. Sovacool et al. (2020) explain these reactions by “the perception that the energy transition is imposed from above, without the real participation of communities” (Sovacool et al. 2020, 228).

Despite the challenges, Romania also offers positive examples. The ElectricUp program (2023) has financed over 2,000 SMEs to install photovoltaic panels, contributing to the growth of distributed generation. In rural areas, pilot projects such as the Sălăcea Energy Community (Bihor) demonstrate the potential of local energy cooperatives (Delors Institute 2025). In addition, investments under the PNRR (10 billion euros for the green transition) can catalyse structural change, provided that implementation is transparent and participatory.

The gradual elimination of energy price capping and compensation measures marks a significant change in Romania's energy policy. Starting in July 2025, the government has decided to liberalise the electricity and natural gas markets fully, replacing the universal support system with a targeted mechanism based on electronic energy vouchers for vulnerable consumers, as provided in Emergency Ordinance no. 6/2025 and announced by the Ministry of Energy (Energynomics 2025; ProTV News 2025). This decision marks a shift from a generalised protection applied to all consumers to a focused one, aimed at supporting only households with incomes below the energy poverty threshold.

Economically, the elimination cap has direct effects on vulnerable households. Full liberalisation will expose consumers to market volatility, likely leading to higher bills. Low-income pensioners, single-parent families and households below the poverty line will feel these effects most acutely, as their incomes are insufficient to cover increased energy costs. World Bank studies (2024) already indicate that these categories spend on average over 20% of their income on energy, compared to the national average of 11%. The elimination of universal support thus risks amplifying energy poverty and deepening social inequalities.

In the short term, the government has introduced a temporary voucher system of 50 lei per month for households with incomes below 1,940 lei, but its impact is limited (Engie Romania 2025). Unlike general capping, these vouchers cover only a small

portion of the anticipated increase in energy costs and do not address the structural problem of home energy inefficiency. In rural areas, where wood heating remains dominant, rising solid fuel prices exacerbate energy vulnerability, leading households to reduce energy consumption or resort to more polluting sources, such as waste or low-quality coal (UNDP 2022).

The elimination of the cap also affects the dynamics of the green transition. Liberalisation without support measures for investments in energy efficiency and renewable energy may discourage the population from adopting sustainable solutions. Those with financial resources will be able to invest in photovoltaic panels and thermal insulation, reducing their costs, while vulnerable households will remain dependent on polluting sources and market fluctuations. Thus, the transition risks becoming an unequal transition, in which the environmental and economic benefits are concentrated in the middle and upper classes (Bouzarovski and Thomson 2022).

In addition, removing the cap puts considerable pressure on the social acceptability of green policies. If the energy transition is perceived as imposing additional costs on disadvantaged groups, public support for climate policies may decrease significantly—a phenomenon already observed in other European countries during the energy crisis (Sandri 2025). The lack of a precise social protection mechanism, combined with market volatility, may turn the green transition into a social justice issue.

Therefore, the decision to eliminate capping and generalised subsidies requires robust compensatory measures: extending energy vouchers, investing in efficiency for low-income households and implementing a progressive social tariff. Without such policies, the green transition in Romania risks becoming regressive, exacerbating energy poverty and eroding public trust in the European Green Deal's climate objectives.

Conclusions

The analysis in this paper has highlighted the complex relationship between the European Green Deal (EGD) and Romania's socio-economic realities, underscoring that the success of the green transition depends equally on social justice and ecological ambition. The EGD proposes a structural transformation of the European economy, oriented towards climate neutrality by 2050, through policies of decarbonisation, energy efficiency and social inclusion. However, applying these objectives in a national context, such as Romania's, highlights significant obstacles generated by persistent economic inequalities, outdated energy infrastructure, and limited administrative capacity.

The research results have shown that internal disparities deeply condition Romania's trajectory towards a sustainable energy future. On the one hand, developed urban areas can attract investments and implement green technologies, while rural regions remain dependent on traditional, polluting sources such as firewood. Although European instruments, such as the Just Transition Mechanism and the Social Climate Fund, aim to ensure a just transition, their implementation at the national level is often hampered by bureaucracy, a lack of inter-institutional coordination, and an uneven distribution of resources. This gap between policy design and its concrete implementation highlights a key reality: the energy transition cannot succeed without a concomitant social transition.

The elimination of energy price caps and generalised subsidies from 2025 onwards represents a turning point with profound social effects. While this liberalisation aligns Romania with the principles of the European market, it exposes vulnerable households to price volatility and an increased risk of energy insecurity. Low-income

families, pensioners, single parents and residents of mono-industrial regions are the most affected. In the absence of effective compensation mechanisms — such as expanded energy vouchers, progressive social tariffs, and energy efficiency programs for vulnerable households — there is a risk of increasing energy poverty and eroding public trust in the fairness of the green transition. As Bouzarovski and Thomson point out, the perception of injustice in energy reforms can undermine social cohesion and the legitimacy of climate policies.

However, Romania's integration into the European green architecture represents not only a challenge but also an opportunity. Initiatives such as Renovation Wave, REPowerEU, and the national ElectricUp or Casa Verde Plus programs can transform ageing energy infrastructure and stimulate emerging economic sectors, generating jobs in renewable energy. For these benefits to be sustainable and equitable, public policies need to combine technological modernisation with social protection, prioritising investments in disadvantaged homes and communities. Energy education and informing the population about responsible consumption and the advantages of green energy are, in turn, essential elements of a just transition.

The concept of just transition, central to EGD, requires the active involvement of affected communities in decision-making. The mining regions of Gorj, Hunedoara or Valea Jiului should not be seen only as problem areas, but as partners in transformation. Without the direct participation of the population and without professional retraining programs adapted to local realities, decarbonisation risks generating economic and social exclusion rather than development.

In conclusion, Romania's energy transition is both a social and a governance test. Achieving EGD objectives requires not only financial resources but also institutional reform, transparency, and strengthened trust between citizens and the state. Climate neutrality cannot be achieved only through technological innovation, but also by including those marginalised by economic and infrastructural inequalities.

Thus, the European Green Deal can become an instrument of social progress for Romania only if it is applied through the prism of equity and accessibility. A successful green transition must combine decarbonisation with redistribution, ecological responsibility with social equity. Without this synthesis, the green transformation risks reproducing old inequalities in a new form. The case study on Romania confirms a broader European reality: the fight against climate change is inextricably linked to the fight against social inequality, and only by ensuring equal access to clean, affordable energy can a sustainable, cohesive future be built.

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