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Securing Romania's Energy and Climate Future: Policy Choices, Risk Exposure, and Public Support

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Securing Romania's Energy and Climate Future: Policy Choices, Risk Exposure, and Public Support

A study by

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About EPG

EPG is an independent, non-profit think tank focused on energy and climate policy in Romania and the European Union. Founded in 2014, EPG operates as a policy research institute primarily financed through competitive grants, philanthropic organisations and, to a limited extent, private sector projects. EPG aims to promote an evidence-based dialogue on how to balance decarbonisation, economic competitiveness and social fairness, engaging decision-makers, industry, and the public.

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Key Findings

- Romania's updated NECP represents an improvement in coherence and ambition, but its effectiveness is constrained by delayed formal adoption and persistent delivery and governance risks. Methodological robustness and transparency remain uneven, raising potential credibility and implementation concerns particularly in the LULUCF sector.
- Romania's transition strategy remains strongly anchored in its traditional energy security strengths, yet relies heavily on a limited number of large-scale projects, increasing exposure to execution, financing, and political continuity risks. Emerging transition-era vulnerabilities, such as supply chain dependencies, critical raw materials, circularity, and climate resilience are insufficiently integrated into the NECP's risk framework.
- Household affordability constitutes a structural and binding constraint on implementation, with existing measures fragmented and not yet consolidated into a coherent, long-term affordability strategy.
- System reliability risks are shifting toward electricity networks, flexibility, and resilience, but the NECP lacks operational sequencing and clarity on infrastructure readiness.
- Public support for climate objectives remains broadly robust, particularly when framed around energy security, but willingness to pay is limited and highly sensitive to fairness and cost distribution.
- The NECP's contribution to reducing energy and climate security risks will depend on moving from planning to delivery, strengthening system-level resilience, and embedding affordability and social acceptance as core enablers rather than secondary considerations.

Executive Summary

Romania's updated Integrated National Energy and Climate Plan (NECP), submitted to the European Commission in October 2024, represents a meaningful improvement compared to previous versions, and provides a more coherent articulation of the country's transition pathway. The revised plan includes 89 policies and measures, strengthens decarbonisation pathways, and places greater emphasis on regional cooperation and interinstitutional coordination. However, implementation is unfolding in a context marked by persistent affordability pressures, infrastructure bottlenecks, and growing exposure to climate impacts, raising fundamental questions about the NECP's capacity to reduce Romania's most salient energy and climate security risks.

This report applies an integrated analytical framework structured around three pillars. First, it assesses the quality of the NECP by examining its data and modelling foundations, the inclusiveness and effectiveness of stakeholder engagement, the coherence and ambition of targets and measures across the five NECP dimensions, as well as the integration of just transition considerations. Second, these elements are assessed against a Energy and Climate Security Risk Index (ECSRI), which tracks 20 indicators across four dimensions (geopolitical, affordability, reliability, and sustainability) to evaluate whether proposed policies are aligned with the country's underlying risk exposure. Third, the analysis is complemented by empirical evidence from a national survey and a discrete choice experiment, providing insights into social acceptance.

The assessment confirms clear improvements in the NECP's analytical structure, particularly in the specification of sectoral targets and the formulation of decarbonisation measures. However, methodological transparency remains uneven. The LULUCF sector constitutes a key vulnerability, as the sharp increase in the removals target is not supported by proportional implementation measures or robust modelling. Although the consultation process has improved compared to previous planning cycles, the extent to which stakeholder input is reflected in final policy decisions remains inconsistent.

Results from the ECSRI analysis indicate that Romania has reduced some traditional vulnerabilities, particularly along the geopolitical dimension, through domestic production, diversification of supply sources, and infrastructure development. Projects such as Neptun Deep may further strengthen Romania's regional position after 2027. At the same time, the upcoming investments shift the risk profile towards new forms of vulnerability, including dependence on global supply chains for critical minerals and the timely delivery of major energy projects.

Energy affordability has emerged as one of Romania's most acute challenges. High levels of energy poverty persist, while extreme price volatility during the 2021–2023 energy crisis exposed households and industry to sharp cost shocks. Price caps and compensation schemes provided temporary relief but generated fiscal pressure and policy uncertainty. Rising CO₂-related costs under the EU Emissions Trading System (ETS), combined with the insufficient allocation of ETS revenues to climate and energy purposes, further amplify affordability and competitiveness risks.

Regarding the reliability dimension, the assessment points to a growing asymmetry between supply adequacy and system readiness. Romania continues to benefit from a diversified generation mix and substantial natural gas storage capacity. However, low energy efficiency in the building stock, underinvestment in electricity networks, and increasing exposure to extreme weather events constrain resilience during the transition. Sustainability risks have eased in some areas, driven by lower energy intensity and a higher share of low carbon electricity generation, yet structural vulnerabilities persist. Beyond the energy system itself, broader resource-use patterns continue to undermine long-term resilience. Romania's high material footprint and low circularity rates signal long-term vulnerabilities that are not yet systematically addressed within the NECP.

The social acceptance analysis suggests that public support for climate objectives remains broadly robust, particularly when climate action is associated with energy independence and security. However, willingness to pay is limited and strongly shaped by concerns over affordability, fairness, and policy stability. The principal social constraint is therefore not opposition to decarbonisation itself, but sensitivity to perceived cost burdens and unequal distributional impacts.

Overall, Romania's NECP constitutes an important step forward towards a more solid transition framework, but its effectiveness will depend on three conditions: timely formal adoption combined with a credible delivery architecture; a shift from project-led ambition toward system-level resilience, particularly in electricity networks and flexibility; and the elevation of affordability, circularity, climate adaptation, and social acceptability from secondary considerations to core enablers of implementation. Without these shifts, the NECP risks functioning primarily as a compliance instrument rather than as an operational roadmap for managing Romania's energy and climate transition risks over the coming decade.

Sumar executiv

Planul Național Integrat în domeniul Energiei și Schimbărilor Climatice (PNIESC) actualizat al României, transmis Comisiei Europene în octombrie 2024, reprezintă o îmbunătățire semnificativă față de versiunile anterioare și oferă o articulare mai coerentă a traiectoriei de tranziție a țării. Planul revizuit include 89 de politici și măsuri, consolidează traiectoriile de decarbonizare și acordă o atenție sporită cooperării regionale și coordonării interinstituționale. Cu toate acestea, implementarea are loc într-un context marcat de presiuni persistente asupra accesibilității prețurilor energiei, blocaje la nivelul infrastructurii și o expunere tot mai mare la impacturile climatice, ceea ce ridică întrebări fundamentale privind capacitatea PNIESC de a reduce cele mai relevante riscuri de securitate energetică și climatică ale României.

Acest raport aplică un cadru analitic integrat, structurat pe trei piloni. În primul rând, evaluează PNIESC-ul prin analizarea fundamentelor de date și de modelare, a gradului de incluziune și eficiență a procesului de consultare a părților interesate, a coerenței și ambiției obiectivelor și măsurilor pe cele cinci dimensiuni ale planului, precum și a integrării aspectelor legate de tranziția justă. În al doilea rând, aceste elemente sunt evaluate în raport cu Indicele Riscurilor de Securitate Energetică și Climatică (ECSRI), care urmărește 20 de indicatori grupați în patru dimensiuni (geopolitică, accesibilitate, stabilitate și sustenabilitate), pentru a evalua dacă politicile propuse sunt aliniate cu profilul de risc structural al țării. În al treilea rând, analiza este completată cu dovezi empirice provenite dintr-un sondaj național și dintr-un experiment de tip „discrete choice”, care oferă perspective asupra acceptabilității sociale.

Evaluarea confirmă îmbunătățiri clare în structura analitică a PNIESC, în special în definirea obiectivelor sectoriale și formularea măsurilor de decarbonizare. Cu toate acestea, transparența metodologică prezintă anumite inconsistențe. Sectorul LULUCF constituie o vulnerabilitate majoră, întrucât creșterea abruptă a țintei de absorbții nu este susținută de măsuri de implementare proporționale sau de o modelare robustă. Procesul de consultare s-a îmbunătățit față de ciclurile anterioare de planificare, însă gradul în care contribuțiile părților interesate se reflectă în deciziile finale de politică publică rămâne inconsistent.

Rezultatele analizei ECSRI indică faptul că România a redus unele vulnerabilități istorice, în special pe dimensiunea geopolitică, prin creșterea producției interne, diversificarea surselor de aprovizionare și dezvoltarea infrastructurii. Proiecte precum Neptun Deep pot consolida suplimentar poziția regională a României după 2027. În același timp, investițiile planificate modifică profilul de risc către noi forme de vulnerabilitate, inclusiv dependența de lanțurile globale de aprovizionare cu minerale critice și livrarea la timp a proiectelor energetice majore.

Accesibilitatea prețurilor energiei a devenit una dintre cele mai acute provocări pentru România. Nivelurile ridicate de sărăcie energetică persistă, iar volatilitatea extremă a prețurilor din perioada crizei energetice 2021–2023 a expus gospodăriile și industria la șocuri semnificative. Plafoanele de preț și schemele de compensare au oferit un sprijin temporar, dar au generat presiuni fiscale și incertitudine în materie de politici publice. Creșterea costurilor asociate emisiilor de CO₂ în cadrul Sistemului UE de Comercializare a Certificatelor de Emisie (ETS), combinată cu alocarea insuficientă a veniturilor din ETS către obiective

climatice și energetice, amplifică în continuare riscurile legate de accesibilitate și competitivitate.

Analiza mai relevă că România continuă să beneficieze de un mix de producție diversificat și de o capacitate substanțială de stocare a gazelor naturale. Totuși, eficiența energetică scăzută a fondului de clădiri, investițiile insuficiente în rețelele electrice și expunerea tot mai mare la fenomene meteorologice extreme pot reduce reziliența sistemului în timpul tranziției. Deși România și-a redus intensitatea de emisii și a crescut ponderea producției de electricitate cu emisii reduse de CO₂, utilizarea intensivă a materiilor prime și ratele scăzute de circularitate semnalează vulnerabilități de durată, care nu sunt încă abordate sistematic în cadrul PNIESC.

Analiza cu privire la acceptabilitatea socială sugerează că sprijinul public pentru obiectivele climatice rămâne, în linii mari, solid, în special atunci când acțiunea climatică este asociată cu independența și securitatea energetică. Cu toate acestea, disponibilitatea de a plăti este limitată și puternic influențată de preocupările legate de accesibilitate, echitate și predictibilitatea politicilor publice. Principala constrângere socială nu este, așadar, opoziția față de decarbonizare în sine, ci sensibilitatea față de povera percepută ale costurilor și de impactul distributiv inegal.

În ansamblu, PNIESC-ul României reprezintă un pas important către un cadru de tranziție mai solid, însă eficacitatea sa va depinde de îndeplinirea a trei condiții: adoptarea formală a planului, combinată cu o arhitectură credibilă de implementare; trecerea de la o ambiție axată pe proiecte individuale către o abordare orientată spre reziliența la nivel de sistem, în special cu privire la rețelele electrice și sursele de flexibilitate; și elevarea accesibilității, circularității, adaptării la schimbările climatice și acceptabilității sociale de la statutul de considerații secundare la cel de factori-cheie ai implementării. În absența acestor schimbări, PNIESC riscă să devină un simplu instrument de conformare cu obligațiile europene - planul ar trebui văzut ca o foaie de parcurs operațională pentru gestionarea riscurilor tranziției energetice și climatice ale României în următorul deceniu.

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Acronyms

AFM	Romanian Environment Fund Administration
ANRE	National Regulatory Authority for Energy
bcm	billion cubic meters
BRUA	Bulgaria - Romania - Hungary - Austria
CCGT	Combined Cycle Gas Turbine
CCUS	Carbon Capture, Utilisation and Storage
CEAP	Circular Economy Action Plan
CEO	Capacity expansion and optimisation
CESEC	Central and South Eastern Europe Energy Connectivity
CHP	Combined Heat and Power
CO ₂	Carbon dioxide
EC	European Commission
ECSRI	Energy and Climate Security Risk Index
ENTSOG	European Network of Transmission System Operators for Gas
EU	European Union
EU ETS	European Union's Emissions Trading System
EV	Electric Vehicle
FEC	Final Energy Consumption
GDP	Gross Domestic Product
GHG	Greenhouse gas
GW	Gigawatt
HH	Households
LULUCF	Land Use, Land-Use Change and Forestry
MW	Megawatt
MWh	Megawatt-hour

NECP	National Energy and Climate Plan
PatEx	Pathway Explorer
PEC	Primary Energy Consumption
PPS	Purchasing power standards
PV	Photovoltaic
RES	Renewable Energy Sources
RRP	Recovery and Resilience Plan
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SMR	Small Modular Reactor
TAP	Trans-Adriatic Pipeline
TSI	Technical Support Instrument
TWh	Terawatt-hour
US	United States
WTP	Willingness to pay

1. Introduction & Context

In alignment with the EU objectives of reducing greenhouse gas (GHG) emissions by at least 55% by 2030 and reaching climate neutrality by 2050, Romania has initiated a series of reforms across its energy system. These efforts are intended to align national energy and climate policies with broader decarbonisation goals, while supporting economic development and strengthening energy security. Romania's updated National Energy and Climate Plan (NECP), first submitted in draft form to the European Commission in December 2023, represents the central strategic document outlining the country's intended pathway toward these objectives.

The proposed NECP detailed actions to reduce emissions, expand renewable energy deployment, and enhance energy efficiency, while also reinforcing Romania's energy security. However, the plan's preparation process initially faced delays and limitations in transparency. Romania missed the June 2023 deadline for submission, leaving the EC with little time to assess the document. The Commission subsequently assessed Romania's renewable energy ambitions as insufficient and highlighted the lack of robust policies to support decarbonisation, as well as shortcomings in stakeholder consultation. Public access to the draft was delayed, and debates were organised only after criticism from civil society. As the revision process continued into 2024, further delays were expected due to the need for an extended Environmental Assessment.

Progress has been made in October 2024, when Romania submitted an updated and more coherent version of its NECP, addressing EC recommendations and strengthening its policy framework. The revised plan includes 89 policies and measures, placing greater emphasis on regional cooperation in areas such as energy efficiency, energy security, and infrastructure, as well as stronger interinstitutional coordination within the national administration.

During these institutional challenges, Romania has also been navigating a broader transformation of its energy landscape. Historically reliant on coal and natural gas, the country is progressing toward a low-carbon energy mix while attempting to safeguard economic stability and energy affordability. For coal-dependent regions, the transition poses socioeconomic challenges, prompting initiatives to support worker reskilling and attract investments in renewable energy production.

Yet this policy evolution is unfolding at a moment when climate action is becoming less politically salient across Europe, including in Romania. Rising energy prices, geopolitical instability, and broader cost-of-living pressures have increasingly shifted public and political attention toward short-term security and affordability concerns, often at the expense of long-term decarbonisation objectives. In this context, climate policy risks being perceived as a competing priority rather than an integral component of economic resilience and national security. Understanding how energy and climate objectives interact with public perceptions, social acceptance, and security considerations is therefore essential to identifying a viable path forward. Without anchoring climate action in concerns that resonate with citizens, such as energy security, price stability, and regional development, even technically robust policy frameworks risk implementation gaps and political pushback.

This report responds directly to this challenge by applying an integrated analytical framework to assess Romania’s climate ambitions within a broader energy and climate security perspective. It first conducts a focused review of the NECP, examining the robustness of its data and modelling foundations, the inclusiveness of stakeholder engagement, the coherence and ambition of targets and measures across the five NECP dimensions, and the extent to which just transition measures are included.

Building on this review, the analysis links NECP measures to Romania’s Energy and Climate Security Risk Index, evaluating whether proposed policies are adequately aligned with the country’s underlying energy and climate security risks and identifying key areas of convergence and remaining gaps.

Finally, the report complements the risk and policy analysis with evidence from a survey on social preferences and willingness to pay for climate policies. This allows an assessment of public support for different measures, potential sources of social or political resistance, and the alignment between societal attitudes and the priorities emerging from the NECP and ECSRI.

This analysis is part of a broader project that applies a unified and comparable methodology across multiple EU Member States to assess the alignment between national energy and climate planning, underlying security risks, and societal preferences.

2. Quality of the NECP

The analysis in this section is based on the Assessment of Romania's draft updated National and Energy Climate Plan (Energy Policy Group, 2025), which integrates both the European Commission's comments (European Commission, 2023) and the official answers provided by the Romanian authorities.

2.1. Data, Modelling and Scientific Foundations

The updated NECP submitted by Romania in October 2024 (European Commission, 2024) presents a more coherent analytical framework than earlier versions, reflecting efforts to align national planning with EU expectations for evidence-based policy design. The integration of 89 policies and measures demonstrates intent to construct a comprehensive system for the energy transition. Still, the robustness of the underlying data and modelling remains uneven across sectors.

There is a clear improvement in the structure of decarbonisation pathways, with sectoral targets now better quantified and more clearly linked to policy instruments, and with increased emphasis on interinstitutional cooperation and regional dimensions. However, methodological weaknesses persist. The most important concerns arise around the LULUCF sector: the decision to raise the GHG removal target from 17% to 87% relative to 1990 is not substantiated by proportional measures or detailed modelling. The justification relies partly on an updated inventory methodology whose implications are not explained in depth, creating uncertainty about the credibility of such an abrupt change in ambition.

Furthermore, some of the datasets referenced in the NECP appear misaligned with parallel national strategies, a discrepancy highlighted by stakeholders during consultations. These misalignments affect projections for energy demand, renewable deployment rates and infrastructure investments. The scientific basis of the NECP is therefore strengthened compared to prior drafts but still requires refinement to achieve internal consistency and methodological transparency.

2.2. Stakeholder Engagement: Inclusiveness, Transparency and Public Trust

Compared with the initial draft, prepared without any public consultation, the updated NECP represents an improvement, reflecting a more open and participatory process. The revised version is based on a more organised consultation process involving ministries, industry actors, civil society organisations and academic institutions. Three rounds of consultations were organised in early 2024 (Investenergy, 2024). Each provided insights into both policy feasibility and stakeholder concerns. The first meeting, focused on energy security and prosumer integration, highlighted tensions around Romania's continued reliance on gas-fired generation and the expected impact of the Neptun Deep offshore gas project. Discussions underscored the need for more transparent assumptions regarding gas capacity projections and for improved data on renewable heating technologies.

The second one, centred on decarbonisation, raised questions about the environmental compliance of biomass and hydropower projects, as well as the urgency of developing a national CCUS strategy. The third dialogue brought attention to the integration of Romanian research institutions, the need to resolve inconsistencies between the NECP and other policy drafts, and the importance of detailed trajectories for the 2024–2030 and 2030–2050 periods.

Overall, the engagement process appeared more inclusive and transparent than in previous planning cycles. Yet the degree to which stakeholder input is reflected in final policy choices remains uneven. Public trust will depend on whether future NECP explicitly integrates and responds to these contributions rather than merely documenting them.

2.3. Targets and Measures Across the NECP Dimensions

2.3.1. Decarbonisation

The revised NECP increases Romania's overall decarbonisation ambition, adjusting its economy-wide GHG reduction target from 78% to 85% (net) by 2030 relative to 1990. When it comes to sectoral decarbonisation targets, reductions in the energy, industry, and agriculture remain broadly stable, while the buildings sector displays a major shift, moving from a modest 2% reduction to a 19% reduction by 2030. This progression reflects the increased role of heat pumps, solar thermal collectors, and building efficiency measures.

In contrast, the transport sector maintains its projected rise in emissions, now slightly reduced from +41% to +40%, reflecting persistent structural challenges in decarbonising mobility despite growth in electric and hybrid vehicle interest.

The LULUCF target remains the outlier. Its leap to 87% removals is disconnected from the scale of measures proposed. While reforestation initiatives are now included, they are insufficient to account for the expansion in net removals envisioned by the new target. As a result, the LULUCF objective appears more aspirational than operational, raising methodological and implementation concerns.

2.3.2. Renewable Energy

The NECP proposes an indicative trajectory for renewable energy development, outlining a national target of 38.3% RES in gross final consumption by 2030, below the Commission's recommended 41%. The trajectory anticipates reaching a 31% RES share by 2025, relying heavily on expanded solar and wind capacity and the integration of heat pumps into heating and cooling statistics beginning in 2023.

Although the Plan recognises the declining share of biomass, from 56% of total RES in 2022 to 34% by 2030, it does not fully address infrastructural and technological constraints that may limit the scalability of new renewable capacities. Achieving the Commission's recommended target would require accelerated permitting, expanded grid flexibility, and deeper electrification of transport and industry, areas where barriers remain.

2.3.3. Energy Efficiency

Energy efficiency is positioned as a guiding principle in Romania's long-term projections, influencing both policy prioritisation and investment choices. For 2030, Romania aims to cut primary energy use by 51% and final energy use by 47%. These targets are ambitious and in line with the EU's goal of lowering energy demand without affecting productivity. The long-term vision for 2050 reflects continuity, with further reductions in energy consumption projected relative to 2022 levels. The link between energy efficiency and meeting renewable and decarbonisation targets is clear, but success will depend on stable funding and effective policy implementation.

2.3.4. Energy Security

Romania's updated NECP presents a nuanced view of energy security, emphasising diversification and reduction of import dependence. The plan acknowledges the increasing reliance on crude oil imports, 75% in 2022 compared to 68% in 2021, and outlines a strategy to stabilise and gradually reduce this dependency through electrification and diversification of suppliers.

The coal phase-out, scheduled for completion by 2032, is reinforced by a target of zero solid fossil fuel imports for electricity and heat production by 2030. Meanwhile, the Neptun Deep project is projected to shift Romania into a net gas exporter position by 2030, sustaining this status until 2040. Although this temporarily strengthens Romania's energy security, the eventual decline in offshore gas production raises questions about the long-term role of gas in the national energy mix.

The plan also highlights increased storage capacity, at least 1,200 MW by 2030, and the importance of demand response to manage an increasingly variable energy system. These measures demonstrate growing alignment with EU expectations regarding system flexibility.

2.3.5. Internal Market Integration

Romania maintains its target of achieving 15% electricity interconnection by 2030. The NECP emphasises smart grid development, digitalisation and prosumer integration as mechanisms to enhance market competitiveness and improve cross-border trade. These priorities are broadly consistent with regional integration goals, although the pace of infrastructure upgrades will ultimately determine Romania's capacity to capitalise on market opportunities.

2.3.6. Research, Innovation and Competitiveness

The revised NECP strengthens its focus on research and innovation, particularly through collaboration between academic institutions and the private sector, recognising innovation as a key element for supporting Romania's energy transition. Emphasis is placed on enabling technologies, such as CCUS, hydrogen production, and digital monitoring systems. Although the NECP provides limited detail on funding mechanisms or prioritisation criteria for research initiatives.

2.4. Just Transition: Socio-economic Implications and Regional Fairness

While the earlier NECP approach to energy poverty relied predominantly on vouchers, the updated plan adopts a broader perspective. It aims to address structural drivers of energy poverty by ensuring access to sustainable and affordable energy sources, introducing one-stop-shops at local levels, and establishing an interministerial committee focused on vulnerable consumers.

However, these measures remain largely limited in scope. The NECP does not sufficiently anticipate the socio-economic pressures expected from the introduction of ETS2, nor does it fully assess the differentiated regional impacts of the energy transition. Regions dependent on fossil fuels or heavy industry is mentioned, but detailed strategies for supporting workers and communities remain underdeveloped.

A more comprehensive transition framework, including proactive measures, territorial impact assessments and long-term financing mechanisms, would be required to ensure equitable outcomes.

3. Energy and Climate Security Risks

Romania’s energy and climate security profile, as assessed through the Energy and Climate Security Risk Index (ECSRI), reflects fifteen years of gradual structural change shaped by internal and external pressures. Between 2008 and 2022, the country has reduced some of its structural vulnerabilities, particularly in terms of geopolitical dependence, while new risks have emerged or intensified in the fields of affordability, infrastructure reliability and environmental sustainability.

The ECSRI, developed by the Centre for the Study of Democracy (Center for the Study of Democracy, n.d.), provides a comparative, data-driven assessment of these challenges across all EU Member States. By ranking 20 individual risk factors across four dimensions: Geopolitical, Affordability, Reliability, and Sustainability, the Index offers an overview of how energy and climate security risks are distributed in Romania.

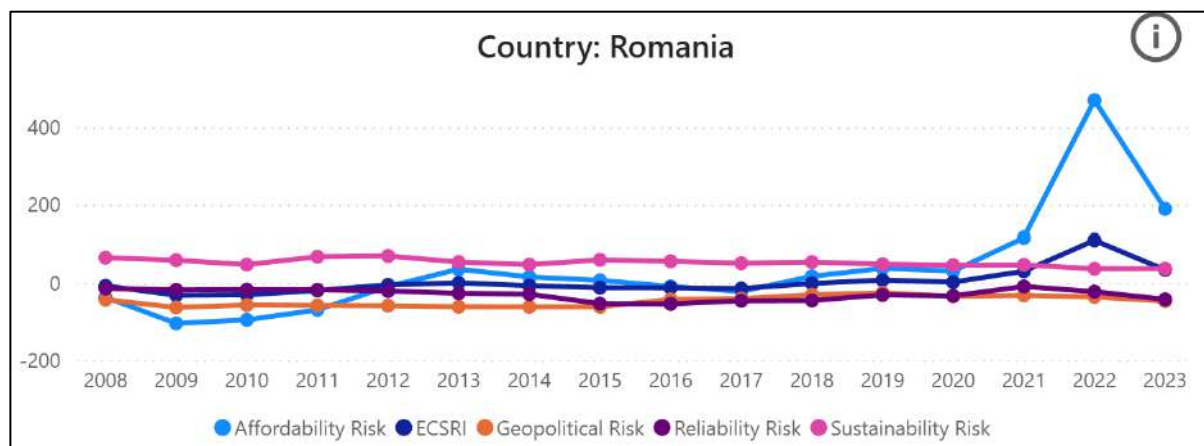
Below are the detailed indicators analysed in Romania’s ECSRI profile.

Table 1 ECSRI Risk Dimensions and Indicators for Romania

Risk Dimension	Indicators
Geopolitical	<ul style="list-style-type: none"> • Security of petroleum imports • Security of natural gas imports • Security of raw materials and renewable energy sources (RES) imports
Affordability	<ul style="list-style-type: none"> • Oil and natural gas import expenditures per GDP • Energy expenditures per GDP • Retail electricity prices – households (HH) • CO₂ costs • Retail natural gas prices – households (HH) • Retail electricity prices – non-households (non-HH)
Reliability	<ul style="list-style-type: none"> • Electricity capacity margins • Electricity capacity diversity • Gas stocks • Gas infrastructure reliability • Household energy efficiency
Sustainability	<ul style="list-style-type: none"> • Energy intensity • Emissions intensity • Electricity non-CO₂ generation share • Waste per capita • Circular material use rate • Material footprint

These risks are shaped by ongoing developments such as the coal phase-out, the Neptun Deep offshore gas project, nuclear expansion, the accelerated deployment of renewables, volatile energy prices, and increasing climate impacts.

Figure 1 Romania’s energy and climate security trends 2008-2023¹



Source: CSD, 2025

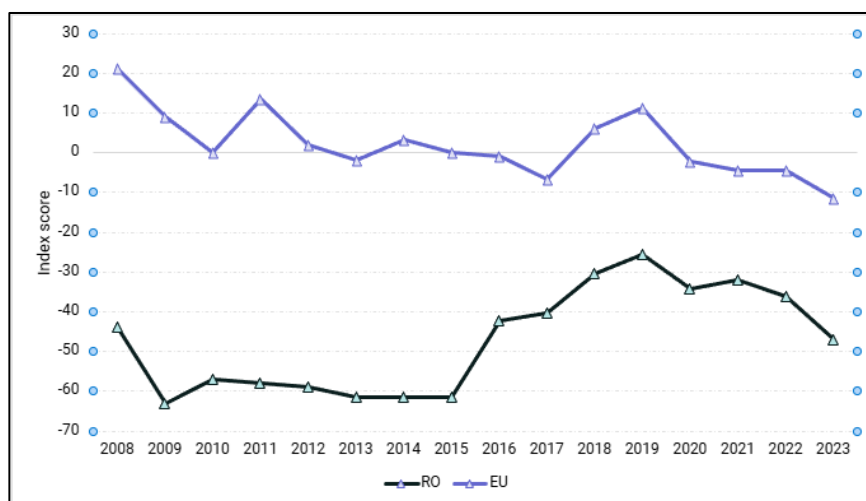
A comprehensive assessment based on the ECSRI indicators was conducted within the study Assessment of Romania’s Energy and Climate Security Risks. The analysis employed a multidimensional framework designed to capture Romania’s exposure to energy- and climate-related vulnerabilities, structural dependencies, and transition challenges. In the following sections, the key findings of the above-mentioned assessment are synthesised and discussed in a structured manner. Results are presented sequentially for each ECSRI dimension, highlighting the main risk drivers, mitigating factors, and structural trends shaping Romania’s energy and climate security outlook.

3.1. Geopolitical dimension

Geopolitical risk in Romania has followed a generally downward trajectory since 2008, when it peaked at 23.18 on the ECSRI scale.

¹ Values are expressed as standard deviations from the EU-27 average in 2015. A value of 0 indicates a risk level equal to the EU-27 average in 2015; positive values indicate higher-than-average risk; negative values indicate lower-than-average risk

Figure 2 Geopolitical risk



Source: CSD, 2025

From 2009 onwards, geopolitical risk indicators remained consistently below the EU average, indicating lower exposure to external suppliers. This trend was temporarily reversed in 2021, reflecting the impact of the European energy crisis and the Russia–Ukraine war. Romania’s relatively favourable starting point lies in its domestic resource base:

- **Solid fuels:** In 2021, Romania met 89% of its total inland solid fuel consumption (19,819 thousand tonnes) from domestic production (17,733 thousand tonnes). Only 11% (1,611 thousand tonnes) was imported, of which 63% came from Russia. Overall dependence on Russian fossil fuel imports before the war was comparatively low, at around 5%.
- **Crude oil:** Romania is among the few EU Member States with indigenous oil production. Geological reserves were estimated at 2,020 million tonnes in early 2014, with proven reserves of 60 million tonnes (96% onshore, 4% offshore). With average annual output of 4,2 million tonnes, a 5% annual decline in reserves and a 5% replacement rate, current reserves are expected to last roughly 23 years. Indigenous production (3,195 thousand tonnes in 2021) covered about 30% of internal consumption and accounted for 18% of EU-27 domestic oil production (Eurostat, 2023).
- **Natural gas:** Romania holds the largest proven gas reserves in Central and Eastern Europe, around 1,600 TWh (150 billion m³) of economically extractable gas (UNFCCC, 2017), within total geological resources of 6,569 TWh (615 billion m³) (UNFCCC, 2017). Annual production is roughly 11 billion m³. Assuming a 5% annual decline in proven reserves and an 80% replacement rate, existing reserves could be depleted in approximately 14 years. Short- and medium-term security can be supported via advanced recovery technologies and new exploration, particularly in the Black Sea.

Romania has actively expanded its gas transmission and storage infrastructure to reduce geopolitical vulnerability. Projects such as the BRUA pipeline and participation in the Central and South Eastern Europe Energy Connectivity (CESEC) initiative aim to integrate Romania into regional gas markets and diversify routes. Future projects, including links to the Trans-

Adriatic Pipeline (TAP) and deep-water extraction, are intended to further reduce dependence on Russian gas.

However, the Neptun Deep offshore project represents a major shift in the geopolitical risk profile. Expected to start production around 2027 and to reach 8–10 billion cubic metres (bcm) per year (OMV Petrom, n.d.), Neptun Deep could make Romania a net gas exporter by 2030, strengthening regional supply security. Romania's role is also shaped by the impending end of Russian gas transit via Ukraine from January 2025, which increases the strategic importance of alternatives such as the Vertical Gas Corridor and other regional interconnections.

On the electricity side, the 2022 generation mix (IRENA, 2025) highlights both elements of resilience and increasing transition pressures. Renewable energy sources, including hydropower, accounted for around 44% of total electricity generation, with 27% coming from hydropower, 12% from wind, 4% from solar, and 1% from bioenergy. Nuclear power provided a stable 20% of electricity generation, reinforcing system reliability. At the same time, fossil fuels - mainly natural gas and coal - still represented 32% of total generation, underscoring the continued role of conventional sources in the power mix and the challenges associated with balancing decarbonisation objectives with security of supply.

Romania has adopted a coal phase-out law, with 660 MW (Energy Policy Group, 2022) of coal capacity transferred to technical reserve by end-2022. While this reduces long-term dependency on imported solid fuels it also increases the importance of timely replacement capacity, especially nuclear and gas, to avoid reliability gaps.

Beyond domestic production and generation structures, Romania's energy security profile increasingly reflects a declining reliance on external oil imports and a more diversified supply base. Crude oil import dependency, at around 70%, remains below the EU average (approximately 92%). Prior to the war in Ukraine, about 73% of crude oil imports originated from Kazakhstan and Russia; since then, Russian volumes have been largely eliminated and replaced by imports from Kazakhstan, Azerbaijan, and Turkey. Over the longer term, crude oil import dependency is projected to decline further to 33% by 2045, driven by increased electrification and a structural reduction in fossil fuel demand.

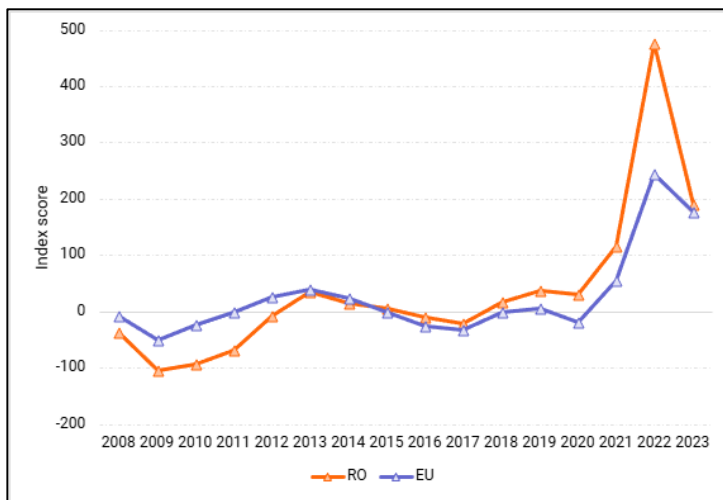
Romania has successfully reduced its risky dependence on Russia and strengthened its energy security. However, this achievement shifts the risk profile away from traditional geopolitical vulnerabilities toward transition-related risks, particularly those associated with global supply chains, access to critical minerals, and the timely delivery of major domestic energy projects. In this context, although Romania has potential in terms of critical mineral resources, the current legislative and regulatory framework is not yet sufficiently adapted to facilitate their exploration and extraction, limiting the country's ability to leverage this potential in support of long-term energy security.

3.2. Affordability dimension

Affordability has emerged as one of the most acute dimensions of Romania's energy and climate security risk profile. Despite the availability of domestic energy resources and a

relatively diversified generation mix, a share of the population remains exposed to energy poverty and to high levels of price volatility.

Figure 3 Affordability risk



Source: [CSD, 2025](#)

Indicators of energy poverty point to deep-seated structural challenges. In 2020, 14% of Romanians reported difficulties in paying utility bills, while nearly one third of households fell below the poverty line after covering energy costs. The situation deteriorated further in 2021, when around 25% of the population experienced some form of energy poverty, with households spending on average 8,7% of their total expenditures on energy (World Bank Group, 2024). By 2022, affordability pressures intensified: 17,8% of Romanians struggled to pay utility bills, the highest share recorded in the EU, 15,2% reported difficulties in maintaining adequate indoor warmth, and 31% faced challenges in cooling their homes during summer. Rural households were disproportionately affected across all indicators (World Bank Group, 2024).

At the macroeconomic level, Romania's energy expenditure relative to GDP ranks among the highest in the European Union. This reflects a combination of structural factors, including high energy intensity in key industrial sectors such as metallurgy, fertilisers, cement and manufacturing; heavy reliance on road transport, with oil products accounting for around 91% of final energy consumption in the transport sector; poor building insulation and the widespread use of outdated equipment; and persistent inefficiencies in electricity transmission infrastructure. Together, these factors translate into elevated overall energy demand, higher production costs, weakened competitiveness, and increased vulnerability for households.

Affordability risks have been further exacerbated by pronounced volatility in electricity prices. Romania has experienced increasing energy expenditure volatility due to external price fluctuations in the European energy market. A combination of rising global oil and gas prices, the ongoing European energy crisis and the liberalisation of energy markets has made energy costs unpredictable for both households and industries. While government interventions have provided temporary relief, they have also introduced fiscal pressures and market distortions

that could lead to long-term challenges. Electricity prices on Romania's local wholesale exchange soared to €490/MWh in August 2022 before dropping to €200/MWh in October, only to rise again to €247/MWh by the same month (EMBER, 2026). On July 24, 2023, the spot electricity price in Romania rose by 61.51% to €111.60/MWh (opcom, 2026) due to heatwaves and technical issues at power plants.

Natural gas prices have followed a similarly volatile trajectory. Despite Romania's domestic gas production, households have faced sharp retail price increases due to global price shocks after 2022, market liberalisation completed in 2020, and rising transmission and distribution costs linked to ageing infrastructure and network investments. Wholesale gas prices increased from below €20/MWh in February 2021 to approximately €70/MWh following Russia's invasion of Ukraine in 2022. Although intended to foster competition and investment, liberalisation exposed households more directly to market-driven pricing during periods of crisis. Seasonal import needs and Romania's integration into the EU gas market further amplify exposure to international price swings. These dynamics have placed a disproportionate burden on low-income and rural households, increasing energy poverty and constraining their ability to absorb price shocks. Beyond households, gas price volatility has increased production costs for gas-dependent industries, contributing to inflationary pressures and weakening industrial competitiveness. (OECD, 2024)

In response, the government adopted extensive emergency interventions to shield consumers from rising costs. Emergency Ordinance 27/2022 (Portal Legislativ, 2022) introduced caps on electricity and gas prices, compensation schemes for suppliers, and extraordinary taxation on excess profits. These price caps were extended multiple times and are currently in force until 1 July 2025 for electricity and until March 2026 for natural gas. The scheme applies differentiated price ceilings for households and critical sectors, including caps of around €260/MWh for certain household categories and €200/MWh for public utilities and essential services. Domestic gas producers were also required to sell gas at regulated prices, such as €30/MWh for households and initially €50/MWh for combined heat and power plants, with subsequent adjustments. In parallel, additional targeted support measures were introduced for vulnerable groups, including large families, single-parent households and users of medical devices.

Affordability pressures are also increasingly shaped by CO₂ costs and emission policies. Under the EU Emissions Trading System (ETS), Romanian industries are required to purchase emissions allowances, raising costs for power generation, heavy industry and transport. In 2021, Romania generated almost €490 million in ETS revenues (European Commission, 2023). However, since 2017, the share of these revenues allocated to climate- and energy-related purposes has consistently fallen short of the 50% minimum required by the ETS Directive, with shortfalls persisting until 2021. As carbon prices increase, compliance costs are passed through to consumers in the form of higher electricity and production prices, reinforcing affordability risks. The transition to renewables, while essential, has also generated short-term cost pressures, as coal plant closures require substantial investment in renewable capacity and grid modernisation, while continued reliance on natural gas as a transition fuel sustains emissions and ETS-related costs. Decarbonisation measures such as

carbon capture and energy efficiency programmes further increase short-term expenditure needs.

These rising costs affect multiple sectors simultaneously. The power sector faces mounting emissions costs that accelerate the shift away from fossil fuels but require heavy upfront capital investment. Energy-intensive industries, including cement, steel and manufacturing, must absorb higher costs, invest in cleaner technologies, or pass costs on to consumers, with implications for competitiveness. For households, particularly in rural areas, higher CO₂-related costs translate directly into increased electricity and heating bills, exacerbating energy poverty and social inequality.

Climate change itself is emerging as an additional affordability stressor through growing economic losses. Romania has experienced increasingly frequent and severe floods, droughts and heatwaves, affecting agriculture, infrastructure and the energy system. Prolonged heatwaves, with temperatures exceeding 40°C for weeks, have sharply increased electricity demand for cooling while simultaneously reducing supply. During the summer of 2023, weak wind conditions constrained wind generation, drought reduced hydropower output, and heat-induced malfunctions led to the automatic disconnection of one Cernavodă nuclear reactor, forcing higher electricity imports and pushing spot prices upward. These impacts have been amplified by decades of underinvestment across the energy value chain. Much of Romania's electricity distribution infrastructure dates back to the 1960s and 1970s, and although some improvements have been recorded in SAIDI and SAIFI², performance still lags behind the EU average, underscoring the need for accelerated grid modernisation.

At the same time, there are emerging mitigating trends. The Romanian Environment Fund Administration (AFM) has played an important role in promoting renewable energy adoption among prosumers through financial incentive programmes (The Romanian Environment Fund Administration, n.d.). By September 2025, prosumers had installed over 3,1 GW of photovoltaic capacity, a sharp increase from only a few megawatts in early 2020. This expansion has enabled many households and businesses to cover part of their own electricity demand and feed surplus energy into the grid, contributing to system resilience and partially alleviating affordability pressures. However, without sustained investment in resilient infrastructure and more effective use of ETS revenues, Romania will continue to face elevated affordability, competitiveness and energy security risks as climate impacts intensify.

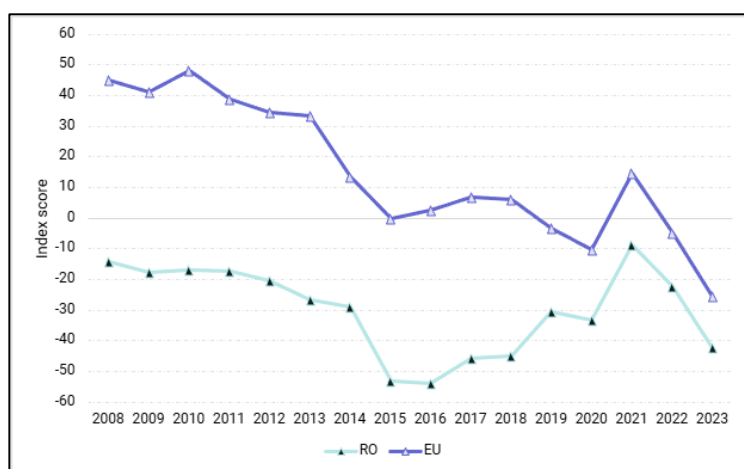
3.3. Reliability dimension

The evolution of Romania's reliability performance over the period 2008–2023, as illustrated in the figure below, highlights pronounced fluctuations driven by structural reforms, market liberalisation, infrastructure constraints, and recent energy and climate shocks. After a gradual deterioration in the mid-2010s, followed by a temporary improvement around 2020–2021, reliability indicators weakened again in the context of heightened price volatility, extreme weather events, and capacity constraints. This dynamic underscore the importance of assessing reliability through both supply-side factors, such as generation adequacy and

² SAIDI (System Average Interruption Duration Index) and SAIFI (System Average Interruption Frequency Index)

gas storage, and demand-side vulnerabilities, including energy efficiency and household resilience, which are examined in detail in the following sections.

Figure 4 Reliability dimension



Source: CSD, 2025

From a supply-side perspective, Romania's electricity system displays a relatively strong reliability profile, underpinned by adequate capacity margins and a diversified generation mix. In 2022, total net installed electricity generation capacity amounted to 16,561 MW (Transelectrica, n.d.) while peak demand reached 9,211 MW on 13 January, indicating a comfortable margin of available capacity. Electricity production was diversified across sources, with hydropower accounting for 37.1%, renewables 25.6%, coal and lignite 16.1%, fossil gas 13.4%, and nuclear power 7.8%. This balanced mix reduces exposure to single-fuel risks and enhances resilience against price volatility, supply disruptions, and extreme weather events.

Natural gas storage constitutes a critical pillar of supply-side reliability, both for meeting domestic demand and for responding to emergency situations such as natural disasters or supply chain interruptions. Its strategic role has been reinforced by evolving EU regulations, which have expanded the framework established in 2010 to strengthen cooperation among Member States in preventing and managing supply disruptions. Since 2017, EU rules have promoted coordinated risk assessments, regional cooperation mechanisms, EU-wide supply disruption simulations conducted by ENTSOG (ENTSOG, n.d.), and enhanced transparency of long-term gas contracts. The introduction of the solidarity principle obliges Member States to support one another during crises, particularly to protect vulnerable consumers during extreme weather events or geopolitical shocks.

In Romania, underground natural gas storage operations are licensed by the National Regulatory Authority for Energy (ANRE). DEPOGAZ (DEPOGAZ Ploiești, n.d.), the main storage operator, manages five underground gas storage facilities developed in depleted gas fields, which together account for approximately 90.54% of Romania's total storage capacity. These facilities have played a key role in strengthening supply security: by 1 November 2022, storage levels reached 96.78%, exceeding the legal requirement by more than 16 percentage points, and the heating season ended with storage levels of 42.92% on 15 April 2023. Romania's

current gas storage capacity amounts to around 3 bcm, equivalent to roughly one third of annual gas consumption. Looking ahead, total storage capacity is expected to increase by an additional 1.6 bcm by 2029, further reinforcing resilience to supply disruptions (European Commission, 2023).

On the demand side, reliability is closely linked to the energy efficiency of the residential sector and households' ability to maintain adequate energy services during periods of stress. Romania's residential building stock has a substantial untapped energy-saving potential, estimated at 40–50% of current consumption (Dimulescu, 2014), reflecting outdated construction standards and inefficient energy use. Although building renovation has become a policy priority, the current pace remains insufficient to meet the 2030 target of a 3.4% annual renovation rate (European Commission, 2023), which is necessary to deliver the energy savings and greenhouse gas emission reductions set out in the long-term renovation strategy.

Improving energy efficiency on the demand side is not only a decarbonisation measure but also a key reliability lever. Better-insulated buildings and more efficient heating and cooling systems reduce peak demand, lower exposure to price spikes, and improve households' capacity to cope with extreme weather events. This is particularly relevant given Romania's high levels of energy poverty. In 2021, around 25% of the population experienced some form of energy poverty, with households spending 8.7% of their total expenditures on energy. By 2022, 17.8% of Romanians struggled to pay utility bills—the highest rate in the EU—while 15.2% reported difficulties in maintaining adequate warmth and 31% faced challenges in cooling their homes during summer (World Bank Group, 2024). Rural households were disproportionately affected, underscoring persistent regional disparities in housing quality and access to efficient energy services.

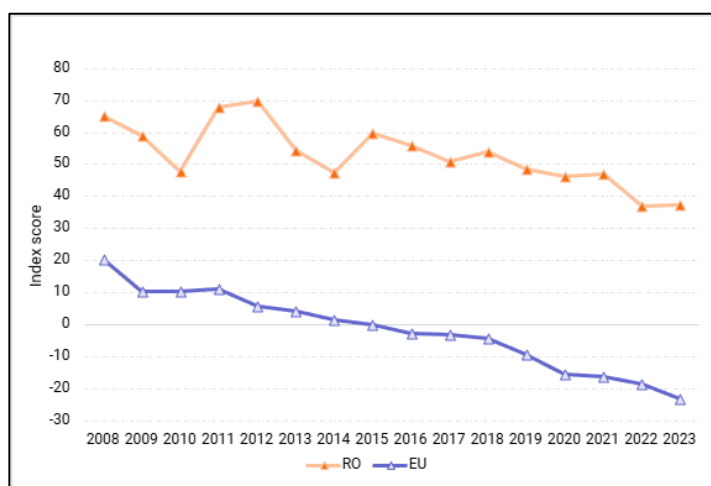
Policy responses aimed at protecting households during periods of price stress have also influenced demand-side reliability. In late 2022, the EU adopted Council Regulation (EU) 2022/1854 (EUR-Lex, 2022), introducing a temporary solidarity contribution on companies operating in the crude oil, natural gas, coal and refining sectors. The regulation required a minimum 33% contribution on profits exceeding a 20% increase over average taxable profits recorded between 2018 and 2021. Romania implemented this measure through Emergency Ordinance No. 186/2022 (Portal Legislativ, 2022), applying a higher 60% tax rate and requiring affected companies to pay contributions by 25 June each year. While initially intended to finance low-carbon energy investments, legislative amendments adopted by spring 2023 redirected these revenues toward direct financial support for vulnerable consumers. Although this provided short-term relief, it also highlighted the absence of a stable, long-term strategy linking affordability, efficiency improvements, and system reliability.

Overall, while Romania's supply-side reliability benefits from adequate capacity, diversified generation and strong gas storage buffers, demand-side vulnerabilities, driven by low energy efficiency, energy poverty and uneven policy implementation, remain a critical constraint on the country's ability to ensure reliable and resilient energy services under increasingly volatile climatic and market conditions.

3.4. Sustainability dimension

The figure below illustrates the evolution of Romania’s sustainability performance over the period 2008–2023, revealing a volatile but overall declining trajectory in recent years. After periods of temporary improvement, the trend points to increasing pressures related to resource use and material efficiency, suggesting that underlying structural constraints have not been fully addressed. This observed evolution provides the background for the following analysis, which examines the specific drivers behind these trends and their implications for Romania’s long-term sustainability and resilience.

Figure 5 Sustainability dimension



Source: CSD, 2025

Within the sustainability risk assessment, the analysis deliberately focuses on material footprint and circular material use rate, as these indicators capture the structural and systemic dimensions of Romania’s economic and energy sustainability, going beyond short-term developments reflected in other metrics.

Other sustainability indicators, such as energy intensity, CO₂ emissions intensity, or the share of non-CO₂ electricity generation, have recorded improvements in Romania over the past decade. These trends largely reflect the effects of EU-level policies already internalised at national level, including the EU Emissions Trading System, the transformation of the power sector, and sustained investments in renewable and nuclear generation. As such, these indicators primarily capture progress within the electricity sector and are strongly influenced by policy frameworks and technological dynamics that are already relatively well established.

By contrast, material footprint and circular material use rate highlight more fundamental and persistent sustainability risks that remain insufficiently addressed by existing policies and are considerably more difficult to correct in the short term. They reflect deep-rooted inefficiencies in resource use, continued reliance on primary raw materials, and delayed progress in transitioning away from a linear economic model. For this reason, these two indicators are prioritised in the sustainability risk assessment.

3.4.1. Material footprint and circular material use

Romania's elevated material footprint is closely linked to its weak performance in circular material use, pointing to structural inefficiencies in resource management and delayed progress toward a circular economy. While the European Union's Circular Economy Action Plan (CEAP) aims to double the circular material use rate between 2020 and 2030, Romania's transition remains insufficient and has deteriorated in recent years.

Romania's material footprint, which captures the total volume of raw materials extracted domestically and embedded in imports for domestic consumption, is among the highest in the European Union and represents a key structural sustainability risk. In 2020, Romania's material footprint reached 29.6 tonnes per capita, more than double the EU-27 average of 13.7 tonnes per capita, confirming an upward trend observed since 2017 (European Commission, 2023).

This elevated footprint reflects the structure of the Romanian economy, where resource-intensive sectors, particularly construction, heavy manufacturing and agriculture, continue to play a dominant role. These sectors rely heavily on primary raw materials and exhibit relatively low levels of material efficiency, reinforcing dependence on extraction and imports rather than reuse and recycling. As a result, improvements in energy or emissions indicators have not translated into comparable gains in material efficiency.

Recent trends in material consumption reveal divergent dynamics across material categories. Declining fossil fuel consumption largely reflects EU-wide decarbonisation efforts and market diversification following Russia's aggression against Ukraine. By contrast, metals consumption fell by approximately 20%, partly due to reduced EU imports from Russia and increased exports to Ukraine, resulting in a lower overall metals footprint. It remains uncertain whether this decline represents a temporary adjustment to disrupted supply chains or a more permanent structural shift as global markets recalibrate.

Structural inefficiencies in material use further amplify these challenges. In 2021, Romania's resource productivity stood at 0.8 purchasing power standards (PPS) per kilogram, well below the EU average of 2.3 PPS per kilogram, a gap that has remained largely unchanged since 2016. From a resilience perspective, low resource productivity increases exposure to price volatility, supply disruptions and external dependencies for raw materials and intermediate goods.

The persistence of a linear production and consumption model is also evident in Romania's weak waste management and recycling performance. The circular (secondary) use of materials declined from 1.7% in 2016 to 1.5% in 2021, far below the EU average of 11.7%, directly contributing to the country's high material footprint (Eurostat, 2025).

In 2021, the municipal waste recycling rate stood at 11.3%, down from 13.4% in 2016, well below the EU target of 50% by 2020, which Romania failed to meet. At the same time, 75.5% of municipal waste was landfilled, more than three times the EU average of 23%, placing Romania at risk of missing the 2025 recycling targets and remaining far from the 2035 landfill reduction target of 10% (European Commission, 2023).

Policy efforts have intensified but remain insufficient. Romania adopted a national circular economy strategy in September 2022, with support from the Technical Support Instrument (TSI) under the Recovery and Resilience Plan (RRP), and approved county-level and Bucharest waste management plans in 2021. However, the 2017 national waste prevention programme and waste management plan have yet to be revised, limiting policy coherence and implementation effectiveness. Inadequate separate collection systems, insufficient treatment capacity, weak waste data management and the continued prevalence of illegal or sub-standard landfilling continue to divert materials away from recycling and remanufacturing, reinforcing reliance on primary raw materials and sustaining a high material footprint.

3.5. Key risk drivers and vulnerabilities

Across the four ECSRI dimensions, several cross-cutting factors emerge as key risk drivers:

1. Structural reliance on fossil fuels and legacy infrastructure

- Continued importance of natural gas for electricity, heat and industry, even as coal is phased out.

Aging electricity transmission and distribution networks, combined with an outdated building stock.

2. High and persistent energy intensity

- Mobility and heavy industry remain major consumers, with limited progress in modal shift or deep industrial efficiency.

3. Exposure to price and climate shocks

- Volatile wholesale prices, frequent policy changes (caps, taxes, compensation schemes) and extreme weather events that reduce domestic generation and necessitate imports.

4. Socio-economic vulnerability and energy poverty

- High share of households at risk of energy poverty, particularly in rural and low-income communities.

5. Weak circular economy performance

- Low recycling rates, high material footprint, low resource productivity, and limited use of secondary materials.

6. Dependence on timely delivery of major projects

- Neptun Deep, nuclear expansion (including SMRs and Cernavodă Units 3 and 4), capacity expansion and optimisation (CEO) projects, grid modernisation, and large-

scale renewables are all critical to future risk reduction. Delays in any of these could amplify both reliability and affordability risks.

3.6. How NECP measures address (or fail to address) these risks

Romania's updated NECP introduces a set of measures that directly respond to the risks identified above but still also leaves key gaps unaddressed.

3.6.1. Geopolitical risks

Addressed by NECP:

- Coal phase-out in electricity and heat generation by 2030, effectively eliminating reliance on imported solid fossil fuels and reducing exposure to external coal suppliers. Integration of Neptun Deep into projections, prioritising domestic gas supply and reducing import dependence, with potential surplus exports in the longer term. Increased attention to diversification of gas suppliers and participation in regional initiatives (e.g. Vertical Gas Corridor, BRUA).
- Nuclear expansion (additional 1.9 GW by 2032) provides low-carbon baseload with limited import dependence.

Remaining gaps:

- Strong reliance on Neptun Deep and nuclear timelines introduces project-delivery risk: delays could increase short-term exposure to external gas suppliers or prolong reliance on gas-fired generation, particularly if renewable deployment falls behind expectations. The NECP does not fully integrate geopolitical risks related to critical minerals needed for renewables, batteries, and EVs.

3.6.2. Affordability risks

Addressed by NECP:

- Stronger emphasis on energy efficiency, including ambitious reductions in Primary Energy Consumption (PEC) and Final Energy Consumption (FEC) by 2030 and 2050, which could structurally reduce energy expenditures. Support for prosumers and distributed generation, potentially moderating household exposure to retail price volatility.
- A more comprehensive approach to energy poverty (beyond vouchers), including one-stop-shops and an interministerial committee for vulnerable consumers.

Remaining gaps:

- Many NECP measures remain incremental and rely on existing instruments, they may be insufficient to offset the impacts of ETS2 and continued price volatility.
- The plan does not fully articulate how ETS revenues will be systematically reinvested to cushion high CO₂ costs or to support vulnerable groups.

- Regional and rural-urban disparities in access to financing, information and technologies are acknowledged but not thoroughly addressed.

3.6.3. Reliability risks

Addressed by NECP:

- Planned expansion of nuclear capacity and flexible gas-fired generation (CCGTs, CHPs) to replace coal and support RES integration.
- A target of at least 1,200 MW (2,400 MWh) of battery storage by 2030, alongside hydropower investments (e.g. Tarnița), to increase flexibility.
- Commitments to maintain high gas storage levels and expand capacity by 2029.
- Building renovation targets under the RRP, which, if fully implemented, would reduce peak demand and improve comfort.

Remaining gaps:

- Underinvestment in transmission and distribution infrastructure is only partially addressed, the NECP references smart grids and digitalisation but does not provide a detailed investment roadmap.
- The link between coal phase-out timelines and commissioning of new dispatchable capacity remains a reliability risk if schedules slip.
- Adaptation aspects (e.g. grid resilience to heatwaves, storms, floods) are not systematically integrated.

3.6.4. Sustainability risks

Addressed by NECP:

- Increased RES targets (38.3% RES in gross final consumption by 2030) and clear trajectories for wind, solar and heat pumps.
- Stronger role for prosumers and acceleration of rooftop PV.
- Continued decarbonisation via the EU ETS and coal phase-out.
- Emphasis on research, innovation and CCUS strategies, as well as moderate-innovator status by 2030.

Remaining gaps:

- The LULUCF target (87% removals vs. 1990) is highly ambitious yet poorly substantiated, risking credibility.
- Romania's circular economy, waste and material footprint challenges are acknowledged at the margins but not central to NECP measures, actions remain insufficient to meet EU recycling and landfill reduction targets.
- The NECP does not fully integrate adaptation planning and climate resilience into sustainability, despite rising climate-related economic losses.

4. Social Preferences and Public Acceptance

The 2022 Eurobarometer (Eurobarometer, 2022) showed that Romanians were optimistic about the green transition, with strong public support for climate policies and priorities—affordable energy, energy efficiency, and investment in innovative technologies—closely matching the EU average.

However, this positive outlook has shifted in the past years. The international landscape has changed due to the geopolitical crises sparked by the Russian aggression in Ukraine or the tensions between the EU and the US. Marked by a high fiscal deficit, Romania had to implement austerity policies which directly hit consumers. After almost three years under a price-capping scheme, its end led consumers to face high energy bills once more, disproportionately affecting vulnerable groups and fuelling public dissatisfaction. Consumers bills were estimated to even 3 times higher than usual (Energy Policy Group, 2025). Another cap on natural gas for heating is supposed to be lifted in March 2026.

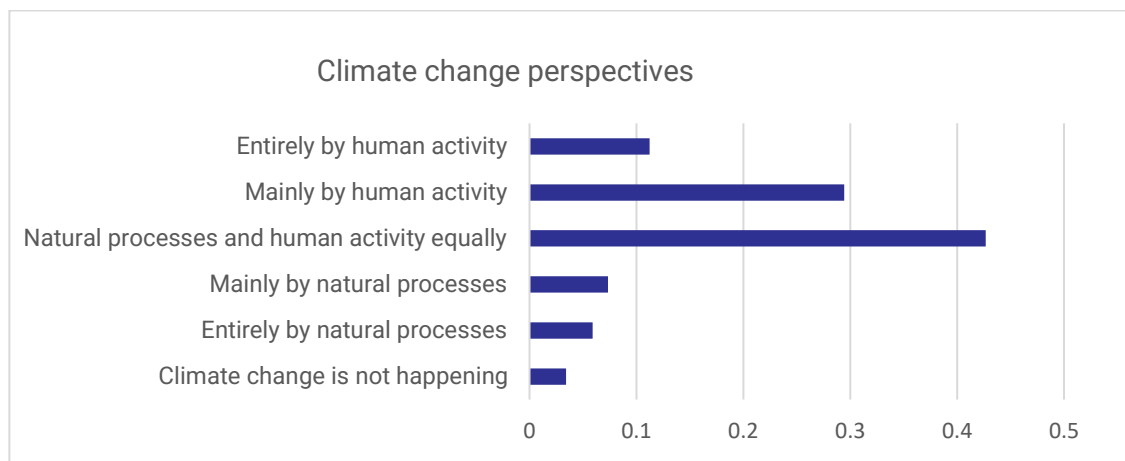
In this context of austerity policies, the rising cost of living and higher utility bills, consumers in Romania are more and more worried about the winter season, the supply of energy but also more broadly on public health and who needs to do more regarding climate change. Moreover, the willingness to pay for climate outcomes is another issue which concerns them. Through a survey and a discrete choice experiment, the current research sheds light on these public attitudes.

4.1. Public concerns and perceptions

Attitudes on climate change, individual and state action

About eight in ten survey respondents agree that climate change is more or less a result of human action (83.2% of respondents believe that human activity affects climate change, entirely, mainly, or equally with natural processes). Climate scepticism remains a belief just for a minority of the population (16.6%).

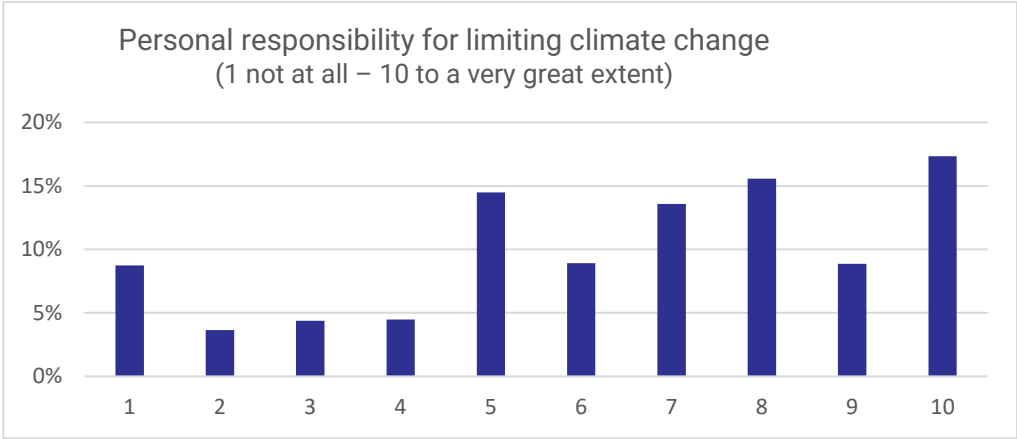
Figure 6 Climate change perspectives



Source: EPG survey results

Among the respondents, more than half (54.5%) share a feeling of high responsibility (7-10) in limiting climate change, 23.3% are in the middle, of which 14.4% leaning toward the lower part of the range (5), 8.7% feel not responsible at all. Even though there is a high sense of personal responsibility among the respondents in mitigating climate change, almost one in ten people do not feel responsible at all in addressing this issue.

Figure 7 Personal responsibility for limiting climate change

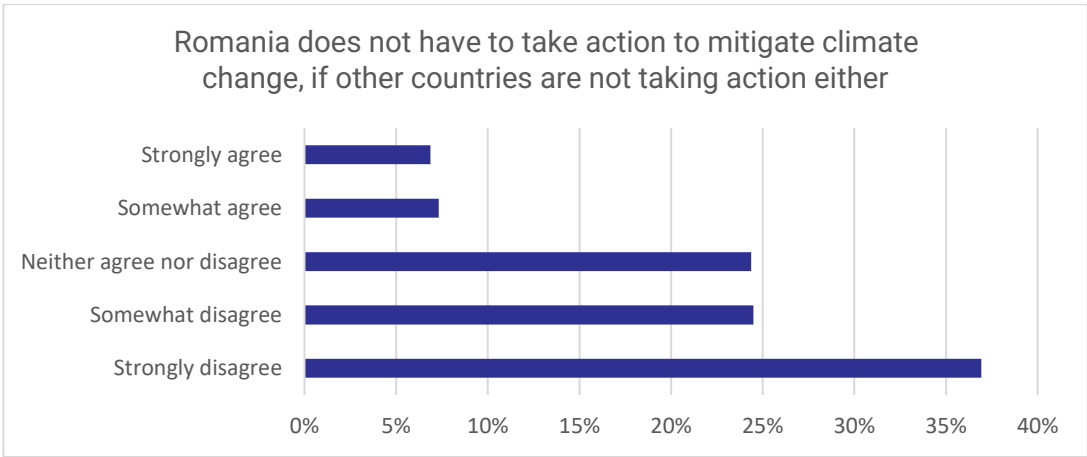


Source: EPG survey results

A high percentage of the population (62.2%) believe that it is worth taking action regardless of what others do. Only 18.8% adopt a passive attitude (“Somewhat agree” or “Strongly agree”), while the same proportion (18.8%) remained neutral.

These high percentage of responsibility to mitigate climate change also reflects in the attitudes of what Romania, as a country, should be doing. When asked whether Romania should not take action to fight climate change if other countries are not taking action either, 61.3% believe the contrary, that the country should take action to mitigate climate change regardless of what other countries do. Only 14.1% think that the country should have a passive stance, while 24.3% remained neutral.

Figure 8 Attitudes on national level action



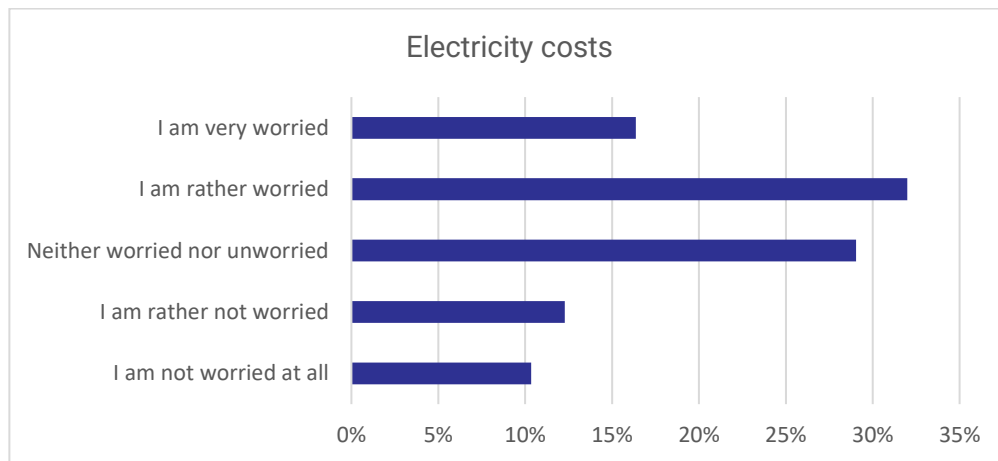
Source: EPG survey results

Overall, the findings indicate a strong acknowledgment of human responsibility for climate change among respondents, with climate scepticism remaining marginal. There is broad support for climate action, both at the individual and national levels, regardless of the actions of others. Taken together, these results suggest a generally favourable public attitude toward independent and proactive climate action, tempered by the presence of a minority that remains disengaged or passive.

Attitudes on energy prices

When asked about their concerns on the costs of heating in the upcoming cold season, almost half of the respondents (48.2%) expressed concern about the rising electricity costs ("I am rather worried", "I am very worried"). Less than one third of the people surveyed (29%) are neutral ("Neither worried nor unworried") and only 22.5% are not worried.

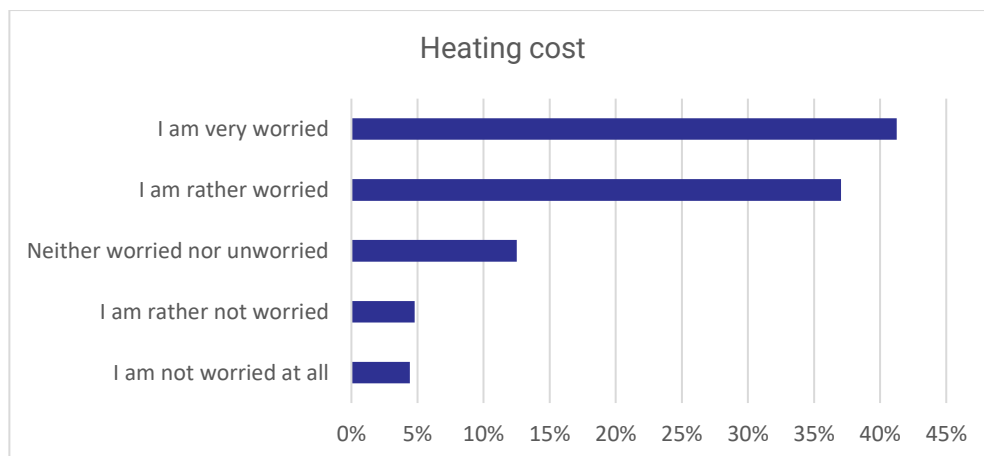
Figure 9 Concerns about electricity costs



Source: EPG survey results

These concerns are also reflected by the high percentage of the population which is worried about the cost of heating their homes in the upcoming cold season, which goes up to 78.2%.

Figure 10 Concerns about heating costs

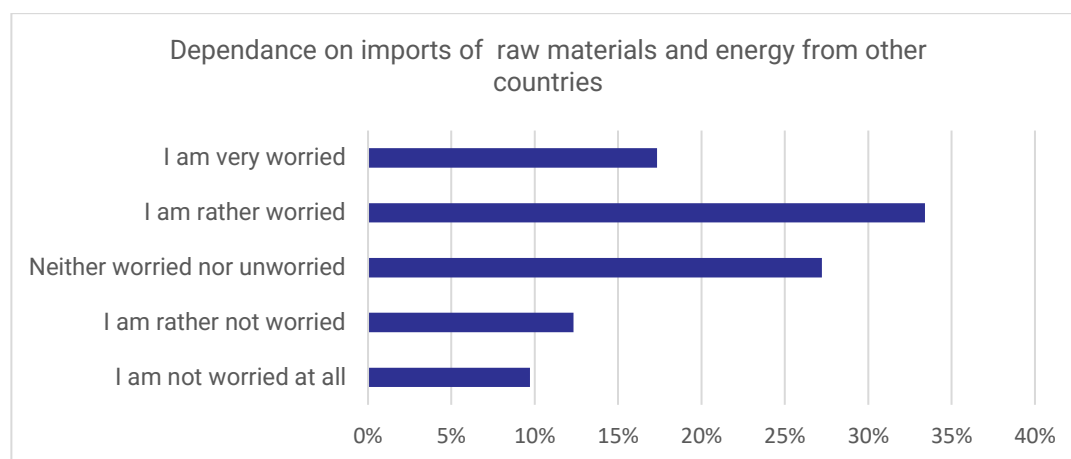


Source: EPG survey results

Overall, the majority of the respondents are worried about the cost of electricity in the upcoming heating season.

These concerns also reflect in the Romanian dependency on imports of energy from other countries, half of the respondents (50.7%) express concern ("rather worried", "very worried") about dependence on imports of raw materials and energy from other countries, only 20% are not worried, while the rest, 27.2% are neither worried nor unworried. In this context, the cost of heating represents a major concern for the majority of people. More than three quarters (78.2) are worried and expect a significant increase in heating costs in the upcoming heating season.

Figure 11 Concerns about dependence of imports from other countries



Source: EPG survey results

Some individuals are additionally concerned of the air quality during the upcoming heating season, with nearly half worrying about it (48.6%). The results confirm that air quality remains an important, though not dominant, source of concern, less worrying than energy or heating costs.

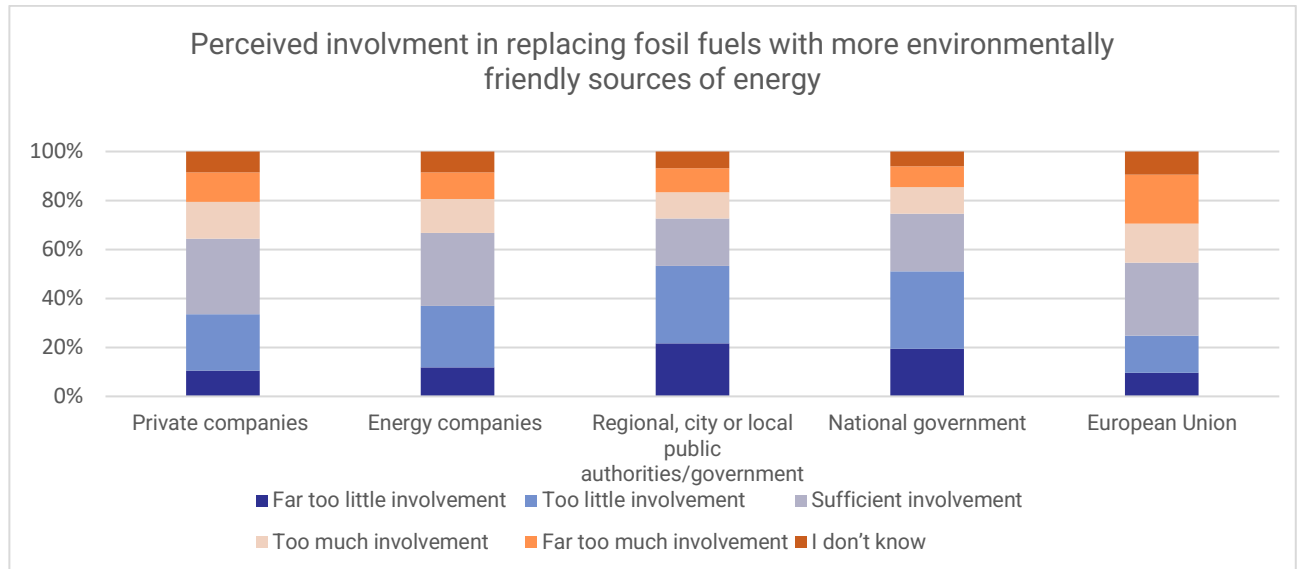
The results show that concerns related to energy affordability are widespread among respondents, with the cost of electricity and heating emerging as major sources of concern ahead of the upcoming cold season. Nearly half of the population expresses worry about rising electricity prices, and more than three quarters expect a significant increase in heating costs, indicating a strong perception of financial pressure associated with energy use.

These concerns are closely linked to Romania's dependence on imported energy and raw materials. About half of the respondents are worried about this dependency, suggesting that energy security is perceived as an important factor influencing household costs. In comparison, air quality during the heating season, while still a relevant issue, generates lower levels of concern than energy prices and heating costs. Overall, the findings highlight that economic and energy security considerations currently outweigh environmental concerns in shaping public perceptions related to the heating season.

Linked to these concerns is the need to replace traditional sources of energy with more sustainable ones. Over 50% of the respondents believe that authorities (either local or

national) are not sufficiently involved in replacing traditional sources of energy with more environmentally friendly ones. 36% consider that the EU is too involved in this issue, while 29.8% consider its involvement sufficient. Alternatively, private companies and energy producers are viewed as not sufficiently involved in reducing the impact of energy production on the environment.

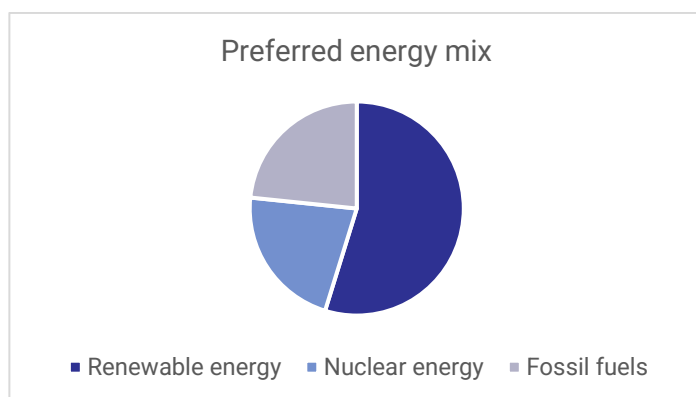
Figure 12 Perceived involvement of different actors in replacing fossil fuels



Source: EPG survey results

When asked about which should be the main sources of electricity and heat production in Romania, renewable energy is the choice with the highest percent 54.7%, followed by fossil fuels and nuclear energy with similar values, 23.3% respectively 21.8%.

Figure 13 Preferred energy mix

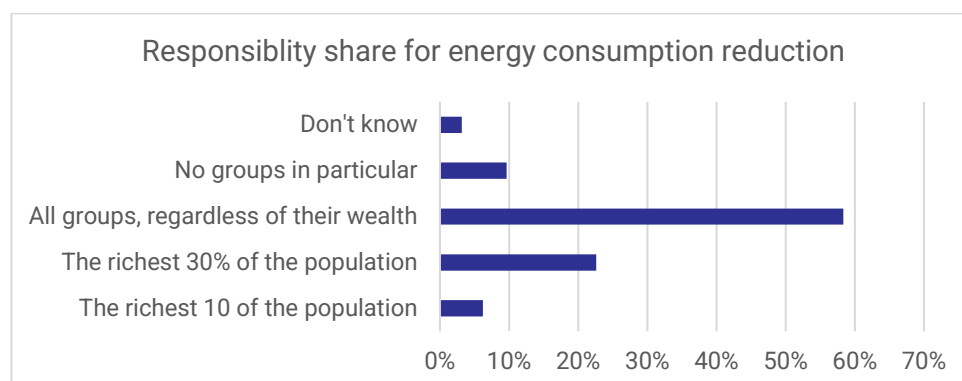


Source: EPG survey results

When it comes to which socioeconomic group bears more responsibility in reducing energy consumption, more than half (58%) consider that everyone, regardless of their wealth, should make greater efforts to reduce their energy consumption. 22.6% believe that the top 30%

should make greater efforts, while only 6% consider that the top 10% of the population should reduce their energy consumption.

Figure 14 Attitudes on responsibility share for energy consumption reduction



Source: EPG survey results

4.2. Willingness to pay for climate policies, results from a discrete choice experiment

Willingness to pay (WTP) values indicate how much respondents value specific features of climate policies, expressed as a monthly monetary amount. In practical terms, WTP reflects the monthly financial gain or loss that respondents perceive as equivalent to a particular change in policy design. A positive WTP suggests that, on average, individuals are willing to forego part of their income to obtain that feature, signalling support for that type of policy. Conversely, a negative WTP indicates that respondents would require compensation to accept the feature, or that they prefer the current situation, implying resistance to such a policy.

Regarding climate impacts, the estimated WTP for a shift from substantial to minimal impacts is about -39 EUR per household per month, and this result is statistically significant. This finding should not be interpreted as a preference for poorer climate outcomes. Instead, it suggests that, within the context of the policy packages presented in the experiment, respondents are unwilling to incur additional monthly household costs and would, on average, require compensation to support a new policy that delivers minimal impacts compared to the baseline. Accordingly, the negative WTP is best understood as indicating that climate impacts are not the main factor guiding choices in Romania, where preferences appear to be driven more strongly by other policy attributes such as costs, financing mechanisms, and distributional effects.

In contrast, the estimated WTP for reducing gas and oil imports from “no change” to a minimal level is approximately 9 EUR per month and is statistically significant. This suggests that respondents place value on increased energy independence and are, on average, willing to bear a modest monthly cost to lower reliance on imported fossil fuels. As a result, energy security emerges as an important factor influencing climate and energy policy preferences.

Costs and benefits of climate policy

The WTP results indicate weak support for highly progressive financing arrangements. When the additional costs are borne exclusively by the top 10% of income earners, the estimated WTP is approximately -21 EUR per month, a result that is statistically significant and signals clear opposition. Expanding the cost burden to the top 30% of earners yields a smaller negative WTP of around -14 EUR per month, although this estimate is not statistically different from zero.

Overall, these findings suggest a general reluctance to concentrate policy costs on a narrowly defined high-income group. There is no strong evidence that respondents clearly favour shifting the burden to the top 30% compared with equal cost-sharing across the population. Instead, preferences in Romania appear to lean toward broadly distributed contributions rather than strongly progressive financing schemes.

When policy benefits are targeted exclusively at low-income groups, both WTP estimates are negative. The WTP is around -64 EUR per month when only the poorest 10% of households receive benefits, and about -31 EUR per month when benefits are limited to the poorest 30%. Although these estimates are imprecise, their negative sign points to a general discomfort with narrowly targeted benefit schemes.

Overall, respondents appear to favour policies in which benefits are distributed more broadly across the population. Combined with the findings on who pays, these results suggest a preference for universal or near-universal approaches to both benefit allocation and cost sharing, rather than policies that strongly differentiate between income groups.

For these attributes, the WTP estimates are not statistically significant, with confidence intervals including zero. While the negative coefficients may hint at a preference direction, the large uncertainty means no strong conclusions can be drawn. Non-significant WTP values are therefore interpreted as showing no robust evidence of an effect, rather than as indicating clear support or opposition.

Main takeaways

- Energy independence is valued and respondents are willing to bear some cost to reduce fossil-fuel imports.
- Climate impacts, as described in this experiment, do not appear as a key driver of choices, and the negative WTP should be interpreted with caution. Respondents do not express a willingness to pay for reducing climate impacts from substantial to minimal, and – on average – would require compensation to accept such a policy package.
- Respondents show little support for strongly progressive financing and are sceptical of policies that concentrate benefits only on small low-income groups, favouring instead more broadly shared costs and benefits.
- For the distribution of benefits, the point estimates suggest a dislike of policies in which gains accrue only to the poorest 10% or 30% of the population rather than being shared equally. However, these effects are not statistically significant, so no firm conclusions can be drawn.

5. How NECP ambitions measure up when seen through risk analysis?

Assessed through the ECSRI framework, the NECP outlines a set of ambitions that mark progress in addressing Romania's energy and climate security challenges. At the same time, these ambitions fall short of constituting a comprehensive risk-mitigation strategy when set against the country's underlying risk profile. This assessment should also be read in light of an important institutional context: at the time of writing this report, the NECP has not been formally adopted, adding a further layer of uncertainty around implementation and credibility across all dimensions.

Geopolitical alignment and strategic exposure

The NECP is broadly aligned with Romania's geopolitical and energy security requirements, particularly in its emphasis on supply diversification, regional integration, and the expansion of domestic energy production. These priorities are consistent with the need to reduce exposure to external shocks in an increasingly unstable regional environment. Nevertheless, the risk-mitigation value of this alignment is depending on the timely and coordinated delivery of several large-scale projects. Given that the NECP remains unadopted, uncertainties surrounding political commitment, permitting, and financing further amplify execution risks, potentially delaying the strategic benefits the plan is designed to deliver.

Affordability and socio-economic vulnerability

In terms of affordability, the NECP foresees improvements through energy efficiency, increased generation capacity, and a gradual shift towards lower marginal-cost renewable energy sources. While these measures may ease cost pressures over the long term, they do not sufficiently address the structural determinants of energy poverty, including income disparities, inefficient building stock, and uneven access to support mechanisms. Moreover, the plan provides limited safeguards against price volatility during periods of market stress. In the absence of clearly anchored social policy instruments, affordability risks remain only partially mitigated, particularly for vulnerable households.

Reliability, adequacy, and system resilience

The NECP is directionally consistent with maintaining system adequacy during the energy transition, recognising the need for network upgrades, flexibility resources, and new capacity. However, it falls short in translating these objectives into detailed and operational pathways. The plan provides limited clarity on sequencing, resilience standards, and stress-testing of infrastructure against extreme weather events, cyber risks, or compound shocks. Until the NECP is operationalised, these gaps increase uncertainty around the reliability of future investments and the system's capacity to withstand disruptions.

Decarbonisation and broader sustainability risks

The NECP advances Romania's decarbonisation agenda by setting emissions reduction targets and promoting renewable energy deployment. Yet, from a climate risk perspective, it

leaves several sustainability-related vulnerabilities insufficiently addressed. Circular economy considerations, material dependency, waste management, and lifecycle impact of new energy infrastructure remain marginal in the plan. In addition, climate adaptation is weakly integrated, raising concerns about the long-term robustness of decarbonisation pathways under changing climate conditions.

Across all four dimensions, the NECP reduces exposure to some well-understood risks but leaves emerging transition-related vulnerabilities insufficiently addressed, resulting in a partial and uneven risk-reduction profile.

6. Conclusions

Compared with earlier versions, the updated NECP offers a more coherent presentation of Romania's transition pathway. The central limitation lies not in analytical ambition but in delivery capacity. Improved modelling and policy design do not, in themselves, resolve implementation risk, particularly while the Plan remains formally unadopted. This institutional uncertainty undermines policy credibility, weakens investment signalling, and increases the likelihood that measures remain fragmented across ministries and funding cycles rather than consolidated into a single, enforceable transition framework.

Viewed through a risk lens, the NECP's core strength lies in its ability to consolidate Romania's long-standing energy security advantages, including domestic resources, a diversified electricity mix, and regional connectivity, into a transition narrative broadly consistent with EU objectives. However, the Plan relies on a limited number of large projects, such as offshore gas development, nuclear expansion, and major grid investments, to deliver security, affordability, and reliability gains. As a result, success becomes less a function of policy design and more a function of execution capacity, notably permitting, procurement, grid build-out, and the ability to sustain financing and political commitment over multiple electoral cycles. This is particularly relevant in Romania's current political context, where delays in energy reforms and shifting governmental priorities complicate the transition from planning to delivery and increase the risk of governance bottlenecks.

A second conclusion concerns the nature of Romania's evolving risk profile. The NECP is primarily calibrated to address risks that are well understood within the traditional energy security paradigm, such as fuel supply, domestic production, and capacity additions. By contrast, emerging vulnerabilities of the transition period receive less systematic attention. Material dependencies, equipment supply chains, waste streams, and climate resilience standards are not integrated as organising principles of the Plan, even though they increasingly determine whether decarbonisation translates into durable security. From a system-level perspective, results from the PatEx modelling exercise (2050 Pathways Explorer (Climact, n.d.)) reinforce this assessment, showing that the NECP underestimates the scale and pace of structural change required in non-ETS sectors, particularly in buildings, transport, and industry, relative to cost-optimal transition pathways.

Governance and delivery risks are also evident in the area of critical raw materials. Despite documented domestic resource potential, limited regulatory clarity, weak institutional coordination, and the absence of concrete exploration and development projects have prevented this potential from translating into effective supply or risk reduction, leaving Romania exposed to external dependencies in a key area of the energy transition.

Affordability emerges as a further conclusion and is best understood as a structural rather than a temporary risk. In Romania, exposure to high energy costs reflects persistent inefficiencies in the building stock, unequal access to modern energy services, and strong sensitivity to price and climate shocks. While the NECP includes measures on energy efficiency, renewables, and vulnerable consumers, these remain fragmented and are not yet articulated into a coherent affordability framework with stable financing and predictable

targeting. As a result, affordability continues to act as a binding political constraint on the transition, increasing the likelihood that implementation weakens under sustained cost pressure despite general support for decarbonisation objectives.

The NECP's approach to reliability is credible in intent but incomplete in operational detail. Romania's system adequacy currently benefits from a diversified supply base and substantial gas storage buffers. However, the transition will progressively shift system stress points towards electricity networks, flexibility, and climate resilience. While the Plan recognises these needs, it does not fully articulate sequencing, including what must be built first, where bottlenecks are most likely to emerge, and how resilience standards will be enforced. In the absence of such clarity, the primary risk is not insufficient ambition but a practical mismatch between the pace of capacity transformation and the readiness of supporting infrastructure.

Social acceptance constitutes a critical cross-cutting implementation risk. Survey results and the discrete choice experiment indicate that public support for climate action in Romania remains broadly intact at the level of general objectives, particularly when linked to energy independence and security. However, willingness to pay for climate outcomes is limited, and preferences are strongly shaped by concerns over energy costs, distributional fairness, and policy stability. The main social constraint on the transition is therefore not opposition to decarbonisation per se, but sensitivity to affordability pressures and perceived unfairness. In this context, the effectiveness of the NECP will depend not only on technical delivery, but also on its ability to align cost allocation, compensation mechanisms, and policy sequencing with societal preferences in order to sustain political and public support throughout implementation.

All in all, the capacity of the NECP to contribute to reducing Romania's energy and climate security risks will depend on (i) timely formal adoption combined with a credible delivery architecture, (ii) a shift from project-led ambition towards system-level resilience, particularly in electricity networks and flexibility, and (iii) the elevation of affordability, circularity, and climate adaptation, together with social acceptability and perceived fairness, from secondary considerations to core enablers of the transition. If these conditions are met, the NECP can evolve into a credible instrument for managing Romania's transition risks. If not, it risks functioning primarily as a compliance exercise rather than as a practical roadmap for navigating the next decade of transition pressures.

7. Bibliography

Center for the Study of Democracy, n.d. *Energy & Climate Security Risk Index*. [Online]
Available at: <https://ces.csd.eu/>

Climact, n.d. *2050 Pathways Explorer*. [Online]
Available at:
<https://pathwaysexplorer.climact.com/pathways?visualisation=0®ion=EU27&source=model&scenario=EU27%3A+%28EEA%29+WEM+2024+%28approx%29>

DEPOGAZ Ploiești, n.d. *About Us*. [Online]
Available at: <https://www.depogazploiesti.ro/en/about-us/profile>

Dimulescu, V., 2014. *Energy efficiency in Romania's residential sector*. [Online]
Available at: <https://roec.biz/project/energy-efficiency-in-romanias-residential-sector/>

EMBER, 2026. *European electricity prices and costs*. [Online]
Available at: <https://ember-energy.org/data/european-electricity-prices-and-costs/>

Energy Policy Group, 2022. *Phasing out coal in Romania: An assessment of the governance framework*. [Online]
Available at: https://www.epg-thinktank.org/wp-content/uploads/2022/12/EPG-Report_Coal-phaseout-in-Romania.pdf

Energy Policy Group, 2025. *Assessment of Romania's draft updated National and Energy Climate Plan*. [Online]
Available at: https://www.epg-thinktank.org/wp-content/uploads/2024/07/REPORT-EPG_Assessment-of-Romanias-draft-updated-NECP.pdf

Energy Policy Group, 2025. *Prețurile Energiei post-plafonare*. [Online]
Available at: https://www.epg-thinktank.org/wp-content/uploads/2025/05/EPG-Policy-Paper_Preturile-Energiei-post-plafonare.pdf

ENTSOG, n.d. [Online]
Available at: <https://www.entsog.eu/>

EUR-Lex, 2022. *Council Regulation (EU) 2022/1854 of 6 October 2022 on an emergency intervention to address high energy prices*. [Online]
Available at: <https://eur-lex.europa.eu/eli/reg/2022/1854/oj/eng>

Eurobarometer, 2022. [Online]
Available at: <https://europa.eu/eurobarometer/surveys/detail/2672>

European Commission, 2023. *Recommendation for a COUNCIL RECOMMENDATION on the 2023 National Reform Programme of Romania and delivering a Council opinion on the 2023 Convergence Programme of Romania*. [Online]
Available at: https://economy-finance.ec.europa.eu/system/files/2023-05/RO_SWD_2023_623_en.pdf

European Commission, 2023. *Commission Recommendation, Assessment (SWD) and Factsheet of the draft updated National Energy and Climate Plan of Romania*. [Online]
Available at: https://commission.europa.eu/publications/commission-recommendation-assessment-swd-and-factsheet-draft-updated-national-energy-and-climate-2_en

European Commission, 2024. *INTEGRATED NATIONAL ENERGY AND CLIMATE PLAN OF ROMANIA 2025-2030 Update*. [Online]
Available at: https://commission.europa.eu/document/download/75df0ac2-ecf9-4212-89ac-2a603bd43e36_en?filename=RO_FINAL%20UPDATED%20NECP%202021-2030%20%28English%29.pdf

Eurostat, 2023. *Oil import dependency down to 91.7% in 2021*. [Online]
Available at: <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20230327-1>

Eurostat, 2025. *Circular material use rate*. [Online]
Available at: https://ec.europa.eu/eurostat/databrowser/view/sdg_12_41_custom_19544670/default/able

Investenergy, 2024. *Ministerul Energiei organizează trei dezbateri publice pe tema proiectului PNIESC. Pe 21 și 28 februarie și pe 4 martie. Înscrieri până pe 15 februarie*. [Online]
Available at: <https://www.investenergy.ro/ministerul-energiei-organizeaza-trei-dezbateri-publice-pe-tema-proiectului-pniesc-pe-21-si-28-februarie-si-pe-4-martie-inscrieri-pana-pe-15-februarie/>

IRENA, 2025. *Energy Profile. Romania*. [Online]
Available at: https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Europe/Romania_Europe_RE_SP.pdf

OECD, 2024. *OECD Economic Surveys ROMANIA*. [Online]
Available at: https://www.oecd.org/content/dam/oecd/en/publications/reports/2024/03/oecd-economic-surveys-romania-2024_12c283a2/106b32c4-en.pdf?

OMV Petrom, n.d. *Neptun Deep - A stronger Romania. With energy from the Black Sea.* [Online]
Available at: <https://www.omvpetrom.com/en/about-us/what-we-do/our-projects/neptun-deep>

opcom, 2026. [Online]
Available at: <https://www.opcom.ro/grafice-ip-raportPIP-si-volumTranzactionat/ro>

Portal Legislativ, 2022. *ORDONANȚĂ DE URGENȚĂ nr. 186 din 28 decembrie 2022*. [Online]
Available at: <https://legislatie.just.ro/Public/DetaliiDocument/263288>

Portal Legislativ, 2022. *ORDONANȚĂ DE URGENȚĂ nr. 27 din 18 martie 2022*. [Online]
Available at: <https://legislatie.just.ro/Public/DetaliiDocument/252777>

The Romanian Environment Fund Administration, n.d. *Programe de Finanțare*. [Online]
Available at: https://www.afm.ro/programe_finantate.php

Transelectrica, n.d. *Cerinte privind transparenta informatiilor referitoare la Productie*. [Online]
Available at: <https://www.transelectrica.ro/ro/web/tel/productie>

UNFCCC, 2017. *Romania's 7th National Communication under the United Nations Framework Convention on climate change*. [Online]
Available at: https://unfccc.int/sites/default/files/resource/0587134_Romania-NC7-1-NC7_ROMANIA.pdf

World Bank Group, 2024. *Romania Energy Poverty Assessment*. [Online]
Available at: <https://www.worldbank.org/en/country/romania/publication/romania-energy-poverty-assessment>

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