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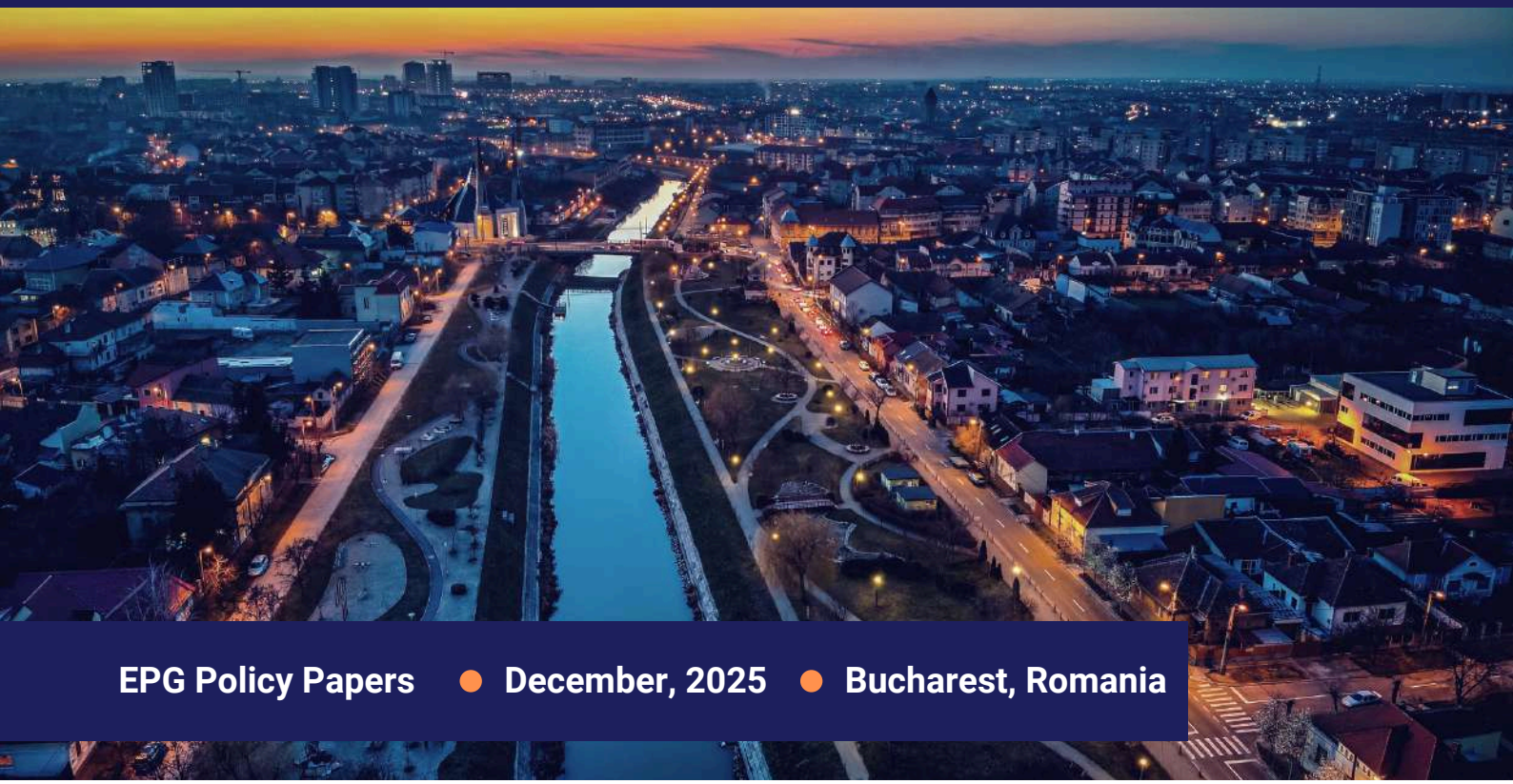

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Overcoming Barriers to the Uptake of Integrated Infrastructure Planning in Romania

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Policy Paper Title

Overcoming Barriers to the Uptake of Integrated Infrastructure Planning in Romania

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

Meeting Romania's energy security, competitiveness and decarbonisation pathway requires deep investment into transmission and distribution infrastructure, but siloed electricity and gas planning approaches risk wasting billions in duplicated or underutilised infrastructure.

Romania needs to invest approximately €21 billion by 2030[1] to transform its power generation system. This will involve supporting coal phase-out through new wind, solar, and nuclear power, with additional investments needed for comprehensive electrification of final demand, integrating flexibility sources — especially new storage capacity — and repurposing limited gas infrastructure to support hydrogen and biomethane uptake. Upgrading electricity transmission and distribution networks alone will require investment of €16-18 billion by 2030.[2]

New European modelling from Fraunhofer [3] suggests that integrated planning across sectors and nations could save up to €500 billion EU-wide by 2050. Critically, over 70% of savings would come from cross-sectoral coordination alone. Integrated planning would coordinate electricity, gas, transport and heating infrastructure investments across sectors to minimise total requirements needed to meet system adequacy and decarbonisation goals.

Three structural barriers have prevented the organic emergence of integrated planning in Romania. First, the regulatory frameworks approve investments based on demonstrated connection requests rather than scenario-based modelling, limiting anticipatory planning. Second, network operators are compensated through sector-specific tariffs, creating disincentives to consider the other sector's existing infrastructure or upcoming plans. Third, institutional gaps prevent coordination as Romania has no authority with a mandate to oversee cross-sectoral planning. Existing authorities, such as ANRE, the independent energy regulator, focus on sector-specific regulation, while local authorities lack the resources and access to accomplish integrated planning.

Without addressing these structural barriers, Romania risks billions in stranded assets while facing increased pressure from the EU to adopt integrated planning through the Energy System Integration Strategy, the TEN-E Regulation revision and the European Grids Package. To harness the benefits of infrastructure planning, Romania should:

- **Clarify the remit of integrated planning and explore how it could be embedded within the current institutional set-up**, likely within the Ministry of Energy or the General Secretariat of the Government. The body will need adequate capacity to undertake structured cross-sector consultation, and regular integrated network planning.
- **Amend ANRE's decision-making to approve investments based on cross-sector modelling and scenario analyses**. Projects that can demonstrate a reduction of cross-sector duplication should be fast tracked.

[1] European Commission, 2024, Integrated National Energy and Climate Plan of Romania 2025-2030 Update
[2] EPG, 2024, Bolstering the electricity grid: A priority to achieve Romania's 2030 decarbonisation objectives
[3] Agora Energiewende, 2025, Designing Energy Infrastructure for a Climate Neutral Europe

- **Conduct a cross-sector review to identify potential infrastructure duplication**, with consideration of cross-sector methodologies used in the upcoming EU cross-border energy infrastructure framework as outlined in the European Grids Package.
- **Major infrastructure development should require a cross-sectoral component to their cost-benefit analysis** and consider how this infrastructure would fit into Romania's transition trajectories.
- **Embed integrated planning into the Romania's National Energy and Climate Plan** and other strategic documents, and **support modelling capacity with funding** from the Multiannual Financial Framework or ETS revenues as well as technical assistance from the European Commission or the Organisation for Economic Cooperation and Development.

Mesaje cheie

Securitatea energetică, competitivitatea şi decarbonizarea României necesită investiţii semnificative în infrastructura de transport şi distribuţie a energiei. Abordarea actuală, caracterizată prin planificarea separată a reţelelor electrice şi de gaze naturale, riscă însă să genereze pierderi de miliarde de euro prin suprapuneri sau prin active subutilizate

România are nevoie de investiții de aproximativ 21 de miliarde de euro până în 2030[4] în producția de energie electrică, având în vedere eliminarea treptată a cărbunelui, instalarea de capacități noi în energie eoliană, solară și nucleară și integrarea surselor flexibile, în special a noilor capacităţi de stocare, pe lângă cele necesare în electrificarea cererii finale și pregătirea infrastructurii de gaze naturale pentru hidrogen și biometan. Pe lângă acestea, modernizarea rețelelor de transport și distribuție a energiei electrice va necesita investiții de 16-18 miliarde de euro până în 2030.[5]

O modelare europeană realizată de Fraunhofer[6] arată că planificarea integrată în rândul sectoarelor și statelor ar putea economisi până la 500 de miliarde de euro la nivelul UE până în 2050, iar peste 70% din economii ar proveni numai din coordonarea intersectorială. Planificarea integrată ar coordona investițiile în infrastructura de energie electrică, gaze, transport și încălzire între sectoare și ar reduce cerințele necesare pentru îndeplinirea concomitentă a obiectivelor de adecvare și decarbonizare.

În România, au fost identificate trei bariere structurale în dezvoltarea planificării integrate. În primul rând, investițiile sunt aprobate pe baza cererilor de conectare demonstrate, conform cadrului de reglementare și nu în baza modelării unor scenarii, ceea ce limitează planificarea anticipativă. În al doilea rând, operatorii de rețea sunt compensați prin tarife specifice sectorului, ceea ce descurajează considerarea infrastructurii existente sau a planurilor celuilalt sector. În al treilea rând, lacunele instituționale împiedică coordonarea, deoarece România nu are o structură dedicată cu mandatul de a supraveghea planificarea intersectorială. Autoritatea de Reglementare în domeniul Energiei (ANRE) se concentrează pe reglementarea specifică sectorului, în timp ce autoritățile locale nu dispun de resursele și accesul necesare pentru a realiza o planificare integrată.

Lipsa unei abordări integrate a acestor bariere structurale, expune România riscului de a pierde miliarde de euro în active neperformante, într-un context în care UE intensifică cerinţele privind planificarea integrată prin Strategia de Integrare a Sistemului Energetic, revizuirea Regulamentului TEN-E şi Pachetul European pentru Reţelele de Energie. Pentru valorificarea avantajelor planificării integrate a infrastructurii energetice, România ar trebui să aibă în vedere următoarele măsuri:

- **Clarificarea atribuțiilor planificării integrate și explorarea modului în care aceasta ar putea fi integrată în structura instituțională actuală**, potențial în cadrul Ministerului

[4] European Commission, 2024, Integrated National Energy and Climate Plan of Romania 2025-2030 Update
[5] EPG, 2024, Bolstering the electricity grid: A priority to achieve Romania's 2030 decarbonisation objectives
[6] Agora Energiewende, 2025, Designing Energy Infrastructure for a Climate Neutral Europe

Energiei sau al Secretariatului General al Guvernului. Această structură va necesita resurse adecvate pentru consultări intersectoriale și planificare integrată periodică a infrastructurii rețelelor.

- **Modificarea procesului decizional al ANRE, în vederea aprobării investițiilor pe baza modelării intersectoriale și a analizelor de scenarii.** Proiectele care pot demonstra o reducere a duplicării investițiilor intersectoriale ar trebui să fie accelerate.
- **Revizuirea analizelor intersectoriale pentru identificarea eventualelor suprapuneri de infrastructură**, luând în considerare metodologia utilizată în viitorul cadru al UE privind infrastructura energetică, conform Pachetului European pentru Rețele Energetice.
- **Dezvoltarea proiectelor majore de infrastructură în baza unei analize cost-beneficiu intersectoriale** și evaluarea contribuției acestora din perspectiva alinierii lor cu obiectivele privind tranziția energetică a României.
- **Introducerea planificării integrate în documentele strategice și dezvoltarea capacității de modelare** în cadrul structurii responsabile. Potențiale surse de finanțare: fonduri UE sau venituri din sistemul UE de comercializare a certificatelor de emisii (EU ETS).

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Introduction

Romania's competitiveness, security and decarbonisation pathway depends on energy infrastructure. Reaching strategic national targets will require supporting growing electricity demand from clean sources, while reducing overall consumption through efficiency measures. Consequently, fossil fuel-based infrastructure will diminish or be partly repurposed, and the electricity grid will need to grow in length, capacity and interconnectivity.

Integrated planning offers a way to plan for future needs while minimising the infrastructure required to meet demand. This can be achieved through strategically designating where electrification should prioritise expansion and where gas infrastructure can serve a transitional need. Recent modelling[7] shows that Europe can save an estimated €500 billion by 2050 in a scenario where the future energy system was planned across sectors and nations, compared to a scenario which operated in sectoral silos with a national perspective. Critically, over 70% of savings would come from cross-sectoral planning alone, indicating that current planning practices may cost Europe billions in underutilised infrastructure. While the modelling is still experimental, it raises a compelling argument for joint sectoral planning and presents a significant opportunity for Romania to reduce its infrastructure costs.

These opportunities are reinforced by the EU Strategy on Energy System Integration[8], the TEN-E Regulation Revision[9] and the new EU Grids Package[10] which commits to developing an EU cross-border energy infrastructure framework, signalling that integrated planning is becoming an expectation. The framework includes a central EU scenario for infrastructure needs aligned with climate targets and will consider synergies across sectors. Romania is well positioned to benefit as the country is central to two of the 'energy highways' the Commission intends to fast track: the electricity pathway connecting Hungary, Romania and Bulgaria to address structural price differentials and the Neptun Deep gas pipeline from the Black Sea into Moldova, Bulgaria and Hungary. This agenda reflects Romania's strategic importance and highlights an opportunity to capture this momentum for national objectives.

However, current planning methods risk becoming an obstacle to the energy transition through climbing costs, reduced competitiveness and stranded assets that lock in fossil fuels beyond energy security needs. Higher costs are either passed down to the consumer or capped by price controls, reducing the already limited fiscal space. As with many other Member States, Romania's regulatory frameworks limit anticipatory planning, creates operator business models that can incentivise infrastructure duplication, and fosters a lack of institutional coordination between gas and electricity sectors. These structural limitations prevent the organic uptake of integrated planning and perpetuate a siloed approach.

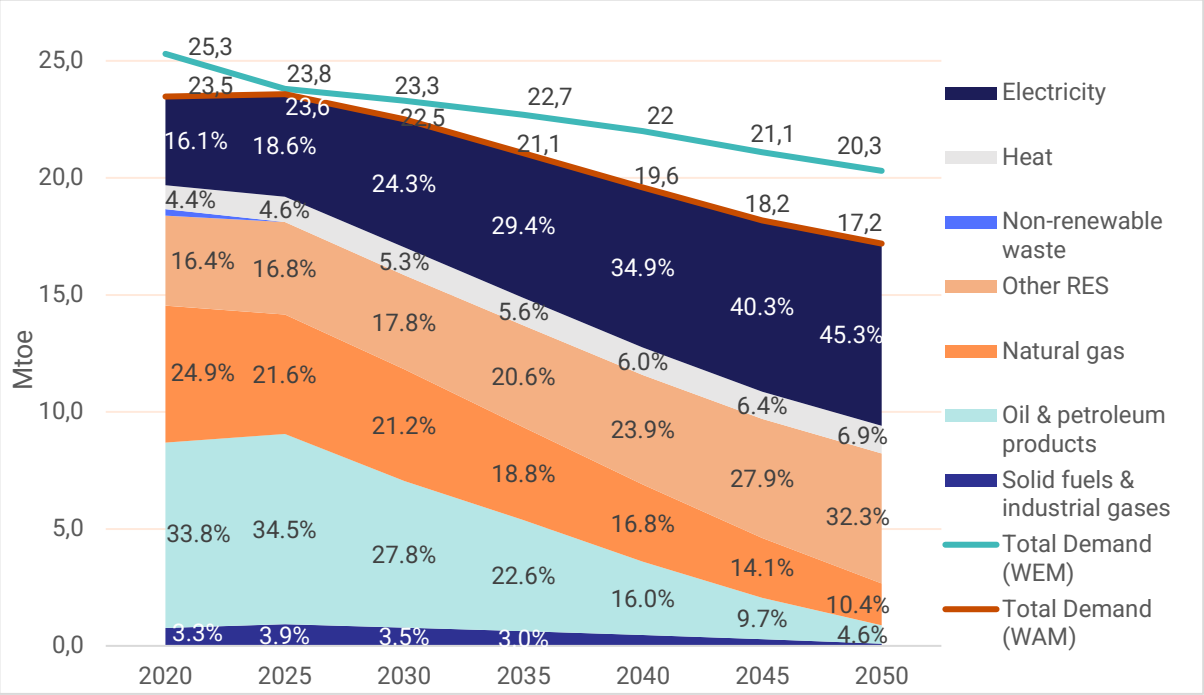
[7] Agora Energiewende, 2025, Designing Energy Infrastructure for a Climate Neutral Europe
[8] EUR-Lex, 2020, Powering a climate-neutral economy: An EU Strategy for Energy System Integration
[9] EUR-Lex, 2020, Guidelines for trans-European energy infrastructure and repealing Regulation (EU) No 347/2013
[10] European Commission, 2025, Commission proposes upgrade of the EU's energy infrastructure

Deep investment is required to expand and modernise Romania's grid infrastructure

Examining Romania's planned energy transformation reveals why integrated planning is so urgently needed. The sector has attracted significant investment since Russia's full-scale invasion of Ukraine, driven by high energy prices and EU funding through the Recovery and Resilience Plan, REPowerEU and especially the Modernisation Fund. However, the majority of funding flowed into new electrical production capacity with little planning for the grid infrastructure needed to support and absorb it.

Understanding the projected energy demand allows for infrastructure to be built based on where demand is growing. The country's National Energy and Climate Plan (NECP) and the Long-Term Strategy (LTS) chart a mid- and long-term decarbonisation pathway, respectively, although inconsistencies remain.[11]

Figure 1. Final energy consumption by fuel with planned additional measures (WAM)



Source: EPG, Data from NECP 2024

Total energy consumption is expected to fall approximately 20% from 25.3 Mtoe in 2020 to 17.2 Mtoe, Romania implements its planned additional measures (WAM). The business-as-usual scenario (WEM) follows a similar trajectory, but with energy consumption remaining consistently higher throughout. The additional measures yield an approximate 5Mtoe reduction in consumption, despite growing the economy in tandem with the energy transition.

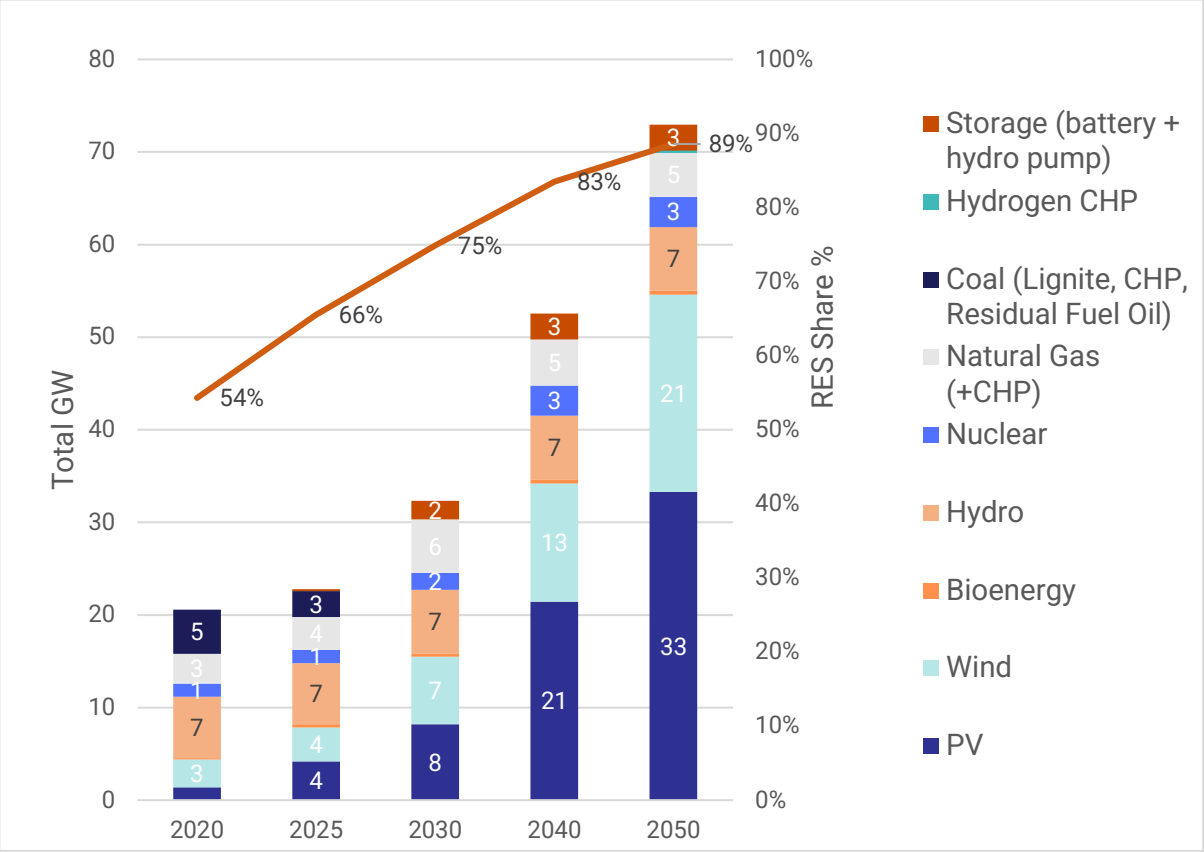
[11] EPG, 2024, Varianta finală a Planului Național Integrat în domeniul Energiei și Schimbărilor Climatice: obiective mai ambițioase dar lipsite de traiectorii clare

The reduction, while modest, represents avoided investment in new generation capacities and the networks required to transport and distribute that energy.

The differences in fuel consumption reveal infrastructure priorities. There will be a reduced demand for oil and petroleum products and, to a lesser extent, natural gas. In contrast, electricity and other renewables will grow, with electricity more than doubling from 2020 to 2050. The amount of energy dedicated to heating will remain relatively stable throughout the transition at around 1.2 Mtoe per year.

The power sector aims for rapid, large-scale decarbonisation by 2035 achieved through coal phase-out, deployment of wind and solar renewables, and nuclear refurbishment and growth.[12] By 2030, total installed capacity should reach 31.3 GW, with approximately 76% from renewable sources, complemented by new nuclear, hydro and storage capacity.[13]

Figure 2. Indicative objective for the installed capacity of electricity generation



Source: EPG, Data from NECP 2024

Meanwhile, natural gas build-out is envisaged to continue with the exploitation of Neptun Deep in the Black Sea, and new installed capacities in Combined Cycle Gas Turbines (CCGTs) enter the system, with gas infrastructure scheduled to convert to hydrogen and other renewable fuels by 2036. However, the planned 55% shift from gas to hydrogen by that

[12] Ministry of Energy and Ministry of Environment, Water and Forests, 2023, Romania's Long-Term Strategy
[13] Ibid. The 2030 deadline for any new nuclear developments has, however, become highly improbable.

deadline seems overly ambitious given progress to date. By 2050, the system would generate more renewable electricity than consumed, channelling surplus into green hydrogen production to decarbonise industrial sectors that struggle to electrify. Consequently, wind capacity will need to reach 28.5 GW and solar 29.5 GW to support growing demand.

Simultaneously, the transport and heating sectors will transition more slowly through to 2050 as vehicle fleets turn over and building stock is renovated. The phased approach recognises the needs of different sectors while balancing competitiveness and climate neutrality. Through deep electrification of end uses, the share of RES in transport will need to reach nearly 30% by 2030, and then accelerate dramatically by 2050 to accommodate new road and rail electricity. By 2050, the majority of cars and buses will be electric, with hydrogen vehicles comprising of approximately 20-25% of the fleet. GHG emissions will increase by a maximum of 40% (relative to 1990) before reducing by 82% by 2050.[14]

Electrification of heating will allow the buildings sector to reach a RES share 37.8% by 2030 and 97.5% by 2050, driven by heat pumps (25% share by 2050) and rooftop PV (100 MW/year through 2029 and 800 MW/year from 2030-2050).[15] The plans envision the modernisation of the existing gas infrastructure to support renewables renewable and hydrogen is expected to play a more prominent role, especially in transport, while biogas has a more localised, agricultural focus in waste-to-energy applications.

The LTS and NECP targets, while ambitious on paper, lack the institutional coordination and implementation capacity required to achieve them. Coal phase-out timelines, renewable deployment schedules, and hydrogen conversion deadlines operate as separate commitments rather than parts of a unified action. An integrated implementation strategy is required to sequence grid upgrades, deploy new storage and generation capacity in a synchronised manner rather than in isolation. Without this approach, ambitious targets remain theoretical. This energy transition and critical infrastructures require comprehensive modernisation, estimated at €21 billion by 2030[16] with €16-18 billion required for electricity transmission and distribution networks alone.[17] The total investment required for both modernising existing grid assets and building new network capacity remains elusive.

Integrated planning can help reduce the total amount of infrastructure required to service this transition by reducing duplication through cross-sectoral analysis. The impact could be magnified through regional or EU-level integrated planning to ensure the minimum infrastructure was required and to avoid costly, underutilised builds. However, cross-sectoral planning is implicitly discouraged in Romania due to structural barriers in the current system.

[14] Ministry of Energy and Ministry of Environment, Water and Forests, 2023, Romania's Long-Term Strategy
[15] Ibid
[16] European Commission, 2024, Integrated National Energy and Climate Plan of Romania 2025-2030 Update
[17] EPG, 2024, Bolstering the electricity grid: A priority to achieve Romania's 2030 decarbonisation objectives

Structural barriers pose an obstacle to integrated infrastructure planning

The introduction of integrated planning in Romania is riddled with multiple structural barriers at the regulatory and capacity levels and misaligned operator incentives. These impediments are part of the reason why integrated planning has not emerged organically and, in some cases, resulted in pushback. Designing effective interventions to introduce integrated planning requires an understanding of these structural barriers.

The constraints detailed below prevent the adoption of integrated planning, but they are not exhaustive. If Romania were to introduce this concept, further challenges in implementation would emerge, including limited modelling capacity which would require extensive data sharing and harmonisation between sectoral cost-benefit methodologies and cross-border coordination through ENTSO-E and ENTSO-G frameworks to ensure Romania is not planning in isolation.

A key implementation risk is that coupling gas and electricity projects can create interdependencies, so that delays or cancellations in one sector can create challenges or block investments in the other sector. Some form of flexible contingency planning will be required to manage differences in timelines and technical and contracting challenges.

Regulatory and Legislative Framework Barriers

The regulatory framework inadvertently acts as a constraint to the implementation of integrated planning as regulations limit the latter's reach. While network operators develop 10-year development plans, ANRE's approval requires demonstrated demand rather than scenario-based projections. Planning is responsive to existing grid connection requests rather than proactive strategic forecasting based on integrated system modelling. The barrier is not related to the time planning horizon, but rather to the evidentiary requirements for approval.

ANRE's approval is required for all projects which expect to recover costs under the transmission or distribution tariffs. The approval process is conducted through the recognition of projects that are justifiable primarily through existing connection requests as well as the need for refurbishment of ageing installations, and implementation of digital technologies. While these would constitute anticipatory planning, they remain reactive to current needs rather than proactive scenario-based anticipation. Integrated planning uses cross-sector modelling and scenario outputs as opposed to immediate connection requests. Therefore, modelling in itself is insufficient to justify approval for investment. This results in a Catch-22 situation where planning cannot occur without approval, yet approval processes only recognise demonstrated demand. Without ANRE's approval, investments by network operators are not recognised under the regulated tariffs and must be self-funded from their own budgets.

Each sector, gas and electricity, must demonstrate demand independently to receive ANRE approval. This siloed approach can result in the duplication and underutilisation of future infrastructure. Electrification and uptake of electrified appliances could significantly affect gas infrastructure cost-benefit analysis and vice versa, as the expected demand may be satisfied through another source. At this stage, there is no mechanism for cross-sectoral evaluations. Without permissive regulation for longer-term anticipatory infrastructure planning, thinking in an integrated perspective is prevented.

Barriers to Operator Incentives

Barriers to operator incentives can be broken down into two categories: (1) business model limitations, and (2) competitive dynamics between energy vectors.

Operators are compensated through regulated tariffs based on approved asset bases. Since approval is sector-specific, there is no incentive to consider whether the other sector's infrastructure might better serve the same needs. There is no incentive to even consider the other sector's existing infrastructure, as doing so would reduce their asset base and returns.

EU funds can be used to close the gap and invest in projects outside of operators' budgets. However, the implementation responsibility falls on the system operator who has little incentive to use these funds. The asset must meet strict performance indicators or risk penalties, including exclusion from the asset base. In many cases, operational costs may not be recognised under regulated tariffs, requiring the operator to cover them from their own budgets without any offset options. This reduces the attractiveness of the project or can even create a negative business case, even if capital expenditure is being covered externally.

Mainstreaming integrated planning in Romania would require a significant mindset shift in the way system operators, generators and suppliers strategise. Currently, the gas and electricity sectors plan independently: the gas sector strives to preserve market share against increasing electrification, while electricity planning proceeds without considering where existing gas infrastructure could serve limited transitional needs. The lack of cross-sector coordination results in no systemic evaluation whether infrastructure deployment aligns with Romania's decarbonisation pathway, which requires managing the planned downsizing of gas infrastructure while scaling electricity systems. This results in a risk of gas infrastructure investments becoming stranded assets and electricity infrastructure overbuild where existing gas networks could have served in the transition.

An example of these dynamics in action is the Anghel Saligny National Investment Programme which was intended to develop local infrastructure across Romania and included a focus on natural gas alongside other infrastructure systems. The programme aimed to connect new homes to the gas distribution network. Funding for the programme was halted in July 2025 due to reduced budget and accumulation of unpaid invoices[18], with only one third of approved projects continuing.

[18] Bellu, 2025, Dacă nu mai sunt bani pentru investiţii în infrastructură în mediul rural prin Anghel Saligny, de ce nu. ZF.ro

The programme had contracted RON 6.3 billion in financing for natural gas network after being launched in 2021; however, by July 2025 less than 30% of funding had been disbursed and only one out of 811 contracted projects was finalised.[19] ANRE has stated that several projects failed to meet the technical criteria and were located at a considerable distance from the transmission system making connection financially unviable.[20] Poor infrastructure planning resulted in underutilised gas infrastructure and minimal reduction in wood fuels for heating. A coordinated approach to planning may have prioritised electrification in these areas to provide affordable single-source heating -- or a programme of stove replacement for rural households -- avoiding investment in gas infrastructure while residents continue relying on solid fuel.

Institutional and Governance Barriers

Romania does not have an authority with a mandate and resources to oversee and shape a cross-sectoral planning process. To some extent, ANRE is expected to fulfil this role as they receive and approve proposals from both the gas and electricity system operators. There is merit to this idea, as cross-sectoral integrated planning requires a top-down approach However, ANRE is an independent regulator focused on sector-specific oversight rather than strategic planning.

The EU approach to integrated planning involves a centralised authority, yet Romanian institutional structures for infrastructure development are already decentralised. Therefore, execution may be better suited to operate at the regional level. In Romania, public authorities have the task of prioritising infrastructure planning at a regional level, but they do not have the necessary resources or access to accomplish this effectively. Local authorities' involvement in strategic energy planning is limited to intermittent consultation during the 10-year TYNDP development process.

An example of an alternative centralised model is the National Energy System Operator (NESO), a new public corporation in the UK which became operational in 2024[21] and is funded through price controls regulated by the independent regulatory agency, Ofgem. Formerly proposed as the Future System Operator, NESO was created following the energy market review to take over system operation function from the TSO, separating it from network operation – though this model may not be easily replicated elsewhere in Europe. The UK's net-zero ambitions, energy independence and cost of living concerns required a new body with the remit and expertise to plan and shape both electricity and gas systems because the previous system was missing an impartial coordinator and advisor that would ensure the implementation of a whole system perspective, designed to optimise across different energy vectors including electricity, gas and, in the future, hydrogen and carbon transport.[22]

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[19] Pârvu, 2025, Unde e Saligny? Stadiul implementării PNI Anghel Saligny 30 iunie 2025. Expert Forum
[20] Ionescu, 2025, ANRE: Unele investiții în rețele de gaze, finanțate prin programul Anghel Saligny, sunt nefezabile – Localitățile sunt prea departe de sistemul Transgaz
[21] NESO, 2024, ESO announces name of the forthcoming Future System Operator
[22] GOV UK, 2023, Energy Security Bill factsheet: Future System Operator - GOV.UK

NESO's key responsibilities include ensuring adequate supply to meet consumer demand, designing an energy system to fulfil future electricity infrastructure needs, and planning and coordinating the design of electricity networks.[23] In addition to jointly planning electricity and gas, NESO manages real-time electricity system operation, handles gas strategic network planning and long-term forecasting.[24] The planned outcomes of combining both planning remits into a single institution include the fair consideration of distribution and non-network solution, fair competitive tenders for network building, improved system planning and better strategic policy decisions. Together, these are expected to improve decision making for heat and transport decarbonisation.[25]

While NESO differs substantially from current Romanian practice, particularly in the separation of system operation from network ownership, the value of the example lies less in its specific institutional configuration and more in the integrated planning functions it enables. The UK experience illustrates how a single actor with visibility across energy vectors can ensure coherent system development, align investments with long-term decarbonisation needs and coordinate planning across electricity, gas and emerging vectors such as hydrogen. For Romania, the key takeaway is not the replication of the NESO model or its governance structure, but the relevance of strengthened cross-sector coordination, clearer strategic planning responsibilities and improved access to data and forecasting tools for decision-makers. Adapted to the Romanian context, similar principles could support more consistent regional planning and help avoid fragmented development pathways without requiring disruptive institutional restructuring.

Several options exist for situating a body with an integrated planning remit within the existing institutional framework. A new department within the Ministry of Energy (MoE) would position planning close to executive functions and allow close alignment with strategy development. This department could certify projects labelled as 'integrated anticipatory investments' for fast-tracking, maintain and update national energy system models and manage the addition of integrated planning in NECP updates. Alternatively, the General Secretariat of the Government (SGG) would offer cross-ministerial authority, despite its distance from the MoE.

If there is appetite to move beyond the existing framework, other options could be explored. These include an independent body as outlined in the UK example, or an integrated TSO combining gas and electricity functions, as Denmark has done since 2004[26], though both options would incur significant structural reform.

Whichever institutional arrangement is chosen, it will require dedicated funding for staff with energy system modelling expertise, a skillset in short supply across Romanian public institutions. Early investment could help bridge this gap, using funds from the Multiannual Financial Framework or ETS revenues, as well as technical assistance from the European Commission or the Organisation for Economic Cooperation and Development.

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[23] NESO, 2024, ESO announces the name of the forthcoming Future System Operator
[24] GOV UK, 2023, Energy Security Bill factsheet: Future System Operator - GOV.UK
[25] Ofgem, 2021, Future System Operator consultation: Impact Assessment
[26] Energinet Denmark, About-Us-Organisation

Recommendations and conclusions

Harnessing the benefits of the cost savings and greater speed in deploying energy infrastructure requires integrated planning which is predicated on a top-down approach. This will require a fundamental change in how decisions around investment into energy infrastructure is conducted.

First, the remit of integrated planning should be clearly outlined and inserted into the current institutional set up, likely either within the Ministry of Energy or within the General Secretariat of the Government. Delivering on such responsibilities would require significant administrative capacity to conduct comprehensive modelling and stakeholder engagement to establish formal mechanisms for cross-sector consultation and should regularly publish integrated network development plans, ideally on an annual basis.

Second, ANRE's framework for decision-making could be amended to allow investments to be made on the basis of cross-sector modelling and scenario analysis. Clear criteria would need to be established for what is considered acceptable modelling evidence (for example, national decarbonisation targets, industrial development plans, expected demographic change). Projects that can demonstrate a reduction in cross-sectoral infrastructure duplication would be fast tracked.

Third, ANRE should conduct a preliminary cross-sectoral review to identify potential overlaps or duplications. As the regulator receiving all infrastructure investment proposals from both electricity and gas operators, ANRE should identify where multiple operators propose serving the same geographic area or energy demand. The institutional body responsible for the remit of integrated planning, alongside operators, should be required to jointly determine whether electrification or existing gas infrastructure can most cost-effectively serve transitional needs, also considering connection costs, customer needs and system level efficiency. Only after this coordination would ANRE approve investments, ensuring that minimal infrastructure is built in each area while serving demand and avoiding the duplicative investments that occur when electricity and gas sectors plan independently.

Fourth, proposals for major infrastructure development should require a cross-sectoral component to their cost-benefit analysis and consider how this infrastructure fits into Romania's future energy targets. Thresholds can be set to ensure this is undertaken only by the largest projects and standard methodologies should be used to ensure decarbonisation pathways are accounted for, with gas infrastructure assessed against transition timelines. Learnings from cross-sector methodologies can be gleaned from the upcoming EU cross-border energy infrastructure framework as outlined in the European Grids Package (2025). Gas and electricity projects should not be approved without proving overbuilding relative to energy transition pathways.

Finally, Romania should provide a formal policy basis for cross sectoral coordination through its inclusion in future updates of the NECP. Signalling alignment with EU priorities on system integration will also allow for future EU funds or ETS revenues to be channelled

into modelling tools and the technical expertise to undertake integrated planning at the national level.

Romania can either continue with siloed planning that risks billions in stranded assets and duplicated infrastructure or adopt integrated planning that targets resources more efficiently, reducing the financing required to deliver heating, transport and electricity for the end consumer while keeping course for Romania's net zero ambitions.

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