

The National Recovery and Resilience Plan

**Investments and reforms
conflicting with the
decarbonisation process of the
energy sector
- policy briefing-**

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Summary

Expenditure for the green transition runs counter to the decarbonization targets; NRRP finances only 3.4% of the investments in renewable energies undertaken by Romania until 2030.

On 2 June 2021, the Ministry of European Investments and Projects published the final version of the National Recovery Plan and Resilience (NRRP), the main investment document guiding the economic recovery. The plan will be revised by the European Commission, and, once approved, Romania will be able to access the EUR 29.2 billion allocated through the Recovery and Resilience Mechanism to remove the negative effects of the health crisis on the economy, should it fulfil all its obligations under the NRRP.

In addition to counteracting the economic and health crisis, the investments and reforms included in the Plan must also contribute to achieving the climate goals set by the European Green Deal and address the challenges identified at national level within the European Semester. Moreover, 37% of the Plan's total financial resources must be allocated to investments that support the green transition.

Although, formally, the NRRP stipulates a share of 40.8% of the expenses related to the green transition, in reality, the largest part of the investment goes to fossil gas projects. These investments cannot be considered green, as they contradict the decarbonization process.

The section of the Plan for the energy sector includes six types of reforms and six investments, with a total allocated budget of EUR 1.6 billion. The contribution of the proposed investments to achieve the climate and energy targets at national and European level is incoherently correlated, stating, for example, that, following projects funded by the NRRP, the installed capacity of wind and solar energy will increase from 4405 to only 4640 MW, by just 235 MW more, although the Plan further shows that, by 2026, 545 MW will be additionally installed. In another section of the Plan, installed wind and solar capacity is expected to increase from 4408 to 5908 MW, resulting in a mismatch between expected results and proposed investments.

However, it is unclear how Romania set a target of 6.9 GW of renewable energy by 2030 and whether it is sufficient, as stated in the NRRP, to reach the European target for reducing greenhouse gas emissions by 55% in 2030. The document does not provide a detailed analysis of this data, but refers to the calculations made in the NECP, which estimates 2300 MW of wind power, 3700 MW of solar power, and 1000 MW of hydropower in addition to the installed capacity from 2020 by 2030. However, only 235 MW are planned for investment through NRRP which is no more than 3.4% of the necessary total.

The plan does not differentiate between onshore or offshore wind energy, which contributes differently to the national energy mix, the offshore one having a higher capacity factor but also being more expensive. From the perspective of the total value proposed for investment, it is rather directed to onshore capacities.

Moreover, a large part of the energy recovery measures proposed in the Plan are not mature solutions, capable of generating urgent responses to the challenges posed by the green transition. Considerable financial resources are allocated for the development of the hydrogen sector, although the technical and economic feasibility of the technology is not yet proven, and other solutions with real and proven potential for decarbonization are treated superficially.

Fossil fuels

Gas-based investments - false solutions to decarbonise the energy system

***The most substantial investments continue to be in fossil fuels;
Romania will not meet its emission reduction target for 2030;
Using any kind of gas, whether fossil gas or hydrogen, to heat residential is probably one of the most inefficient, expensive, and unsustainable heating methods.***

One of the major challenges facing the energy sector identified in the Plan is that it remains the most important source of greenhouse gas (GHG) emissions, generating 66% of emissions. Even the Plan notes that "in the light of the current energy mix, even with the targets in the National Climate Energy Plan (NECP), Romania will not achieve its emission reduction target for 2030."

Despite this, the NRRP is extremely generous with fossil gas investments, both on the production side, as well as on the distribution and transport side, with the hydrogen component added only to meet the European environment requirements (the DNSH principle).

Investments include expanding the distribution network of fossil gas in combination with hydrogen with a value total of EUR 400 million and consists of the construction of approximately 4000 km of pipelines capable of taking up hydrogen and other low-carbon gases (e.g. bio-methane) in a proportion of up to 10% of its capacity. The network will be built in the Oltenia region, a geographical region where the population is supplied with thermal energy based on solid fuels and where the connection to the fossil gas distribution system is poorly developed. NRRP does not propose rehabilitating the existing gas transmission systems' capacity but expanding it with 'smart pipelines' which are 90% based on fossil gas, but can be converted fully to hydrogen at some point. Basically, the proposal is to expand the consumption of fossil gas (a fuel with significant greenhouse gas emissions) to replace the current heating systems in Oltenia which are based mainly on the use of biomass. Indeed, the use of wood for heating is often inefficient and falls into the category of energy poverty, but replacing it with fossil gas is not a solution worthy of the 21st century, in the midst of the climate crisis.

The use of gas of any kind, whether natural gas or hydrogen, for heating homes is probably one of the most inefficient, expensive, and unsustainable heating methods. Studies at the European level or even for Romania recommend more efficient heating solutions^{1,2}, such as district heating systems or heat pumps.

The NRRP proposal does not contribute to the reduction of greenhouse gas emissions, on the contrary, it proposes to increase emissions through the use of more fossil fuels. In addition, it is unclear whether NRRP also includes in the investment proposal financing individual residential hybrid gas boilers (on hydrogen/fossil gas) and the necessary infrastructure in buildings, or if it expects to be paid by consumers.

For the medium and long-term, decarbonisation of the heating sector in a region already affected by the use of fossil fuels, energy efficiency measures for buildings and implementing heating measures using electrification based on renewable energy sources must be prioritized, as they represent decarbonisation solutions that can be applied immediately and that generate real carbon reduction. Allocating considerable financial resources for an investment whose technical and economic feasibility is not yet available is contrary to the objective of the Recovery and Resilience Mechanism, that involves investments and reforms which can generate urgent responses to the challenges posed by both the health crisis caused by COVID-19 and the transition to a climate-neutral economy.

In general, NRRP does not propose concrete solutions or investments to reduce emissions from residential heating sector in Romania, being the energy sector with the highest carbon emissions. According to the latest studies, burning hydrogen can generate emissions of nitrogen oxides equal to or even higher than those produced as a result of burning

1 <http://www.csr.ac.uk/2020/09/hydrogen-for-heating/>

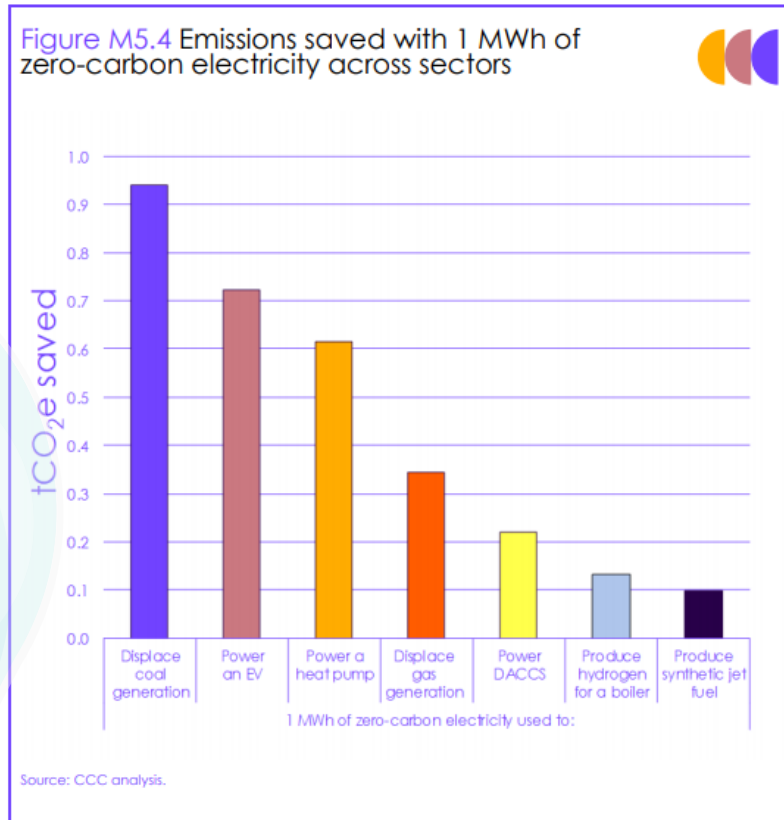
2 https://vbn.aau.dk/ws/portalfiles/portal/288427732/Country_Roadmap_Romania_20181005.pdf

fossil gas³. Oltenia region has a considerable solar renewable energy potential, where the annual sunshine duration has a high level of 2300-2400 hours/year⁴, which makes residential district heating based on renewable energy and direct electrification more cost-effective. The commissioning of the project will take place only in 2026, once the technical and economic feasibility of hydrogen will be demonstrated.

In addition to fossil fuel and hydrogen distribution networks, NRRP proposes the construction of two gas-fired power plants with an installed capacity of 159 MW in Mehedinți and Constanța, part of two integrated projects aimed at demonstrating the technical and economic benefits of producing hydrogen in mix with gas and renewable energy sources, erroneously considered necessary for a sustainable energy transition. The costs of these two projects amount to EUR 585 million, each plant having allocated an amount of EUR 135 million, and represents approximately 40% of the total financial resources allocated to the energy component.

In general, demonstrative projects for the most promising technologies of the future are welcome and may have the potential to put Romania at the "forefront of European energy innovation", as described in the NRRP. However, the Plan's proposal for integrated hydrogen projects is at least inconsiderate in relation to the rest of the investments in Component 6 - Energy, which proposes almost EUR 700 million for this purpose. In this case, the produced hydrogen will be used as storage for electricity in chemical energy and can be used at a later time in the gas plant to produce electricity and heat. In essence, this idea has been circulating for a long time, but its big problem is the low efficiency (transforming electricity into chemical energy, and then electrical/thermal is subject to loss) of 25-30%, while if electricity from photovoltaic panels would be used directly, then the efficiency would be about 90% (being subject only to transport or AC/DC conversion losses). The other problem is that not only hydrogen will be used for this purpose, the system in question being based to a certain (unspecified) extent also on the use of fossil gas.

Aside from demonstrative projects, Romania should focus on integrating more ambitious capacities of wind and solar energy in combination with Power-to-Heat and Power-to-Mobility solutions⁵, which can decarbonize both the thermal energy sector in households and a large part of the transport. Such investments would give Romania the ability to reduce carbon emissions at a faster pace, six to nine times more efficiently than investment in hydrogen power plants, as illustrated in this graph:

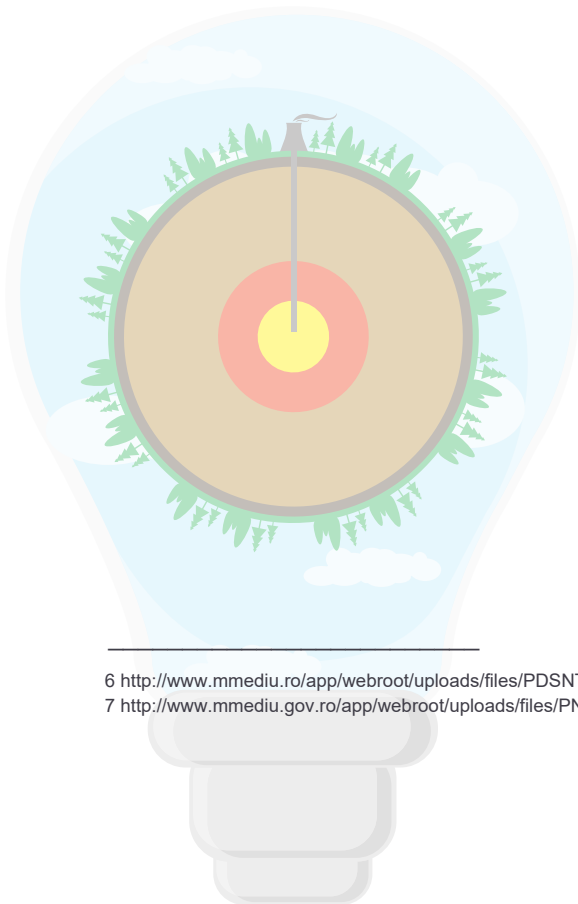


3 <https://blog.ucsusa.org/julie-mcnamara/whats-the-role-of-hydrogen-in-the-clean-energy-transition/>

4 https://bankwatch.ro/wp-content/uploads/2021/03/Raport_Regenerabile.pdf

5 <https://www.infoclima.ro/acasa/de-la-un-sistem-energetic-fosil-la-un-sistem-energetic-100-regenerabil-n-6-pai>

Adding hydrogen to fossil gas projects is just the way the fossil fuels industry tries to stay relevant throughout the decarbonisation process of the national economy, and is only an illusion sold to appear that investments are made in green energy. The plan does not clearly state what type of hydrogen will be produced, as the document generally mentions hydrogen 130 times and green hydrogen only 3 times, making it difficult to assess how much the carbon footprint will be reduced through the hydrogen produced in the proposed projects. Until hydrogen will be considered a financially viable and efficient option to reduce greenhouse gas emissions, the proposed investments only delay the actual transition of the energy sector. Expansion of the fossil gas distribution system, although concentrated in a region with low connectivity, will be done despite the existence of renewable alternatives and the fact that, in the last decade, national fossil fuel consumption has been steadily declining . Moreover, NECP estimates that the use of fossil gas in final energy consumption in 2035 will remain at the level recorded in 2017⁷, but, even so, NRRP stipulates investing 60% of the funds dedicated to the energy component in fossil fuels and uncertain decarbonisation solutions, at the expense of developing sectors with considerable proven potential, such as offshore wind energy.



6 http://www.mmediu.ro/app/webroot/uploads/files/PDSNT%202021-2030_.pdf

7 <http://www.mmediu.gov.ro/app/webroot/uploads/files/PNIESC.pdf>

Coal phase-out from electricity mix

Phasing out hard coal from the electricity mix by 2032 is not enough for Romania to really contribute to its climate goals;

The timeline of the closure of lignite mines is at odds with other plans proposed by Romania;

The coal from the electricity mix will be replaced by fossil gas at a volume of 96%, renewables replacing a modest 4%.

Phasing out coal from the electricity mix is treated in a vague manner in the NRRP; some parts of the Plan reference only the removal of hard coal, while other sections mention the removal of coal in general.

Romania officially assumes the coal phase-out from the energy mix by 2032 and commits to drawing up the necessary legislative framework for this transition in one year's time, legislation which will include a concrete timeline for coal replacement, mine closure/conservation measures, reskilling and professional reconversion measures, and also other measures with socio-economic impact in the affected communities.

The milestones set out in the Plan mention the closure of the Lonea and Lupeni hard coal exploitation sites by Q2 2025, and until Q2 2032 the Vulcan and Livezeni exploitation sites in Hunedoara county, taking into account greening measures.

With regard to lignite, the objectives are to close at least 5 of the 9 exploitations which are part of Oltenia Energy Complex (OEC) by Q3 2026, and the replacement of 1300 MW lignite-based power plants with fossil gas-based capacities. In this case, the objectives are not linked to the measures proposed in the available version of the OEC's Restructuring and Decarbonisation Plan⁸, which stipulates the reduction of lignite-based installed capacity by 1605 MW by 2030. The restructuring plan is currently being reviewed by the European Commission, with its most current version not yet available. The plan is criticized by national and European environmental organizations because it does not provide for real decarbonisation in line with the objectives of the European Green Deal; it is estimated a fossil gas-based energy mix in which the renewable component represents only 4%.

Even so, removing only hard coal by 2032 is not enough for Romania to truly contribute to its climate goals. Hard coal has a share of only 2% in the national electricity mix, generating emissions of 1.18 million tonnes of carbon dioxide (CO₂) in 2019, according to EU-ETS data. By comparison, 17-20% of the electricity produced annually is based on lignite, which generates the highest amount of emissions from the entire economic system, exceeding 12 million tonnes of CO₂ in 2019⁹.

Therefore, for a real decarbonisation of the electricity generation sector, the coal phase-out targets need to be more ambitious, and the restructuring of the big energy companies needs to be done by green, fair means, taking into account technological developments in the field of renewable energy.

⁸ <https://www.investenergy.ro/wp-content/uploads/2020/11/Plan-restructurare-CEO-1.pdf>

⁹ <https://bankwatch.ro/ministrul-energiei-nu-isi-asuma-tranzitia-de-la-carbune/>



Green energy

Insufficient funding of the renewables sector

Only 25% of the financial resources in the Energy Chapter are allocated to the renewables sector.

The main reform measures contained in the NRRP aim at revising the existing legislative framework in order to stimulate the development of the renewable energy sector:

- introducing the possibility of concluding bilateral energy purchase agreements (Power Purchase Agreements) outside the centralized market, through direct negotiation;
- launching a support scheme for developing new renewable energy capacities;
- finalizing the legislative framework dedicated to Contracts for Difference;
- elaborating the legislative framework for the offshore wind sector.

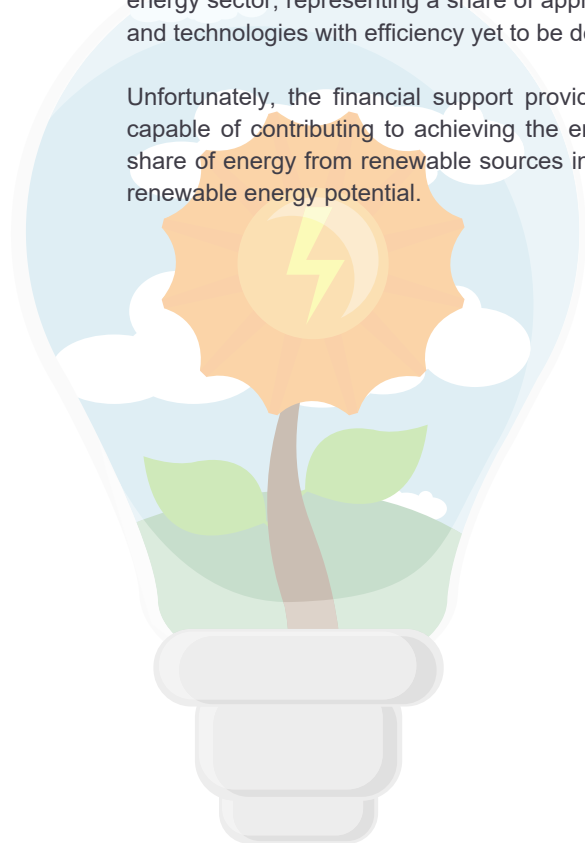
Other proposals provide for the implementation of demand response measures and storage capacities, revision of the legislative framework dedicated to prosumers by simplifying connection procedures and introducing incentives and financial support, but also the implementation of national financing programs to promote the use of heat pumps and individual renewable energy solutions.

The support scheme for new renewable energy capacities will have a budget of EUR 200 million and will allow installing an additional capacity of 235 MW, representing approximately 0.8% of annual consumption. Moreover, by the end of 2026, another 3000 MW will be installed as a result of the facilities offered through Contracts for Difference (operational from 2023) or other financial instruments such as the Modernization Fund, reaching a threshold of 7408 MW renewable installed capacity.

Investments in storage capacity are insufficient given the current precarious state of the national electricity grid, requiring the implementation of large-scale storage solutions for system balancing and efficient integration of energy produced from renewable sources. The plan includes financing of EUR 32.5 million for a single storage project with an installed capacity of 50 MW, which will be implemented by Transelectrica, the national electricity transmission system operator, and will offer financial support for the research and development of this sector, allocating another EUR 167.5 million through a state aid scheme, aimed at installing an additional storage capacity of 100 MW by the end of 2025.




Specifically, out of the total funds allocated to the energy component, 400 million euros are dedicated to the renewable energy sector, representing a share of approximately 25%, with the rest of the resources allocated to fossil fuel projects and technologies with efficiency yet to be determined.

Unfortunately, the financial support provided to the renewable energy sector is insufficient for mass development, capable of contributing to achieving the energy objectives assumed by Romania. In fact, the NECP target of 30.7% share of energy from renewable sources in the gross final consumption is unambitious, taking into account Romania's renewable energy potential.





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