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SCENARIO FOR A FAILED TRANSITION

Analysis of the decarbonization plan of the
Oltenia Energy Complex

GREENPEACE

Energy transition in Gorj. Between governmental delusion and European opportunities.

Communities in mining areas, such as Gorj or Hunedoara, are offered a chance to develop harmoniously in the coming years, provided that central public authorities acknowledge the interests at stake exposed in the European Green Deal, a new policy for economic growth based on ambitious climate and environmental objectives. Europe aims to significantly reduce its greenhouse gas emissions by 2030 and to achieve carbon-neutrality by 2050. Huge amounts of money are assigned to ensure the just transition and sustainable development of those regions that are still highly dependent on fossil fuels, as well as of those still producing increased levels of emissions. Funds are allocated to release these said regions from the unsustainable, unfeasible economic growth model that generates environmental and health related risks. Gorj county, strongly dependent on the mining industry, with approximately 13.000 employees in the mining and energy sector, will inevitably undergo the same type of transition.

Short of a timeline and of a strategy, lacking funding or because political stakes or financial interests prevail over the common good, this transition towards a healthy and just society that can provide jobs and that is caring of the natural world may fail.

This analysis¹ is raising a powerful warning to the Romanian authorities which have committed to reduce greenhouse gas emissions while, at the same time, have taken on a moral obligation to not repeat the '90s, scenario when the mining region of Jiu Valley faced a failed transition.

Resources granted through the Just Transition Fund for the benefit of the economic diversification, retraining and active inclusion of employees will be viable to access as long as counties such as Gorj commit to significantly reduce their greenhouse gas emissions. Instead, this analysis proves the contrary. The Ministry of Energy, both through the National Energy and Climate Plan (NECP) and the Oltenia Energy Complex Decarbonisation Plan, is determined to artificially and very expensively sustain the life of a dying, polluting and overdue industry that is no longer capable of responding to current realities and needs. Such a decision to prolong uncertainty (when exactly is Romania going to stop producing coal-based energy?) and to plan this delusion will only keep the Gorj communities away from existing opportunities that could ensure a prosperous future for the region.

¹ The Greenpeace analysis was carried out with the support of an external technical consultant, based on the restructuring and decarbonization plan made public by the Oltenia Energy Complex.

Context

With a total of 3.570 MW installed capacity, Oltenia Energy Complex (OEC) reported a 22% share of the electricity market in Romania in 2019. By means of the two cogeneration groups in Craiova, OEC annually produces about 700.000 Gcal of thermal energy, which provides heating to approximately 200.000 local inhabitants. Lignite extraction in the nine mining sites owned by OEC in Gorj and Mehedinți counties added up to approximately 20 million tons (mt) in 2019, which subsequently decreased to approximately 13.5 mt in 2020.

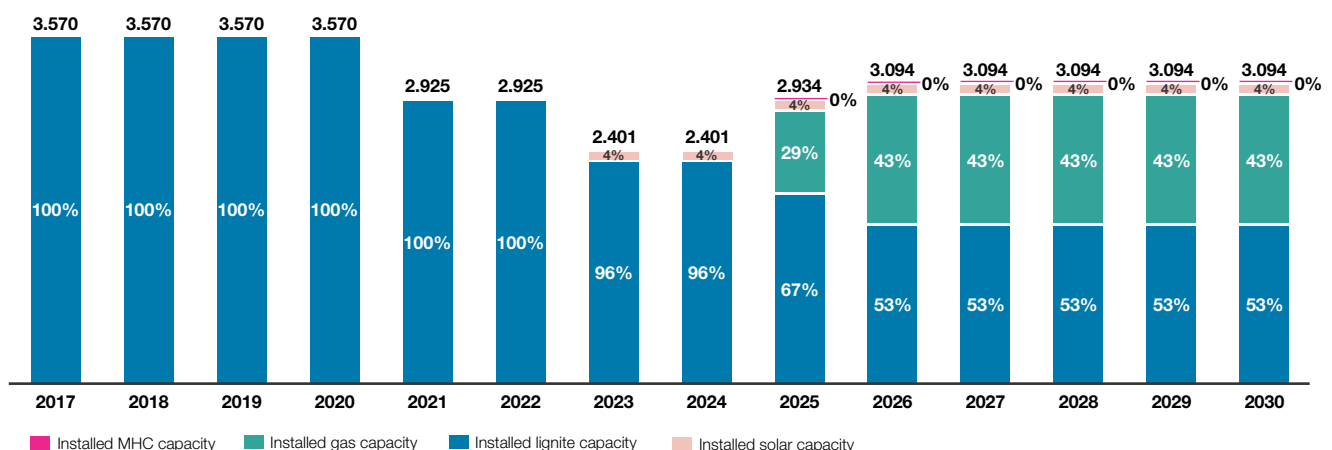
According to NECP (National Energy and Climate Plan) projections for the 2030 electricity mix, lignite electricity production will amount to an average of 15% of the total electricity market, which encouraged the company to take on a much more ambitious target of 18-20% for 2030.

As a result of a huge financial loss recorded by OEC in 2018 and 2019 given the considerable markup of emission allowances, the European Commission approved, in February 2020, that the Romanian Government granted OEC a 6-month loan of €251 million. Predictably, the company was unable to repay these funds and instead opted to submit a Government-approved Restructuring Plan² to the European Commission, that included a decarbonization investment plan designed to ensure the financial viability of OEC until 2026. According to OEC data, costs associated with the purchase of emission allowances added up to 41% of the 2018 turnover and 45% of the 2019 turnover.

Included in the above-mentioned restructuring plan, OEC's 2021-2026 decarbonization plan requires investments in 8 solar farms on closed slag and ash depots, and on interior and exterior dumps respectively, with a total capacity of 725 MW, the rehabilitation and modernisation of the micro hydropower with an installed power of 10 MW in Turceni, as well as the construction of two gas power plants with the following installed capacities: 475 MW (Turceni) and 850 MW (Ișalnița).

Graph 1 shows lignite-based capacity planned withdrawals, as well as the newly planned production capacities, as resulted from the public communication of the OEC restructuring plan.

Graph 1: Predicted development of OEC-level installed power, based on the Restructuring Plan



Source: Oltenia Energy Complex

² https://media.hotnews.ro/media_server1/document-2020-11-17-24424776-0-plan-restructurare-ceo.pdf

Consequently, according to the restructuring plan, OEC's total electricity production installed capacity would amount to 3.570 MW in 2020 and to 3.094 in 2030³, with a minimum of 2.401 MW anticipated in 2023 and 2024. According to the plan, gas-based capacities would go into production as of 2025 and 2026, simultaneously with the drop in lignite-based installed capacity and the shutdown of the sites in Peșteana (2022), Husnicioara (2025) and Lupoiaia (2025).

The decarbonisation plan is financially framed around the objective of EOC and the Romanian Government to access the Modernisation Fund, pursuant to article 10 (d) of Directive 2018/410/EU to amend Directive ETS 2003/87/EU.

CO₂-eq emissions calculation according to the OEC Restructuring Plan

Based on this decarbonisation plan, OEC estimates a drop in specific CO₂ emissions 0.82 tCO₂/MWh in 2020 to 0.74 tCO₂/MWh in 2025 and 0.51 tCO₂/MWh starting with 2026. However, cumulatively, OEC would emit higher annual greenhouse gas emissions in 2030 than in 2020, which questions the very “decarbonisation plan” notion itself.

Indeed, the total OEC annual emissions indicated in the Plan will increase from 7 Mt CO₂/year in 2020 to approximately 9 Mt CO₂/year in 2030, reaching a maximum peak of 10.7 Mt CO₂/year in 2024. Throughout the entire period of 2021–2030, OEC will be responsible for a total emissions level of approximately 92 Mt CO₂. The total emissions level is increased to 95,5 Mt CO₂ if emissions related to the two units in Craiova are also taken into consideration, which OEC intends to transfer into the public property of Craiova Municipality in 2023. Calculated at an annual average price of 40 €/ton⁴ of the emission certificates (EUA), the cost paid by OEC for CO₂ emissions between 2021 and 2030 would amount to €3.68 billion, according to inhouse emission projection (and to €3.82 billion, if emissions from cogeneration units in Craiova are also taken into consideration).

The estimated electricity production development is linked to the increase in lignite-based electricity production from 8.5 TWh in 2020 to 12 TWh in 2024, followed by a drop to a constant level of 7.2 TWh between 2026 and 2030. The drop in the lignite-based emissions is compensated by emissions associated with the newer gas-based units which would start coming into operation in 2026. Lignite-based electricity will continue to account for a significant share of electricity sold by OEC after 2026 – approximately 41% of the total – while renewable energy produced by solar panels will represent only 6% of this total by around 2030.

³ This data seems to not include the total capacity of 725 MW of the eight solar farms included in the Restructuring Plan.

⁴ This value, selected to simplify calculations, is a rather conservative reflection of the various quantity projections regarding the EU ETS price by 2030.

Based on a methodology that considers the entire life-cycle⁵ and specific emissions pulled out of the *ecoinvent*⁶ database, (database containing LCI – *Life Cycle Inventories* – which help carry out life-cycle analyses, LCA) we can conclude the following:

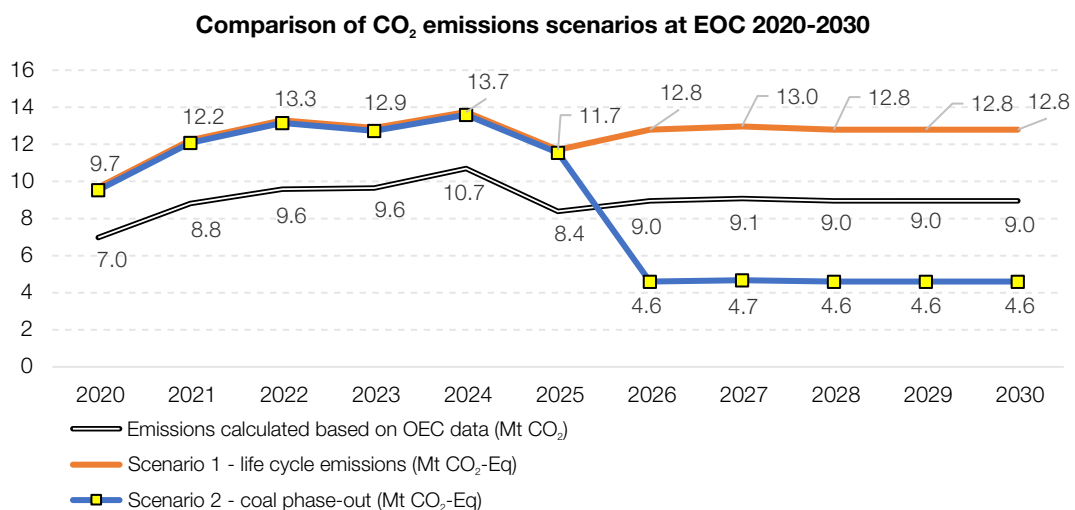
- The difference in emission levels related to OEC activity between 2030 and 2020 amounts to approximately 3.1 Mt CO₂-eq, with an increase of 12.8 Mt CO₂-eq in 2030. Out of the total, 64% would continue to return to lignite-based energy production (66% if emissions resulted from the two units in Craiova are also taken into consideration).
- In case the EU ETS mechanism would consider entire life-cycle emissions, the cost of emission allowances paid by OEC in 2020-2030, calculated at an average price of 40 €/ton, would amount to over €5.1 billion and to approximately €5.4 billion, if emissions resulted from the units in Craiova are also taken into consideration.

An alternate scenario (Scenario 2), which considers the projected electricity production of OEC by 2026 and the decrease to zero of lignite-based electricity production (coal phase-out) starting with 2026, simultaneously with the launch of the new gas units, shows, based on *ecoinvent* database emissions, that:

- Starting with 2026, annual OEC emission levels would be reduced to 4.6 Mt CO₂-eq (5.4 Mt CO₂-eq including Craiova), while the total emission levels in 2021-2030 would amount to 86.9 Mt CO₂-eq (93.3 Mt CO₂-eq including Craiova), allowing for a 52% decrease in annual emissions for 2026-2030, compared to the level of emissions registered in 2020. As such, the difference between this scenario and that included in OEC decarbonisation plan is of approximately 41 Mt CO₂-eq.
- Applying their same average price basis, costs associated with emissions allowances would be €1.2 billion lower in this scenario where lignite would be removed from the energy mix.

As shown below, Scenario 2 is, in fact, the most realistic.

Graph 2: Comparison of CO₂ emission scenarios at OEC 2020-2030



⁵ *Life Cycle Assessment* is a method that assesses and quantifies the impact that a product or process carries on the environment during its entire life-cycle, starting from extraction and processing of raw materials, manufacturing, distribution, usage, recycling and disposal. The LCA calculation will indicate higher CO₂-eq emissions than the tailpipe emissions, according to how these are calculated for EU ETS-related reports. At EU level, LCA analyses are increasingly required. Of course, the LCA analysis will indicate higher values than the one which is based solely on tailpipe emissions.

⁶ Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E., and Weidema, B., 2016. *The ecoinvent database version 3 (part I): overview and methodology*. The International Journal of Life Cycle Assessment, [online] 21(9), pp.1218–1230. Available at: <http://link.springer.com/10.1007/s11367-016-1087-8>

Accessing the Modernisation Fund

Based on article 10d of revised Directive EU ETS (2018), „For the 2021-2030 timeframe, a fund is set up to support investments proposed by beneficiary member states ... in view of modernisation of energy systems and of improvement of energy efficiency in member states registering GDP per capita at market prices that is lower than 60% of EU's average in 2013 (hereinafter referred to as <<modernisation fund>>).

The same paragraph indicates that “Support investments must be compliant with the objectives of said directive, as well as with the objectives of the EU-regulated climate and energy policy framework for 2030 and with the long term objectives expressed in the Paris Agreement. **The modernisation fund shall not support further energy production installations based on solid fossil fuels**, other than efficient and sustainable heating plants in member states registering their GDP per capita at market prices below 30% of the EU average in 2013...” - meaning Romania and Bulgaria.

By simple economic reasoning, this restriction *must also include calling into operation of low-energy greenhouse gas production capacities (such as natural gas or renewable energy capacities) as well as the continuing operation of coal-fired power stations*, as profits thus obtained would establish domestic subsidies for the extended functioning of coal-fired power stations, in direct contradiction with the objectives of Directive EU ETS and the goal of the Modernisation Fund.

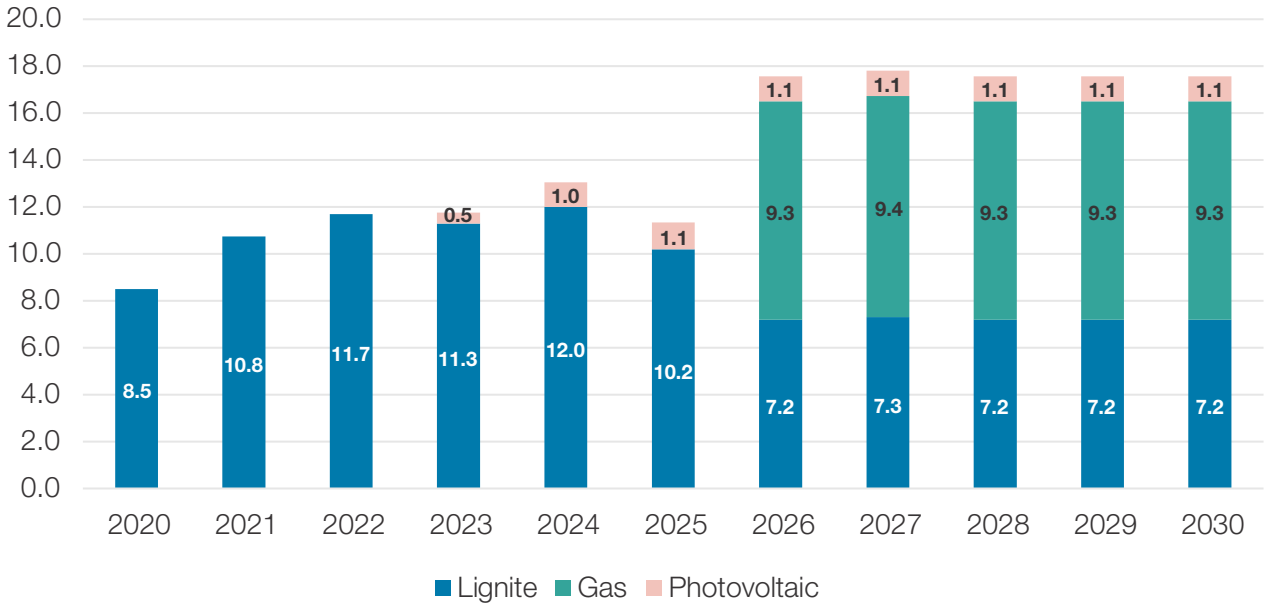
Instead, OEC Restructuring Plan is based substantially on this approach, as shown in graph 1. Starting with 2025, the share of natural gas-based electricity production is expected to increase significantly, simultaneously with maintaining a considerable share of natural gas-based production. Furthermore, according to OEC strategy, lignite-based electricity generation would be maintained as such long after 2030. However, according to the above exposed reasoning, this scenario would be possible exactly by means of using the Modernisation Fund resources in opposition to Directive EU ETS.

To conclude, OEC's plan to reduce greenhouse gas emissions *by means of increasing renewable and gas based energy production with lignite-based production is not compatible with Directive EU ETS and with the objectives of the Modernisation Fund*. Operating new gas units would only be possible simultaneously with the shutdown of lignite-based capacities. The same reasoning applies to the introduction of new photovoltaic capacities in the company's mix.

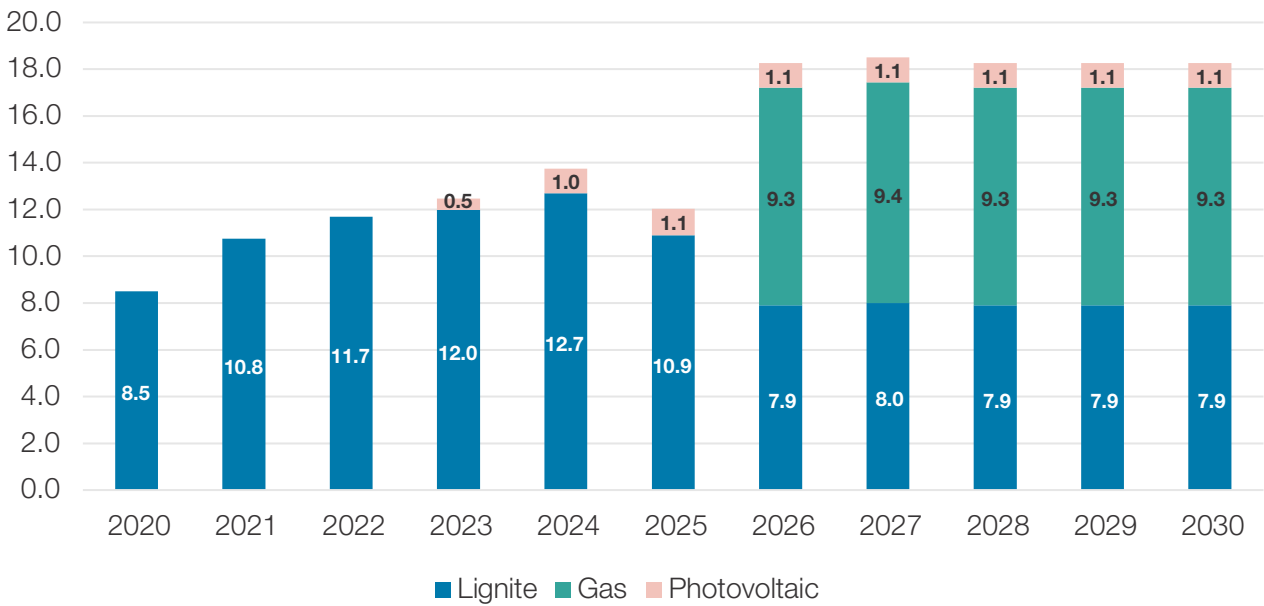
Other issues will most likely be related to the *state-aid clearance* requirement that all entities applying for funding through the Modernisation Fund must meet. This is not the subject of this analysis, but the OEC case seems to be extremely complicated from this point of view, precisely from the perspective of the loan granted by the Romanian Government, the non-payment of which led to the proposal of the Restructuring Plan.

ANNEX

OEC, projection of sold electricity, 2020-2030 (TWh)



OEC + Craiova, projection of sold electricity, 2020-2030





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Greenpeace is an independent global campaigning organization present in over 55 countries, which acts to change attitudes and behaviors, to protect and conserve the environment and to promote peace.

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