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Extending the Use of Coal Beyond 2030, a Compromise Solution in the Case of Romania, to Ensure Energy Security

Leonard Magdalin Dorobăț[1], Anca Turtureanu[2], Codruța Mihaela Dobrescu[3]

Abstract: In the current geopolitical context, following the Russian invasion of Ukraine, the energy consequences are severe for almost all European countries, whether they are EU members or not. A blind energy policy pursued over the last 20–30 years by most EU countries has led to an over-reliance on a single source for gas and/or oil: Russia. Moreover, the hasty implementation of measures to shut down fossil fuel-fired power plants without finding viable alternatives in place has exacerbated this poisonous dependence on Russian gas sources. As a result, following the new geopolitical framework, Europe is forced to revert to an old source of energy, coal, at least for a certain period, revise its energy and environmental policy. Many countries such as Italy, Germany, Poland, the Czech Republic, etc. have already passed or intend to move to the reopening of coal mines and thermal power plants that use this source. Poland, which obtains about 75% of its energy from coal, initially set itself the goal of giving up this resource in 2049, but now this deadline will be "much more" postponed. Germany has kept its 2030 target for this goal, if all goes well. Considering all this and because Romania is not independent of the energy viewpoint, we consider that also in this case it is beneficial from the economic and energy security perspective to keep in operation the coal mines and the thermal power plants that use this raw material, beyond the horizon of 2050. This can be done by refurbishing mines and thermal power plants and by implementing efficient management, totally different from what has happened over the years so far. Only when the so-called clean, "renewable" or other energy sources with a soft environmental impact can cover the energy deficit can the use of fossil fuels and, especially, coal be safely abandoned.

[1] Senior Lecturer, PhD, Faculty of Science, Physical Education and Informatics, University of Pitesti, Romania, Address: Str. Targu din Vale 1, Pitesti, Arges, Romania, Tel./Fax: +4 0348453260, E-mail: coltanabe@yahoo.com.
[2] Professor, PhD, Faculty of Economic Sciences, Danubius University of Galati, Romania. Address: 3 Galati Blvd, Galati 800654, Romania. Tel.: +40372 361 102, fax: +40372 361 290. Corresponding author: ancaturtureanu@univ-danubius.ro.
[3] Senior Lecturer, PhD, University of Pitesti, Faculty of Science, Physical Education and Informatics, Romania, Address: Str. Targu din Vale 1, Pitesti, Arges, Romania, Tel./Fax: +4 0348453260, E-mail: codrutza_dobrescu@yahoo.com.

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1. Introduction

The use of coal for the production of electricity or thermal energy has become more and more problematic recently because it pollutes a lot, compared to other types of fossil fuels. The emphasis on the increasingly extensive use of various sources of energy considered as green (although often, things are not quite like that, if we do a detailed analysis) has recently led to the commitment of the EU countries to give up the use of coals as quickly as possible. Thus, we often heard the expression Green Deal, referring to the fact that the European Commission adopted a series of proposals aimed at adapting EU policies to reduce net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels, and until 2050 to reach zero emissions in terms of greenhouse gases (https://ec.europa.eu).

We do not go into detail about the cause of global warming, the cause of which not all specialists agree that is of anthropic origin (Crânganu, 2020), the terrestrial climate system is very complex and still far too little understood. Also, the effects of a warming climate are difficult to quantify and many of them are beneficial. In short, in the geological or historical past, there were geological or historical periods in which the average global temperature was much higher than what is predicted to be in the coming years and lifea did not disappear and humanity did not suffer. We consider that not polluting is beneficial for the environment and the objective proposed by the EU is ambitious and the intention is good with positive effects on the environment. We will briefly approach the problems that can be generated in the case of Romania if a calendar is adopted for a rapid and forced transition to energies considered green, quickly giving up the use of coal.

2. Some Key Issues

Unfortunately, regarding many components, devices, equipment used to produce wind and solar energy, they originate from China. This is because, in this country, the construction for the production of these components is much smaller than if they were produced in the European Union. The consequence of this fact is that a rapid large-scale implementation of these green technologies in the EU, without the member countries quickly being able to produce most of the components themselves at competitive prices, can become dangerous. The EU's dependence on a single

supplier of components and devices for the production of green energies is as toxic as the EU's dependence on a single gas supplier, Russia. If the EU-China relations will deteriorate (for various reasons), the energy security of the EU will be endangered again. Even if at a given moment such a thing might seem improbable, it must be considered by those responsible of this matter.

Another aspect not to be neglected is the fact that the transition to green energies if it is done without Europe being able to cheaply produce photovoltaic panels, wind turbines (we mean all their components) can aggravate the trade deficit between the EU and China, which is still big. Between 2014-2021, in just seven years, it has doubled (https://www.eleconomista.es).

In the context of what happened after the invasion of Ukraine by Russia, the data of the problem changed fundamentally. The European Union has a disastrous policy regarding energy security. Many countries have become dependent on a single major supplier of gas or even oil, Russia. This dependence proves to be fatal in the current political context, after the deterioration of relations with Russia.

Quickly finding viable alternatives that can replace Russian gas, but also the coal that was imported from Russia, is difficult, expensive in the short term and will take at least a few years.

As a response to the difficulties on the world energy market caused by the invasion of Ukraine by Russia, the European Commission presented the REPowerEU plan, in which there are three guidelines: saving energy, generating clean energy and diversifying energy sources; it is supported by financial and legal measures to build the new infrastructure and energy system that Europe needs. (https://ec.europa.eu/info/strategy).

Regarding the diversification of energy sources, the abovementioned same source shows that "the EU is collaborating with international partners to find alternative sources of energy supply. In the short term, we need, as quickly as possible, alternative supplies of gas, oil and coal, and in 2023, we will also need hydrogen produced from renewable energy sources".

Regarding the use of hydrogen, specialists show that there are difficult problems to be solved. Obtaining hydrogen is expensive and polluting, only hydrogen is considered green, as it is obtained using non-polluting processes, having zero impact on the environment.

Thus, Romania proposed implementing a hydrogen strategy that will be developed in 2022, a strategy that will meet the EU trend, which has already planned how it will use hydrogen to achieve climate neutrality; EU's priority for the next 10 years is the production and use of green hydrogen in sectors that are difficult to electrify the chemical, cement and steel industries, in heavy transport, aviation, or maritime transport. (https://bankwatch.ro).

The previously mentioned source shows that: "Romania has already been included in the National Recovery and Resilience Plan projects for the production of green and gray hydrogen and its mixture with fossil gases in pipelines that will reach the home consumer directly, but the research on hydrogen is still one in its first stages, the studies and reports so far show that hydrogen is a limited fuel that helps the energy transition to some extent, if used correctly." Or the authors note the fact that green hydrogen, obtained without polluting, is prohibitively expensive, needing 5 times more electricity for its production compared to what a heat pump would consume. The use of other types of hydrogen, the so-called types of blue, gray, or black hydrogen, i.e., hydrogen obtained through even more polluting processes, through the use of fossil fuels, would be even more polluting than if those fuels were burned directly (https:// bankwatch.ro). Thus, for the production of one kWh using blue hydrogen, between 143 - 218 g of CO_2 would be emitted; if gray hydrogen were used, the emissions would reach 13.3 kg of CO_2 for the production of 1-kg hydrogen, the more polluting being black hydrogen, with 691 g CO_2 for one kWh (https://green-planet-energy.de).

This shows that the technologies that involve obtaining and using hydrogen are at an early stage and there is a risk that their hasty implementation will be expensive and even more polluting.

It is obvious that green energies cannot provide, at the current level of development, adequate to satisfy industries such as steel (electrical steelworks), cement factories or electric trains (https://www.contributors.ro/).

For these reasons, a number of EU countries are increasingly and more openly considering that a rapid schedule for phasing out coal as an energy source is no longer viable, proposing the continued use of this fuel, the reopening of plants put into conservation or the retechnology of others and their use in longer terms, beyond 2030 or even beyond the term 2050.

Going somewhat in the opposite direction of this trend, Romania recently adopted the Emergency Ordinance 108/30.06.2022 regarding the decarbonization of the

energy sector. The draft normative act establishes the general legal framework for the phased elimination from the energy mix of electricity production based on lignite and coal, the deadlines for the closure and preservation of energy groups operating on lignite and coal, and measures including for ensuring the necessary technical reserve safe and stable operation of the National Electroenergetic System (https://energie.gov.ro). It is also shown here that they will be decommissioned and conserved in conjunction with the commissioning of investments in natural gas capacities and renewable energy sources.

However, the same normative act that was published in MONITORUL OFICIAL no. 659 of July 1, 2022/ O.G. 108/30.06.2022 provides as a safety measure: ***"In a situation of energy crisis, the Government of Romania, at the proposal of the Ministry of Energy, can take the decision, by the decision of the Government, to postpone the closure of some energy capacities operating on coal and mining operations related or restarting closed energy groups and related mining operations, in compliance with environmental legislation and the deadline for completing the decarbonization of the energy sector and in correlation with the measures included in the emergency plans related to the energy sector."***

We consider this premature and too fast to close the coal-based energy production capacities. One of the reasons is that we don't really have anything to put in place. The issue of using hydrogen on a large scale is expensive and the technology is uncertain.

The complete and rapid abandonment of coal would put Romania in energy insecurity, potentially becoming an importer of energy or gas.

Many EU countries have reconsidered their schedule for closing coal mines or thermal power plants that use it.

Thus, the largest country in the EU and the first economy of the Union, Germany is pressuring the countries of the G7 to give up their commitment to reduce investment in projects unrelated to fossil fuels at the end of this year, reported Bloomberg on Saturday (https://adevarul.ro).

The case of Germany is not unique: countries such as Austria and the Netherlands are preparing to increase coal-based energy production, as an emergency measure, shows www.economica.net.

The same source reports the case of Poland, which is even more suggestive; this country is based on coal, obtaining 70% of its electricity based on the use of this

fuel; moreover, to compensate for the enormous increase in the price of gas used in the domestic sector, the Polish government will subsidize part of the price of coal used for heating homes (www.bugetul.ro).

The Polish mining company PGG claimed it will phase out all its mines by 2049 (www.economica.net), and even that distant deadline is being questioned, with the Polish government recently considering much more coal use after 2049, as the Polish Deputy Prime Minister said, quoted by www.digi24.ro; from this source we also learn that Greece, Italy, the Czech Republic are three other EU member countries that want to reopen their coal-based thermal power plants, postponing the implementation of the Green Deal. In fact, the EU member countries want to stop the import of coal from Russia starting from August 2022 (https://www.politico.eu), using European coal instead.

Analyzing all these aspects, we consider that Romania must head in the same direction. Romania has several advantages. First, it is much less dependent on Russian gas than most other EU countries.

Romania has natural gas reserves and if the deposits were exploited and intelligently capitalized, independence from imports would be ensured a few decades from now.

Secondly, there are deposits of coal, coal and lignite, which could be exploited for decades. The human resources still exist, most of the mines being recently closed, so the former qualified employees who worked in the mining sector have not been deprofessionalized. What would be very necessary would be a re-technological re-engineering of the mining operations, doubled, and an implementation of less polluting technologies within the thermal power plants that use coal, bringing pollution to the lowest possible level.

If these things were carried out simultaneously with the introduction of a modern, high-performance, non-politicized economic and environmental management, then the results would be adequate and social problems in the respective areas, where mining operations are undertaken, would be solved, as they are almost mono-industrial areas.

The use of coal in such refurbished power plants, at least until 2050, would give enough time for many of the current green alternatives to be verified and validated. The risk of hasty adoption of technologies that would not prove viable would be avoided. We believe that Romania is a country that would not afford the luxury of implementing expensive technologies, the viability of which would prove to be a fiasco.

3. Conclusions

The complete abandonment of coal and the closure of mines and/or thermal power plants that use coal would lead to endangering the energy security of Romania, as the natural gas deposits on the territory of the country alone could not, in the medium or long term, ensure the necessary for domestic use and for economic agents. We would become net importers of gas, which is undesirable.

The hasty application of some futuristic technologies, little verified, would lead to high costs and doubtful results. Such technologies must be perfected, must pass the test of time and become cheaper, safer and more accessible.

Social problems could arise in mining areas or even in adjacent areas, where coal-based thermal power plants operate. Their quick closure is undesirable, a slower, gradual transition to clean technologies would avoid such problems.

There is a possibility that in a relatively short time, some components necessary for green technologies will be produced in Romania as well, and this would really be indicated. Obviously, costs must also be considered, but we believe that there are enough premises to be optimistic about Romania's ability to be competitive in this segment.

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