Chapter 22

The European Union's Energy Policy from the Perspective of a Central-Eastern European Country: Romania

Tamás Szendrei

Abstract

This scientific article examines the European Union's (EU) energy policy from the perspective of Romania, focusing on its unique position as a Central-Eastern European country. Against the backdrop of the 30-year anniversary of the Maastricht Treaty, the relevance and challenges of EU energy policy are explored in relation to Romania's energy landscape. The article analyses the current legislation, including the European Energy Charter Treaty[1], as well as the Energy Union initiative, which aims to improve energy efficiency, reduce import dependence, and stimulate economic growth. Additionally, it investigates the implications of the energy crisis triggered by the Russian–Ukrainian war on defining the "energy mix" and the extent of the EU's influence versus Member States' autonomy. The concept of solidarity, particularly regarding compulsory gas sharing, is examined through the lens of Western European, Central and Eastern European, and candidate countries, addressing the reasons behind sharing energy stocks. Furthermore, the article evaluates the contribution of Regulation (EU) 2022/869 and projects identified under Trans-European Networks to enhancing security of supply in the countries under review. Ultimately, this article offers insights into the complexities, challenges, and opportunities faced

1 Available at: https://energy.ec.europa.eu/topics/international-cooperation/international-organisations-and-initiatives/energy-charter_en (Accessed: 10 October 2023).

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by Romania and the wider EU in shaping energy policies that promote sustainability, security, and cooperation.

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1. The European Union's Energy Policy

The main purpose of the European Union's energy policy is creating security, sustainability, and integrating the energy markets of the member states. The history of Europe's energy policy started with the European Coal and Steel Community, which was created in 1951 based on the principle of supranationalism, with the purpose of integrating Europe's coal and steel resources into one common market. It was established by the Treaty of Paris, and it was signed by Belgium, France, Italy, Luxembourg, the Netherlands, and the Federal Republic of Germany. The second important moment was the formation of the Euratom in 1957, focused on the collaboration on nuclear energy.

The European Union was founded in 1992, by the Treaty of Maastricht, which did not include a specific chapter on energy, this being rejected by member states with larger energy reserves, who wanted to retain their autonomy on this topic. In 1996, a directive was passed by the European Parliament, and another on the internal gas market in 1998. The directives stated that network operation and energy generation should not be done by a single company, and that separation would create competition in the area.

Even without including a specific chapter, the Treaty of Maastricht holds great significance in shaping the European Union's (EU) energy policy – as the treaty that established the framework for the EU and introduced the concept of European integration, it laid the foundation for increased cooperation among member states in various policy areas, including energy. The period around the drafting of the Maastricht Treaty coincided with pivotal developments in EU energy policy, which established rules and principles for energy cooperation, promoting the development of a stable and transparent energy market, notably the adoption of the European Energy Charter in 1991. Another essential development in that period was the Energy Charter Treaty established in 1994, currently having fifty-three signatories and contracting parties, focusing on four areas: the protection of foreign investments, based on the extensions of national treatment, or most favoured nation treatment;

non-discriminatory conditions for trade in energy materials; the resolution of disputes between participating states; and the promotion of energy efficiency.[2]

Directive 2001/77/EC, the first Renewable Energy Directive was passed in 2001 for promoting renewable energy use in electricity generation, in the context of the 1997 Kyoto Protocol against climate change. This directive set national indicative targets for renewable energy production from individual member states which were monitored by the European Commission. It included a target of doubling the share of renewable energy in the European Union's energy mix from 6% to 12% by 2010. The increase for the electricity sector was even higher, with a goal of 22%. Two years later, another directive increased the share of biofuels in transport.

In 2009, the 2020 climate and energy package was enacted in legislation, to ensure that the EU meets its climate and energy targets for the year 2020. This created the 20/20/20 objectives, binding for all EU member states: a 20% cut in greenhouse gas emissions (from 1990 levels); 20% of EU energy from renewables; and 20% improvement in energy efficiency.[3] All these targets were met. According to European Economic Area (EEA) estimates, greenhouse gas emissions were 31% lower than in 1990. A 21.3% share of renewables was achieved, mainly due to the increased use of renewables for electricity, heating, and cooling. A 20% reduction in energy consumption was also achieved after the widespread lockdowns in 2020, due to COVID-19.[4] New targets were set for 2030, focusing on a 55% reduction of greenhouse gas emissions in 10 years as part of the European Green Deal.

After the Russian invasion of Ukraine, the European Union's energy policy turned more towards decreasing the EU's dependency on Russian fossil fuels, adopting the REPowerEU policy package. This plan includes: increasing EU's 2030 target to 45% renewables in the EU mix, up from the current target of 40%; accelerating the rollout of photovoltaic (PV) energy, with a dedicated EU Solar Energy Strategy; introducing the European Solar Rooftop Initiative; aiming at doubling the current deployment rate of individual heat pumps; decarbonising the industry by accelerating the switch to electrification and renewable hydrogen; speeding up renewables' permit to minimise the time for the rollout of renewable projects and grid infrastructure improvements; increasing the EU's 2030 binding energy savings target to 13%.[5] In May 2022, the European Commission launched calls for clean energy infrastructure projects to meet these targets set in the REPowerEU Plan, worth EUR 800 million.

The EU's competencies in energy policy are foreseen in Article 194 of the Treaty on the Functioning of the European Union (TFEU) which provides shared responsibility between EU member states and the EU in the case of energy policy. However, each member state has the right to decide on the conditions for exploiting its own

2 The Energy Charter Treaty, 2019.
3 The Climate and Energy Package, 2020.
4 European Environment Agency, 2021.
5 European Commission, 2022a.

energy resources, to choose between different energy sources and to define the general structure of its energy supply.

Currently, the energy system's legal framework is still incomplete, and it is not clear if the EU can meet the targets set out by the 2015 Paris Conference of the Parties 21 Agreement, considering that recent data show that carbon emissions increased in 2022.[6] There has been too little innovation in the EU's energy policy, while old theories and methods still prevail.[7]

Within this context, as a Central-Eastern European country, Romania offers a unique perspective within the European Union's energy landscape. Situated at the crossroads of Eastern Europe, Romania possesses a diverse energy mix, including significant reserves of coal, natural gas, nuclear energy, and renewable energy sources. Its strategic location and rich energy resources place the country at the forefront of energy discussions within the European Union.

Romania's energy sector is key to its evolving economy and security policy. The country's electricity mix is one of the most balanced in the European Union, with coal, hydropower, fossil gas, nuclear energy and wind power, which will all be detailed separately. Based on 2021 energy statistics, the country's energy mix is composed of 36% coal and coal products, 30% natural gas, 14% oil and oil products, 30% renewable energy, and 8% nuclear energy.[8]

Romania is the 38th largest energy consumer in the world and the largest in Southeastern Europe, as well as an important producer of natural gas, oil, and coal. In terms of greenhouse gases, Romania is slightly greener than its neighbouring countries due to its hydroelectric, nuclear and growing number of wind power plants. In accordance with the opinion of European and international experts, the Romanian government encourages further greenhouse gas emission reductions through the strong support of nuclear power, as well as renewable energies.

In Romania, the project to update the national legislation on energy policy based on the Directive (EU) 2019/944 of the European Parliament and the Council of 5 June 2019 on common rules for the internal market, and also on Directive 2012/27/EU, started in September 2020, and was finalised with the passing of the Government Emergency Ordinance No. 143/2021 (*GEO 143*). This new normative act that was supposed to be ready by January 2021, came into force only on the last day of the year 2021. This complex process involved not only the work of the Ministry of Energy, a CMS team of expert lawyers from Romania and from the UK, but also the special advice and support of the state stakeholders ANRE, OPCOM and Transelectrica. The GEO 143 introduced changes in the national legislation in different areas of electricity policy.

An important topic of the GEO 143 was the liberalisation of the electricity market, where bilateral transactions are freely negotiable outside the organised markets.

6 International Energy Agency, 2023.
7 Heffron, 2023.
8 European Commission, 2022b.

According to this, these energy markets are "markets for electricity, including over-the-counter markets and electricity exchanges, markets for the trading of energy, capacity, balancing and ancillary services in all timeframes, including forward, day-ahead and intraday markets".[9]

It also introduces a significant change regarding all market participants' free choice to enter into directly negotiated electricity trading contracts. According to previous legislations, all electricity output was due to be sold via the exchange platform OPCOM. GEO 143 includes provisions regarding consumers' rights, which can now be parts of contracts with multiple suppliers and are provided with clearer information about offers and prices.[10]

Also, because of the current increases in energy prices across Europe, Romania's government put in place some measures to protect the consumers from the impact of the rising prices. On 7 September 2021, the Parliament passed a law to shield vulnerable consumers, on 4 October, the Minister of Energy announced compensation for electricity and gas bills, on 20 March 2022, the government imposed a one-year ceiling on electricity and natural gas prices, and on 11 April it announced a series of grants and vouchers to help vulnerable Romanians and key industries covered by EU funds.[11]

2. Coal

About 20% of the electricity production in the European Union is based on coal, remaining a primary fuel in the European energy mix. It also provides jobs to around 230,000 people in mines and power plants in 11 member states.

In order to meet the target of reducing CO_2 emissions by at least 55% by 2030, the EU is transitioning to cleaner forms of energy and innovative technologies in this area. The total coal power generation has already dropped by approximately a third in the European Union since 2012, with mines closing down and power plants being decommissioned. However, one of the European Green Deal's targets is making Europe the first climate-neutral bloc in the world by 2050. Aiming to achieve this goal, the Commission adopted the Just Transition Mechanism in January 2022 as a regulation, to ensure that this transition towards a climate-neutral economy transpires in a fair way. This includes not only tailored financial and practical support,

9 European Commission, 2022a.
10 Radu, Dulamea and Diaconeasa, 2022.
11 Sgaravatti, Tagliapietra and Zachmann, 2021.

but it also helps the affected workers, and generate the necessary investments to areas particularly affected, like the EU coal regions.[12]

While we recognise coal production's importance in the European Union, we also understand the necessity of these regulations in the EU's plan, considering that producing energy using coal can be replaced with newer technologies that are less polluting. Some member states are already coal-free, some of them announced the future elimination of coal production, while some of the member states haven't taken any steps to reach this goal. Coal-fired power stations produce an immense amount of carbon dioxide, which contributes highly to climate change. In order to reduce this amount, another strategy of the European Union is the Green Taxation method, which is a set of taxes on energy, transport, pollution and resources, including a special tax for CO_2 emissions.

In Romania, coal production is slightly above the European Union average. Due to the pandemic-induced worldwide crisis, in the first five months of 2020, coal production decreased by 41%, while oil production dropped by 20%, according to the National Institute of Statistics. In 2022, coal production and consumption in the EU reached 349 million tonnes, and 454 million tonnes, respectively[13]. Romania produced approximately 1,308 million tonnes, becoming the fifth largest coal producer, after Germany, Poland, The Czech Republic, and Bulgaria.

The role of traditional fuel such as oil, natural gas, coal, and uranium in the energy mix is currently being reconsidered according to European Union-led new context and trends, like the EU Green Deal. Romania produces pit coal and lignite and operates several coal-fired power plants, all needing upgrades in the immediate future in order to comply with European Commission's guidelines. In June 2022, Romania's government adopted new legislation[14] focusing on the country's decarbonisation and replacing traditional fuel with renewable and low-carbon energy sources, including clean hydrogen. The decarbonisation law is one of the milestones in Romania's National Recovery and Resilience Plan (`*NRRP*`) that had to be completed by the end of 2022 for Romania to receive the second tranche of EU recovery funds.

The country announced a new deadline for the definitive closure of coal-fired power plants and the total elimination of coal from the energy mix, setting it at the end of 2032. The cessation of the mining activity and the restoration of the environment will be accomplished based on the provisions of the Mining Law no. 85/2003, with subsequent amendments, additions, and directly applicable rules.[15]

12 Available at: https://energy.ec.europa.eu/topics/carbon-management-and-fossil-fuels/eu-coal-regions-transition_en (Accessed: 10 October 2023).

13 Eurostat, 2023.

14 Government Emergency Ordinance 108/2022 regarding the decarbonization of the energy sector was approved as Law 334 on December 5, 2022.

15 Bobei, Vasile and Ciolea, 2022, pp. 59–64.

3. Oil and Gas

According to the European Union's energy policy, national governments have control over oil and gas resources in their territories. Member states can determine the areas in which companies can search for and extract these resources. However, to get licenses for these areas, companies must follow a set of common EU regulations to ensure fair competition. These licensing rules for oil and gas production are set out in the Directive 94/22/EC of the European Parliament and of the Council of 30 May 1994 on the conditions for granting and using authorisations for the prospection, exploration, and production of hydrocarbons. These common rules include the following: at least 90 days before the application deadline for a new license, an EU country must publish all relevant information about the license in the Official Journal of the European Union; licensing must be open to all interested companies and EU countries must grant licenses in a fair, competitive, and unbiased way; when granting licenses, EU countries can take into account issues such as national security, public safety, public health, security of transport, the protection of the environment, the protection of biological resources, or the planned management of hydrocarbon resources.[16]

On the territory of Romania, oil production goes back to 1857, but it became an important strategic country for its oil production in Europe during World War II. Once a significant player in the global oil industry, today Romania has relatively modest oil production and reserves, compared to other countries in the European Union – with high potential in the present. The most important oil refineries in the country today are: Petrobrazi Refinery (Petrom/OMV) in Ploiești, Petrotel Lukoil Refinery (LUKOIL) in Ploiești, Petromidia Constanța Refinery (Rompetrol) in Năvodari, Vega Ploiești Refinery (Rompetrol) in Ploiești, and Petrolsub Suplacu de Barcău Refinery (Petrom/OMV) in Suplacu de Barcău. The majority of petrochemical processing plants have been closed down, the remaining ones are KazMunayGas: Petromidia, Chimcomplex, and Oltchim.

On the other hand, Romania was the first nation to employ natural gas for industrial purposes and has the largest natural gas market in Central Europe. The country also has the second largest natural gas reserves (except Russia) behind Ukraine, but twice as large as that of Poland. Being the second largest gas producer in the European Union, having sizeable reserves, including those recently found in the Black Sea, Romania is the nation in the region with the lowest reliance on imported natural gas. The country has proven natural gas reserves of 762 billion cubic meters and is ranked 30th among countries with proved reserves of natural gas. The majority of its natural gas reserves are located in Transylvania, in Sibiu and Mureș counties.

The production of Romania's natural gas is dominated by two very large companies: Romgaz and Petrom, with a market share of 51.25% and 46.33%, respectively. Several smaller companies are also present, such as Aurelian Oil&Gas with a

16 European Parliament and Council, 1994.

market share of 0.38%, Amromco with a market share of 1.85%, Lotus Petrol with a market share of 0.13%, and Wintershall with a market share of 0.06%.

Romania supports a long-term perspective of natural gas in the European Green Deal, because it forecasts that this resource will remain an important tool in changing the energy sector and transitioning to a more sustainable and carbon-free economy. Over 14,200 kilometres of pipes and gas connections transport natural gas, these are owned by Transgaz SA, while Conpet SA owns and is in control of the oil transporting infrastructure of Romania. Both joint stock companies are owned in majority by the Romanian state, and are listed on the Bucharest Stock Exchange (BVB).

Onshore natural oil and gas production in Romania is provided by traditional producers such as Romgaz SA, OMV Petrom SA, Amromco Energy SRL, Mazarine Energy Romania, Raffles Energy SRL, and Stratum Energy Romania. Romgaz SA and OMV Petrom SA are also companies listed on the Bucharest Stock Exchange, having the largest proportion in the BET index.[17] However, with the current listing, Hidroelectrica SA will become first in this regard.

The newly discovered gas reserves in the Black Sea boosts Romania's energy independence narrative and is waiting for the adoptation of legislation on offshore investments.[18] OMV Petrom and Romgaz will exploit the recently discovered Neptune Deep gas field, which covers 7,500 square kilometres at a depth of 100-1,000 metres in the Black Sea, 160 kilometres offshore. This will require a major infrastructure investment – estimated at around €40 billion – to be built. This has just been announced recently, and Romania's now former Prime Minister Nicolae Ciuca encouraged every Romanian citizen to buy OMV Petrom and Romgaz shares. According to OMV Petrom, the natural gas from the Neptune Deep block could contribute to Romania's energy security and energy transition. Furthermore, Neptune Deep will boost the economic development of the country, bringing additional budget revenues and boosting the development of projects in related industries. In March 2023, OMV Petrom and Romgaz signed a contract with Transgaz for the transport of natural gas from the Black Sea, and in June they approved the development plan for the Domino and Pelican South commercial fields. The first cubic metres of natural gas are expected to be extracted and entered into the national transmission system in 2027.[19] In addition to the Neptune Deep, Romania can diversify its energy supplies with the Midia Natural Gas Development Project of Black Sea Oil and Gas.

In accordance with Directive 2009/73/EC, the national natural gas market is now 100% open which means that customers can choose their suppliers and arrange direct sales-purchase agreements. In order to reach its 2030 renewables target of 30.7%, Romania plans to add around 7GW of new capacity, of which around 3.7 GW is planned to be solar projects. In terms of energy consumption, in 2019, little over

17 Bursa de Valori București, 2023.
18 Buzogány and Davidescu, 2022.
19 OMV Petrom Conference, 2023.

of 24% energy consumption originated from renewable energy sources, ranking the country 10th in the European Union and above the Union's average level.

4. Electricity

In the European Union, the largest share of power and electricity generation is made up by renewables, followed by fossil fuels, and nuclear energy. However, the percentage of renewable energy and other types of energy used to produce electricity is different in each member state. Following Russia's aggression against Ukraine, there has been a significant impact on the prices of fossil fuels in the European Union. This affected mostly gas, which led to higher prices for Europeans' electricity bills.

In the European Union, 2,641 TWh (terawatt-hours) of electricity were produced in 2022, 40% of this coming from renewable sources, 38.6% from fossil fuels (gas: 19.6% and coal: 15.8%), and 20% from nuclear power.[20] The percentage made from renewable energy sources will continue to grow every year, as the EU has committed to become climate neutral by the year 2050. The member states' electricity mix differs significantly, ranging from 93% of the electricity produced from renewables in Luxembourg, to only 13% in Malta. Romania is situated around the middle of the list, with 45% of its electricity being produced from renewable energy sources in 2022.

The EU's legal framework for the electricity market is based on the principle that competitive markets create the most efficient economical balance between supply and demand, based on Article 7 of the Electricity Market Directive that obligates states to adopt a non-discriminatory, objective, and transparent authorisation procedure for the construction of new generation capacity.[21]

In March 2023, the European Commission presented a legislative proposal to reform the energy market and to protect Europeans in the future from similar price shocks to the one caused by Russia's invasion of Ukraine. New emergency rules were made to allow member states to support their citizens and companies by cutting energy costs. Measures to cut down energy bills are the following: obligating EU countries to reduce electricity use, capping revenues of electricity producers, and securing a solidarity contribution from fossil fuel businesses.

In Romania, the main electricity producer companies are owned by the state, but there are still some privately operating businesses, too. The country has been mainly focused on developing nuclear power generation. The most important electricity sources are the following: Cernavodă Nuclear Power Plant with a 2x700 MW

20 European Council, 2023.
21 Huhta, 2017, pp. 7–14.

installed capacity for units 1+2, ensuring approximately 20% of the total energy mix; 208 hydropower and pumping plants with a 6.4 GW installed capacity ensuring more than 36% of the energy mix; and six coal-fired power plants, two within the Hunedoara Energy Complex, which is currently under insolvency, that intends to provide 1-3% of the national energy mix, and four within the Oltenia Energy Complex, providing 20% of national electricity production. These were established after the reorganisation of RENEL, the successor of the Ministry of Electricity from the communist regime.

In 2022, almost 50% of generated power had renewable resources. After fossil fuels, the second most important source of electricity generation in Romania is hydroelectricity, which accounted for 25% of production in 2022, with the main provider being Hidroelectrica. In the year 2022, wind power accounted for 12% of electricity generation, while solar technologies accounted for 3%.[22]

5. Nuclear Energy

Nuclear energy represents a very important component in the European Union's energy mix, accounting for around 21% of the energy produced. Producing nuclear energy has been the topic of controversy for years now, as member states' point of view differs. In the aftermath of the 1986 Chernobyl disaster and the nuclear catastrophe in Fukushima, Japan in 2011, it was made clear that nuclear energy can be very dangerous, and that eliminating it can reduce these threats to the European society. Germany's decision to phase out the total nuclear industry from its territory has led to discussions about the abandonment of nuclear power in the European Union. On the other hand, nuclear energy proves to be an efficient low-carbon alternative for fossil fuels, that can help the European Union achieve their goal of being a greener continent.

The legal basis of nuclear energy production in the European Union is the Treaty establishing the European Atomic Energy Community (EURATOM Treaty), which includes separate articles on the nuclear common market, respectively the Nuclear Safety Directive 2009/71/Euratom, and its amendment, 2014/87/Euratom. Based on these regulations, EU member states can choose whether to include nuclear power in their energy mix or not. At the same time, if a member state chooses to utilise this method of energy production on its territory, the EU provides a set of safety standards of nuclear power stations ensuring that nuclear waste is safely handled and disposed of. The EU chooses to pay extreme attention to these safety regulations, as the aftermath of a nuclear catastrophe in any member state can have negative consequences across the whole continent and beyond. These regulations require EU

22 Fleck, 2023.

countries to submit national reports on addressing and implanting the directive and its obligations.

After the 2011 Fukushima accident, all EU nuclear plants carried out safety tests, so-called stress tests to check whether the safety standards used when specific power plants received their licenses were sufficient to cover unexpected, extreme events like earthquakes, floods, terrorist attacks, or aircraft collisions. Some of these power plants were found to require further improvements, but generally the tests proved that in the EU nuclear power plants were safe. The implementation of these kinds of tests remains a national responsibility and is ensured by operators and national regulators.

Another important topic is the waste management of the nuclear energy producing process. For this reason, a legal framework was created in the EU in 2011 with the adoption of Council Directive 2011/70/Euratom, focusing on the safe management of spent nuclear fuel and radioactive waste. Member states must submit national reports every three years on the implementation of this directive.

The EU also operates the European Community Radiological Information Exchange (ECURIE), which is a notification system in case of a radiological or nuclear emergency. This was implemented after the Chernobyl disaster, and signed by all 27 member states, as well as Switzerland, Norway, and North Macedonia. Iceland, Montenegro, Serbia, and Turkey have also been invited to join.

Today, approximately a quarter of the electricity and half of the low-carbon electricity in the Union is generated by nuclear energy. Currently, there are eight European countries that are building new reactors, or seriously considering the building of new nuclear power plants: France, Finland, Slovakia, United Kingdom, Poland, Hungary, Romania, and the Czech Republic. On the other hand, some countries like Germany, Austria, Portugal, Denmark, and Luxembourg are urging the European Commission to keep nuclear power out of the EU's green finance taxonomy.

Romania ranks 24th in the world for the highest use of nuclear power, with 1,400 MW of nuclear capacity produced by one active nuclear power plant, the Cernavodă Nuclear Power Plant (NPP), with two reactors.[23] The two reactors in operation supply approximately 20% of the total energy production in the country. With the production of nuclear energy, Romania reduces its greenhouse gas emissions by more than 10 million tonnes each year. Three more reactors exist on the same site, but their construction was discontinued at the fall of the communist regime in 1990. Currently, there are plans in cooperation with the United States of America, Canada, and France to make another two of these reactors functional by 2030 and 2031. The Cernavodă Nuclear Power Plant is owned by Nuclearelectrica SA, a company under the authority of the Ministry of Energy. The state owns 82.49% of the shares, while other shareholders have 17.50% after listing the company at the stock exchange in 2013.

23 World Nuclear Association, 2023.

The Romanian Government supports nuclear energy, and is having discussions about expanding the current nuclear system in the country. This is based on the government's commitment to phase out coal by the year 2032 as part of the European Green Deal, looking at nuclear energy as an effective replacement that will play an important role in Romania's energy mix for years to come. The country has a long tradition and deep nuclear expertise gained through the construction, commissioning, and safe operation of Units 1 and 2 of the Cernavodă Nuclear Power Plant (NPP), and other nuclear facilities such as the heavy water plant, the nuclear fuel plant, research institutes, engineering and advanced physics centres and education.

In Romania, the general legal framework in the field of nuclear activities is outlined in Chapter VIII, Regime of Nuclear activities (Art. 45–48) of GEO 195/2005 on environmental protection. This sets out the rules for obtaining the authorisation and the environmental permit to start nuclear activity. The legislation also contains the central public authority's primary obligations for environmental protection, more specifically: organising the monitoring of environmental radioactivity throughout the country; supervision, control, and taking of the necessary measures in the field of nuclear activities, in order to comply with the legal provisions on environmental protection; the obligation to cooperate with the competent bodies in disaster protection, the protection of public health and the environment. It also sets out the obligations of authorised natural and legal persons performing these activities. The most important obligations are the following: assessing the potential risk, requesting and to obtaining the environmental permits, applying the procedures and providing the equipment for new activities, monitoring the radioactive contamination of the environment, and more.[24]

6. Renewable Energy

The European Union's future plans for energy production all focus on the importance and increasing role of using renewable energy. The EU's strategy for 2030 sets a target of at least 32% of gross final energy consumption from renewable sources. While in 2004 this made up only 9.6% of the EU's energy mix, it reached 22.1% in 2020, but fell to 21.8% in 2021.[25]

To ensure that the European Union's targets in integrated energy and climate policies are met, EU legislation requires each member state to draft a 10-year National Energy and Climate Plan (NECP), setting out how to reach its binding national targets, such as reducing greenhouse gas emissions by at least 40%, increasing energy efficiency by at least 32.5%, increasing the share of renewable energy to at

24 Duminica, Ramona and Popescu, 2022, p. 52.
25 Eurostat, 2023.

least 32% of energy use, and guaranteeing at least 15% electricity inter-connection levels between neighbouring member states.

The European Green Deal, launched by the EU at the end of 2019, aims to make Europe the first climate-neutral continent in the world by 2050. Its main target is to reduce emissions by 55% compared to the 1990 levels, including renewable energy as much as possible, in all member states by 2030. The legal framework for the development and usage of renewable energy in the European Union is the European Renewable Energy Directive (RED) which establishes common rules for the promotion of clean energy, and also sets mandatory targets for renewables. With this legislation going through different revisions, the target was raised to 40% renewables by 2030, and later it was pushed further to 45%, with additional changes expected to be introduced in the future. It also establishes how entities can claim renewable energy use by using Guarantees of Origin, which exist with the purpose of proving that the final energy was in fact produced from renewable sources. Another component of the legislation that builds the renewable energy's legal framework in the EU is the Electricity Markets Directive (2009/72/EC) which requires European suppliers of electricity to disclose information on CO_2 emissions and radioactive waste regarding the fuel supplied by them, so that consumers can choose not only based on the product's price, but also based on its production. The European Union Energy Roadmap 2050[26] includes renewable energy production targets on the road to decarbonisation, with scenarios targeting an 80% reduction in greenhouse gases and an 85% decline in CO_2 emissions from energy production. The EU Taxonomy is also a great way of encouraging investors and consumers to make more environmentally positive choices by increasing transparency and informing the society.

Renewable energy is becoming an increasingly popular and appealing topic in Romania. Based on the plan adopted by the country to reach its 2030 renewables target of 30.7%, it plans to add approximately 7 GW of new capacity that includes 3.7 GW of energy made from solar projects. In 2019, 24% of energy consumption in Romania originated from renewable sources, which ranked the country 10th in the European Union, above EU member states' average level.[27]

Romania has expedited its decarbonisation goals to 2030 from 2050. Renewable energy sources, nuclear power, and natural gas, as a transitional source, form the backbone of Romania's energy transformation. Investments needed to achieve the objectives of the Romanian Energy Strategy are estimated at EUR 127 billion overall from 2021 to 2030 (annually around 6% of current GDP), mostly in energy demand sectors. At the same time, Romanian authorities have allocated a budget of EUR 457.7 million for a new renewables procurement practice. Selected wind and solar projects will be granted rebates ranging from EUR 0.425 million to EUR 1.3 million per MW installed.[28]

26 European Commission, 2011.
27 URBIO, 2020.
28 International Trade Administration, 2022.

The Romanian Government is supporting rooftop PV deployment via its Casa Verde Fotovoltaice (green PV home) scheme for residential solar installations, under the national net metering regime, that by the end of 2020 resulted in 1.39 GW of solar installed in the country. The use of Regenerable Sources of Energy (RES) is also promoted through a Regional Operational Program (ROP) for installation of photovoltaic systems for electricity production, in relation to covering the necessary consumption and delivery of surplus in the national network.

Another perspective worth taking is Romania's promising biomass potential and the numerous ongoing projects focusing on this. On the other hand, the sustainability of the Romanian biomass is vexing, since the country increased its production of liquid biofuels, biogas, conventional biofuel, and biodiesel.

At the same time, there seem to be good opportunities regarding wind energy, since the Romanian Association for Wind Energy (RWEA) launched RESInvest, a program that helps investment opportunities in this area based on an EU funded capacity of 3,000 MW.[29] This means that in the future there could be significant companies relocating to Romania, manufacturing equipment for renewable energy installations and training qualified personnel for the operation, maintenance, and repair centres.

However, the main category of renewable energy production in Romania is clearly hydropower energy. Hydroelectricity is the second most important source of electricity generation in the country, after fossil fuels. With the country's abundance of rivers, the hydropower potential in Romania is even greater than that used currently, the estimated additional potential countign for more than 9 GW.

The Romanian hydro power plants are owned by Hidroelectrica SA, a leading company in electricity production and the main provider of technological services required in the National Energy System in the country. Hidroelectrica SA is also the most valuable company in Romania right now, EUR 10.3 billion, according to Fondul Proprietatea's latest valuation, as of Hidroelectrica SA`s IPO in July 2023.[30]

The minority shareholder next to the state, Fondul Proprietatea (which is also partly owned by the Romanian state) decided to go public and list the shares of Hidroelectrica. The Initial Public Offering (IPO) that unfolded on the Bucharest Stock Exchange (BVB), through which Fondul Proprietatea sold its entire 19.94% stake in Hidroelectrica shares for 9.28 billion RON (1.87 billion EUR), was the largest in Europe and the third largest in the world in 2023.

The company's shares debuted at the Bucharest Stock Exchange with an initial price of 104 RON (€21.87) per share, and the valuation rose during trading due to strong investor demand.

This event foresees positive changes for Romania, it is expected to significantly increase its stock market and its liquidity. Hidroelectrica's IPO will bring Romanian assets to the attention of large international investment funds. Never before have

29 Ibid.

30 Also other financial details see: Bursa de valori București, 2023.

foreign institutional investors been offered the opportunity to make such a large bet on Romania. At the same time, Hidroelectrica has a history of continuous growth, with record profits in recent years from the rise of electricity prices. It's also the biggest power producer company in Romania, a country that currently faces an electricity deficit, which makes it a rather safe bet. Moreover, Hidroelectrica's capacities are mostly hydropower plants, which fit well into the EU drive to lower CO_2 emissions. On the other hand, other listed Romanian companies could benefit from this, because after a major investment fund buys Hidroelectrica shares, it will start looking more closely at what other Romanian assets are available. In particular, energy companies such as Nuclearelectrica, OMV Petrom, and Romgaz could also get to see a boost of interest from investors. In addition, Hidroelectrica's IPO is also a perfect opportunity to boost Romanian people's interest in the stock market.

The number of Romanian individual investors buying stocks on the Bucharest Stock Exchange has remained relatively low in recent years, in spite of the positive market evolution. The current number of trading accounts on the Bucharest Stock Exchange is lower than 100,000. By comparison, some estimates indicate that around one million Romanians may be investing in cryptocurrencies, however, the current economic context with high inflation and significant corrections for risky assets could determine more local investors to look at safer alternatives. Lastly, the IPO of Hidroelectrica is also good news for the pension of Romanian citizens. While the number of individual investors on the Bucharest Stock Exchange is low, over 7 million Romanians are indirectly investing in Romanian stocks through pension funds. The seven mandatory pension funds currently manage assets worth around EUR 19 billion, and they are constantly on the lookout for more investment options.

7. Energy Transmission

From the European Union's point of view, improving cross-border energy interconnections is an important area to improve. Having different resources and different climates, member states produce different types of energies, that need to be transmittable across countries. With a system focused on this, countries in need could easily get power from states with energy surpluses. This is also important when a power plant fails, or during extreme weather conditions, that EU countries are able to rely on their neighbours to import the electricity they need. Without a good transmission infrastructure, it would be impossible to buy and sell electricity across borders. For this purpose, the European Union set an interconnection target of at least 15% by the year 2030, to encourage EU countries to interconnect their installed electricity production capacity. To achieve this target, the European Commission set up an expert group on electricity interconnection in 2016, which is made up of 15 experts from industry organisations, academia, and NGOs, as well as the

Agency for the Cooperation of Energy Regulators (ACER), and the European Networks of Transmission System Operators for Electricity and for Gas (ENTSO-E and ENTSOG). This group's mission is to provide technical advice and to present reports, including on the interconnection capacity in the EU, and the public acceptance of the implementation. The 2030 target proposed to be implemented by the Commission was based on this group's recommendations, as outlined in the Communication on strengthening Europe's energy networks.[31]

Taking a look at the electricity transmission system in Romania and the interconnection system with its neighbouring countries, it becomes evident that it is managed and operated by one company, Transelectrica SA. Transelectrica SA is the only operator providing the services of electricity transmission of the Romanian Power System and electricity market administration, such domains being considered as a natural monopoly under the law. The company is majority state-owned.

Activities like the generation or distribution of electricity are totally segregated from the transmission system and the system operational services. The power generated is transmitted from the producer to the consumer in a safe way, the act of electricity transmission is carried out through the power grid, using overhead and underground power cables. The distribution network delivers high (110 kV), average (20 kV), and low (0.4 kV) voltages, whereas the transmission network delivers the highest voltages (220 and 400 kV).

The five major electricity suppliers that are active in Romania are Enel Energie Muntenia, Enel Energie, CEZ (currently Macquarie Infrastructure and Real Assets – MIRA), Electrica, covering different regions, and E.On. As of July 2021, there were 176 licensed gas suppliers and licensed electricity suppliers, 14 of these licensed for both. In 2019, over nine million users were connected to power grids through eight licensed distribution system operators (54.72% in urban areas: e-Distributie Muntenia, e-Distributie Banat, e-Distributie Dobrogea, Distribuție Energie Oltenia, Delgaz Grid, SDEE Muntenia Nord, SDEE Transilvania Nord, SDEE Transilvania Sud).

8. Conclusions

To sum up the information presented, Romania's perspective regarding the European Union's energy policy is shaped by its own energy challenges and aspirations. The country has made significant strides in recent years to align its energy sector with the standards and objectives implied by the European Union. It has prioritised

31 European Commission, 2017.

energy diversification, increased renewable energy deployment, and improved energy efficiency. Moreover, Romania's energy policy is influenced by its historical energy dependence, particularly on Russian natural gas, and its efforts to enhance energy security through alternative supply routes and sources, an ambition which was amplified by the Russian–Ukraine conflict.

The country's rich energy resources, commitment to diversification, and active engagement in regional cooperation all provide a solid foundation for its continued contributions to European Union's energy landscape. By seizing opportunities for collaboration, both within the European Union, and with neighbouring countries, Romania can enhance its own energy security while advancing the broader goals of the European Union's energy policy framework. Together, through cooperation and shared responsibility, Romania and the European Union can build a sustainable and resilient energy future to the benefit of all.

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