Energy Without Russia

The Consequences of the Ukraine war and the EU Sanctions on the Energy Sector in Europe
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Energy Without Russia: The Case of Romania

The Consequences of the Ukraine War and the EU Sanctions on the Energy Sector in Europe

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INTRODUCTION

Romania has been enjoying one of the most diversified energy mixes and low import dependencies in the European energy sector for years. While the carbon intensity of the economy has remained high, indigenous oil, gas, and coal resources have kept Russian import dependencies at relatively low levels – at 17 per cent on average. Oil dependency was slightly higher in 2020, the last year for which full data is available, at 37 per cent, while gas remained low at 15.5 per cent and coal even lower, at 11.8 per cent. While it was traditionally a net electricity exporter, in the past three years Romania turned into a net importer, yet no electricity was sourced from Russia. Consequently, the greatest consequence of the Russian invasion in Ukraine was not related to security of supply, but to price stability. While gas and electricity prices had been on the increase 3 to 6 months before the conflict, immediately in the aftermath of the invasion they rose dramatically and even quadrupled, as was the case with wholesale electricity prices. With low administrative capacity to properly target vulnerable energy consumers, the Government put in place a complex, volatile and very expensive price regulation system in all segments of the market. Supplier losses, forced to sell at end-user regulated prices (a cap) were offset by government compensations, covered through extraordinary levies raised on the windfall gains of electricity producers, irrespective of their fuel source. Despite not enacting any mandatory energy savings targets, the latest data indicate that final energy consumption decreased significantly, by up to 20 per cent in segments such as public lighting. Russian imports, particularly coal and gas, decreased dramatically, while market players also claim to have diversified oil and oil products supply sources. It is quite clear, nonetheless, that right before the embargos set in, significant oil imports from Russia were made. Renewables are advancing slower than expected, due to legislative unpredictability and low investor confidence. In international and European dialogue processes, Romania shows commitment towards renewables and hydrogen, while stressing the role of indigenous gas as a bridge fuel for transition and of nuclear energy as an important piece of the decarbonisation puzzle.

Figure 1
Imports from Russia in gross available energy, EU, 2020

Source: Eurostat, Including estimates for non-reported data for countries with*
Romania has been taking great pride in its diversified energy mix and low import dependency in the energy sector. This has resulted in high energy resilience and security in the aftermath of the war in Ukraine.

In 2021 the energy mix stood as follows: oil and oil products (36 per cent), natural gas (30 per cent), coal and coal products (14 per cent), renewables (12 per cent), and nuclear (8 per cent). In the same year, the electricity mix was: renewables, biofuels and biomass (48 per cent), nuclear (19 per cent), solid fossil fuels (17 per cent), and natural gas (16 per cent). In precisely the month of February 2022, the electricity mix was as follows: natural gas (23.27 per cent), hydropower (21.87 per cent), nuclear (20.37 per cent), coal (16.16 per cent), wind (15.76 per cent), solar (1.32 per cent), and biomass (0.4 per cent). According to the National Statistical Institute, in 2021 the energy dependency (a Sustainable Development Goal indicator in Romania) was 32.6 per cent, having increased gradually from 2016, when it stood at 21.6 per cent, to 23.9 per cent in 2017, 25.5 per cent in 2018, 25.7 per cent in 2019, and up to 30.5 per cent in 2020. Distinctly by fuel, the energy dependence in 2021 stood at 26.2 per cent for coal, 67.9 per cent for oil, and 25.4 per cent for gas. Gas had faced the sharpest increase, from merely 11.4 per cent in 2017 to 23.7 per cent in 2020 and 25.4 per cent in 2021, due to a reduction in internal natural gas production. During the same interval, while gas dependency more than doubled, gross internal natural gas consumption remained relatively steady.

Traditionally a net electricity exporter, Romania has shifted in the past few years towards becoming a net electricity importer. In 2022 this switch has brought a trade deficit of over €640 million, as Romania imported approximately 1.3 TWh. Two thirds of the imported electricity originated in Bulgaria, while the most of the remaining amount came from Hungary. Small quantities were also imported from Serbia, Ukraine (about 4 per cent of the total electricity imported), and Switzerland. On average, wholesale prices for imported electricity were approximately 10 per cent higher than exported electricity. 2022 was the fourth year in a row that Romania was a net electricity importer rather than an exporter, although quantities were approximately 50 per cent lower than in the previous year.

In February 2022, Romanian gas imports represented 29.18 per cent of its consumption (approx. 24 per cent from Russia and 4 per cent from other sources, namely the CEE markets, via the interconnector with Hungary), while domestic production stood at 70.82 per cent.

Romania is one of the few EU countries with indigenous oil production (3,195 thousand tonnes in 2021, representing about 18 per cent of indigenous oil production in the EU27), covering approximately 30 per cent of its internal consumption. Consequently, it also has one of the lowest oil import dependency rates in the EU, of approximately 70 per cent, compared to about 92 per cent at EU level. In 2021, the latest year for which Eurostat data is available, Romania was importing 11,432 thousand tonnes of crude oil and oil products, out of which 3,745 thousand tonnes came from Russia – meaning that Russian imports totalled approximately 32 per cent of all of Romania’s oil and oil products imports. This, from a total crude oil and oil products consumption of 20,530 ttoe in 2021, Romania had a Russian import dependency of 18 per cent. The rest of the crude oil and oil products imports were coming from mainly from Kazakhstan (slightly more than from Russia), but also Azerbaijan, Turkey and several EU countries (for oil products).


As far as solid fuels are concerned, Romania also has a sizeable amount of its internal consumption covered from indigenous sources. In 2021, 89 per cent of the total inland consumption of 19,819 thousand tonnes was covered from indigenous production (17,733 thousand tonnes) and the remaining 11 per cent from imports. Out of the 1,611 thousand tonnes it imported, 1,024 thousand came from Russia (63 per cent). Thus, before the war, with regard to fossil fuels, Romania had an import dependency on Russia of about 5 per cent.

All in all, dependency on Russian energy imports for Romania, before the Russian invasion in Ukraine, was highest for natural gas (24 per cent in February 2022, according to data reported by ANRE), followed by crude oil and oil products (18 per cent in 2021, according to Eurostat) and solid fuels (5 per cent in 2021 according to Eurostat). Romania did not import any electricity from Russia.

According to earlier average yearly data that had comparatively assessed the Russian import dependency of EU Member States, in 2020 Romania had the following Russian import dependency rates (Figure 2).

It should be noted that these 2020 data are Eurostat estimates, due to a lack of clear statistical communication channels. They are also significantly different from the latest available data (see above) before the Russian invasion in Ukraine, either communicated to Eurostat or reported at national level. Thus, right before the invasion, Romania had a higher natural gas dependency and a lower coal dependency than in previous years, while oil dependency remained stable.

Romania’s economy is definitely less based on electricity than the rest of the EU Member States. In 2021, out of the main fuel groups available for final consumption, electricity represented only 15 per cent, while oil and oil products were 35.9 per cent, natural gas 26.1 per cent, and renewables and biofuels 14.7 per cent. In the EU27, these percentages are slightly different, with electricity representing 20.8 per cent of the energy available for final consumption, oil and oil products 38.9 per cent, natural gas 21.9 per cent, and renewables and biofuels 10.7 per cent.

According to the National Statistics Institute, the primary energy production was divided between natural gas (7,425 toe), oil (3,232 toe), coal (3,006 toe) and electricity from hydropower, wind and solar (2,241 toe). While electricity from hydropower, wind and solar enjoyed a 6 per cent increase in the primary energy production from 2020, coal had an even steeper growth, at 16 per cent.

In 2021 final energy consumption increased by 7 per cent compared to the previous year. Out of 25,370 toe of final energy consumption, agriculture and forestry represented 2.2 per cent, manufacturing 26 per cent, transport 27 per cent, households 34 per cent and other branches of the economy 8.7 per cent.

Given the higher dependency on Russian imports with regard to natural gas and oil, the electricity production sector was hit least by the conflict in Ukraine; to a lesser extent, this also applies the services and manufacturing sector in general, as they are also quite reliant on electricity consumption. The same cannot be said about households, as many rely on gas for winter heating and, due to chronic underdevelopment of the railroad infrastructure, also on diesel cars and buses. However, as the Romanian electricity market is interconnected with the European one, the electricity price hikes on the European markets quickly reverberated in Romania, accentuating an increasing trend in electricity prices that had started about six months before the invasion, thus affecting households from multiple directions.

![Figure 2](image-url)
Reducing import dependency had been a central element of national energy policy even before the Russian invasion. According to draft National Energy Strategy and public statements by Romanian officials, some of the main planned measures to reach this objective had been: the promotion of nuclear energy and further stimulating investments in new nuclear reactors, including SMRs (small modular reactors); encouraging indigenous gas production in the Black Sea; supporting the diversification of natural gas supply routes by encouraging the development of BRUA and the Southern Gas Corridor; and encouraging hydrogen development.

In summer 2023 wholesale electricity prices reached all-time highs, with prices on the local wholesale exchange being even higher than in Western Europe. Thus, in August 2022, wholesale electricity prices reached €490/MWh, then gradually dipped to €200/MWh in October 2022, only to increase again to €247/MWh in October 2022 (Source: Ember). Wholesale natural gas prices also started to increase gradually, from under €20/MWh in February 2021 to approximately €70/MWh immediately in the aftermath of the Russian invasion. Nonetheless, it should be noted that both electricity and natural gas wholesale prices had started their upward slope 3 to 6 months before the Russian invasion in Ukraine.

As mentioned in the first section, Romania enjoys significant domestic production, so the immediate concern was not related to security of supply, but to energy prices, particularly due to the price evolution which had begun to be worrisome even before the conflict. As a result, the government started a long series of subsequent legislative decrees capping prices for certain categories of consumers and compensating the suppliers through extraordinary levies on the excessive profits on the part of energy producers.

The first piece of legislation meant to address rising energy prices was issued on 18 March 2022 (EGO 27/2022). It capped end-user prices to 0.68 RON/kWh for households with an average monthly consumption below 100 KWh in the previous year, 0.8 RON/kWh for households with an average monthly consumption between 100 KWh and 300 KWh, and to a maximum of 1 RON/kWh for non-households. It also capped natural gas prices for the final consumer: to a maximum of 0.31 RON/kWh for households (irrespective of consumption levels) and to 0.37 RON/kWh for non-households with an average yearly consumption below 50,000 MWh and for heating producers delivering thermal energy to households. These price caps were supposed to last between April 2022 and March 2023. The system also entailed a fixed supply tariff and a mechanism for the compensation of suppliers for the price difference between the energy purchased on wholesale markets and the energy supplied to end-users at regulated prices. Other components of the price were also regulated. Romania took advantage of its privileged position as a natural gas producer and mandated all domestic producers to sell at a fixed price the gas quantities meant to be further sold to households (€30/MWh for direct household consumption and €50/MWh for gas meant to be processed in thermal power plants serving households). Furthermore, the Government also took advantage of its privileged position as a majority shareholder in electricity production companies to mandate by law that these companies answer to domestic suppliers’ demands rather than export the electricity produced.

This mechanism was meant to be financed by an extraordinary levy of 80 per cent on power producers applied to the extra gains resulted from the extraordinary market circumstances. This extraordinary levy came on top of a levy enacted since 2013 on oil and gas producers that had benefited from market deregulation.

Soon after it was issued, ad hoc corrections started to be enacted and added to the scheme, sometimes at two-week intervals, demonstrating the low capacity of national public authorities to enact robust, data-driven policy measures and a low capacity to build public buy-in and stakeholder consensus. New categories were added to the scheme, so that they could benefit from the lowest cap (e.g., families with three children, single-parent families, clients who use medical devices, etc.). The cap got extended to all households, irrespective of consumption levels, but in a progressive fashion – i.e. the lower the consumption, the lower the cap. Nonetheless, even the highest household consumptions were capped at RON 1.3/kWh. More and more enterprises and large consumers were also added to the scheme, besides SMEs, such as public utilities operators, food industry players, public authorities, national research institutes, hospitals, churches, etc. – with most of them enjoying a cap at about RON 1/kWh (the approximate equivalent of 25 eurocents).
In December 2022 the scheme was extended until March 2025.

Ad hoc responses not related to prices, enacted from the very beginning (in EGO 27/2022 from March 2022) comprised obligations for gas suppliers to store, between 1 April 2022 and 31 October 2022, at least 30 per cent of the gas quantities estimated to be consumed by households.

Thus, by and large the main ad hoc response of the government was a re-regulation of all segments of the market, through a cap and compensation system, which included mandatory centralised electricity purchasing and which turned out to be quite costly. All in all, the system meant a public expenditure of approx. €2 billion in 2022 alone. At the same time, the government collected slightly more through the extraordinary levy paid by energy companies. The taxes that were collected fed not only suppliers’ compensations, but also cash transfers not related to energy, directed at the lowest income citizens as a cushion for rising inflation.

At the end of 2022 a new tax was introduced, titled a “Solidarity Contribution”, based on Council Regulation (EU) 2022/1854 of 6 October 2022 on an emergency intervention to address high energy prices. It was strongly opposed by industry, as they were claiming that the sector is already excessively taxed. Yet the government went ahead with it and changed it several times to ensure that all market players were covered. The destination of the levy is supposed to be new, low-carbon investments in the energy sector, but analysts and industry players fear it will only be used to cover the budget deficit. As a matter of fact, in spring 2023 it was amended in Parliament so that the money collected will be used for direct transfers to vulnerable consumers.

Evaluating the degree of success of the measures enacted depends on the success indicator used. Indeed, consumers were shielded from increased energy prices, but a fact-based targeting of vulnerable energy consumers was lacking. Energy demand reduction measures were also not enacted and as a matter of fact European Commission proposals in this direction were thoroughly rejected by national decision-makers, invoking national sovereignty over energy matters, the fact the energy consumption per capita is already low compared to the European average, well-being concerns for the citizens, etc.
Reduced dependency on Russian imports, as evidenced in section 1 above, meant that the practical impact of sanctions on the country’s energy consumption and production were not drastic.

Additionally, the embargo on Russian oil and oil products came very late – the former in December 2022, the latter in February 2023. Market players had a lot of time to diversify supply sources. In the run-up to the oil embargo, Romania increased its oil imports by over 30 per cent (2022 compared to 2021), and approximately 35 per cent of the oil came from Russia. Over half of the oil imports in 2022 came from Kazakhstan and investments in oil pipes refurbishment to be able to bring in increased quantities from Kazakhstan (shipped via the Black Sea) also occurred in 2022. The 2022 ramp-up in oil imports supported players in avoiding a scarcity of oil and oil products in 2023 (as Romania still has significant local refining capacity). Oil refiners also adjusted their refining technologies to be able to process non-Russian oil. Despite the crisis, domestic production continued its decline (by 6 per cent in 2022 compared to 2021). Oil imports from non-traditional partners increased, namely from Tunisia and other North African countries, but also India as well.

Despite having low refining capacity for diesel and thus having to import diesel in significant quantities, Romanian oil and gas players diversified supply routes and sources for diesel too, and so far have been able to overcome the February 2023 embargo. Oil prices, despite remaining high, began to stabilise in the past six to eight months. What helped earlier in the year was a 20-cent rebate per litre, offered to all drivers in gas stations.

On the other hand, Romania was able to increase domestic gas production and, benefitting from a relatively warm 2022/2023 winter, managed to keep domestic consumption under control as well. A huge focus on storage throughout the warm season also helped. In November 2022 Romania had accumulated in underground storage three times more natural gas than in November 2021. Consumption also decreased under the same period analysed by 20 per cent. These cumulative factors (mild winter, focus on storage, lower consumption, etc.) helped imports reach all-time lows in January and February 2023.

While the full energy balance for 2022 has not yet been released by the National Statistical Institute (most likely the full picture for 2022 will be available in autumn 2023), the quarterly comparison between Q1/2022 and Q1/2023 is surprising. While dependency on Russian imports was not negligible for coal either, good fundamentals for renewables, especially hydropower, decreased primary coal consumption by 20 per cent in the first three months of 2023, out of which the coal imports (all from Russia) decreased by almost 80 per cent. The aforementioned ramp-up in oil imports (from Russia before the embargo and from diversified sources after the embargo) became evident, as net oil consumption (including storage) increased by 18 per cent over Q1/2022, and oil imports by 28 per cent. Domestic natural gas consumption increased by 7.2 per cent, while imports decreased by over 70 per cent. Romania resumed its status as net electricity exporter, at least on a quarterly basis, with an increase in renewable and nuclear electricity production of 8 per cent. Coal and gas-fired electricity production decreased by 8 per cent, but so did wind-based electricity production (by 3 per cent) and PV (by 15 per cent). Hydropower instead skyrocketed, with a 40 per cent quarter-to-quarter increase in production. Final energy consumption decreased by almost 8 per cent, with the sharpest decreases being in public lighting (20 per cent) and in household consumption (15 per cent). While no mandatory saving measure was enacted for any market segment, not even for public institutions, local municipalities took voluntary measures; in addition, house-holds and businesses, due to fear of high energy bills and well-orchestrated communication campaigns by private players, also managed to reduce their consumption.

All in all, despite not leading to the enforcement of any binding final energy consumption reduction targets in any market segment, consumers’ behaviours shifted, and effective public policy at the level of public buildings administration led to significant energy savings. Domestic gas and coal production did not increase to make up for the lost imports from Russia, but instead renewables displaced coal; favourable weather conditions, combined with stricter storage obligations, led to a promising outlook for 2023. Wind and solar PV did not grow as expected, and the “saviour” of the national energy system turned out to be state-owned hydroelectric producer Transelectrica.

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7 Quarterly Q1 energy balance report for 2023 was issued by the National Statistical Institute on 15 May 2023, and is available at https://inss.e.ro/cms/sites/default/files/com_presa/com_pdf/energie03r23.pdf (Last accessed 15 May 2023).
Price regulation across the board kept end-user energy prices under control, but the price to pay has been significant: all gains from private players are feeding a complex and cumbersome cap and compensation system instead of being directed towards new investments in indigenous production, new technologies, and security of supply.
In the medium-run, new supply sources have been identified for oil and oil products (North Africa, Kazakhstan, India) and while the not-so-secure Black Sea route is used for these imports, domestic oil pipelines and even cross-border ones (e.g. with Bulgaria) were reinforced to be able to support the diversification. While it is too early to tell, as full statistics are not public, plausible media reports are talking about high oil and oil products imports right before the embargos came into force. Still, positive structural changes did occur, such as transformations in several local refineries to be able to work with non-Russian oil. Gas supply diversification has not been so spectacular, yet notable developments did occur with the Southern Gas Corridor. With the onset of the conflict, Romania accelerated the finalisation of the domestic segment of the BRUA pipeline and also of the interconnectors with Bulgarian and Hungary. High-level diplomacy, particularly with Azerbaijan and Turkey, intensified and state-owned natural gas company Romgaz signed a Memorandum of Understanding with Azeri company SOCAR to import Azeri gas to Romania (approx. 1 billion cubic meters per year). Still, given Turkey’s insatiable appetite for natural gas and the competition over Azeri gas from EU Member States much more dependent on Russian gas imports than Romania (i. e. Bulgaria), the actual import of such a vast quantity remains in question.

While there is still no officially adopted renewable energy strategy, and the National Integrated Energy and Climate Action Plan is still under revision, the Recovery and Resilience Plan (RRP) has oriented energy policy in Romania towards decarbonisation and intensification of electricity production from renewable sources. Hydrogen is favoured across the board and authorities are seeking to adopt a National Strategy for Hydrogen. At least at a discourse level, coal phase-out is still on the agenda with 2032 as end date for the closure of mines and thermal plants. Still, as 2024 is an electoral year (with local, parliamentary, presidential and European Parliament elections taking place in the same year) the most significant closure actions are planned for after 2025. What is nonetheless more worrisome is that, despite the EC-approved restructuring plans of Romania’s largest coal mine and thermal power plant production complex, Complexul Energetic Oltenia, over a year ago, with coal-fired capacity scheduled to be replaced by gas-fired capacity and solar PV, no concrete steps towards the needed investments have been made to date. Romania has also announced a carbon neutrality deadline – 2050 – which means that financial incentives for renewables investments, as well as foreseen regulatory changes (e.g. contracts for difference) are planned. Nonetheless, political leaders still stress the importance of natural gas and nuclear energy as transition fuel, respectively as backbone of the electricity production system. As a matter of fact, Romania’s negotiating positions at EU level comprised strong support for the inclusion of these energy sources in the EU green taxonomy. The prosumer movement was also incentivised and, despite the lack of new investments in large-scale wind and PV, over 500 MW were installed in the past two years by consumers (citizens, as well as businesses and public institutions and buildings).

According to RRP, Romania plans to install at least GW 6.9 additional capacities of electricity production based on renewable sources. By 2032, MW 4590 of coal capacity are expected to be phased out. By the end of 2023, MW 1500 based on renewable sources should be installed and another MW 2000 by 2025. Thus, Romania’s target value for 2026 is to have an electricity production capacity of MW 7408 based on renewable sources. Unblocking large-scale private investments and not just CAPEX subsidies is essential for reaching such an ambitious target, yet progress is stalling. As the state continues to be a significant player in the electricity production sector, it tends to favour incumbents (the national nuclear company, the national hydropower company) including attempts at weakening and even breaching environmental legislation as to encourage these energy sources.

Encouraging prosumers through subsidies and potentially through new favourable conditions in legislation seems to be, at the moment, the main energy consumption reduction strategy in place, rather than focusing policies and incentives on demand-side response and management, building retrofitting, etc. Nonetheless, the Renovation Wave from the European level also made its way in the Romanian RRP, with €2 billion dedicated to retrofitting collective housing. At least until the NECP revision, given its mandatory savings targets, no significant savings/consumption reduction target is envisaged.

Long-term planning is not too distinct from the medium-term planning described above, with the exception being that it is now widely admitted that natural gas is only a bridge fuel. Nuclear energy is seen as the backbone of
choice and plans for building two new nuclear reactors in addition to small modular reactors are very much on the table. Natural gas supply diversification strategies comprise first and foremost exploiting indigenous natural gas in the Black Sea, followed by diversification of routes and sources, primarily around Caspian Gas (Azeri gas first and foremost). Several legislative initiatives aimed at stimulating hydrogen development are being debated and Romania is also competing in EU flagship initiatives in this area.

The Government recently published for consultation its Long-Term Strategy (LTS) for reducing carbon emissions. The document proposes a scenario of choice, according to which Romania aims at becoming climate neutral in 2050, reaching a 99 per cent net emission reduction in 2050, compared to the 1990 level. To reach this target, the interim 2030 target of 78 per cent emission reduction, relative to the 1990 level, is entering the stage. As far as the energy sector is concerned, the scenario is optimistic: “The decarbonisation of the energy sector has already started, and in 2019 69 per cent of the 2050 goal was already achieved. By 2035, 98 per cent of the goal will have been achieved.” However, other fields are much more difficult to address. One case in point is transport, where emissions need to stop increasing and come down at an accelerated rate. The same scenario is valid for buildings, where emissions are poised to increase slightly by 2025, and then to start decreasing drastically. In this scenario, the RES share in the gross final energy consumption should reach 89.9 per cent in 2050 and 36.3 per cent in 2030. Even in this capacity new nuclear capacities are envisaged and all new CCGT and CHP plants are expected to be ready for green hydrogen by 2036.
Romania is expected to continue to advocate for hydrogen-ready natural gas infrastructure as bridge fuel and for nuclear energy as a decarbonisation tool. Depending on the number and magnitude of European allies in this positioning, it may gradually weaken its positioning, particularly if the Black Sea natural gas is not being given a green light with a final investment decision by summer 2023 or 2024. Low administrative capacity may hamper the rapid deployment of renewables but at least now, in contrast to a couple of years ago, the vision and willingness to move in this direction are present.