

THE IMPLICATION OF THE RUSSIAN INVASION OF UKRAINE ON THE EUROPEAN ENERGY SUPPLY

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Abstract: *The invasion of Russia into Ukraine is primarily a humanitarian concern, compounded by the energy crisis that has far-reaching implications for the European Union and other global regions. This paper reviews the implication of the Russian invasion of Ukraine on European energy security to provide an overview of the European energy dependency on Russian and how the sanctions levied by the EU affected the energy supply. Also, it offers some insights into alternative energy sources' role in providing more sustainable and autonomous energy sources.*

Keywords: Energy security; Russia-Ukraine war; Sustainable energy; EU's energy policy; European economies

JEL classification: F52; Q01; E31; Q43.

1. Introduction

In February 2022, Russia invaded and occupied parts of Ukraine. This event caused a decrease in the amount of gas that Russia exported to European Union countries. For many years, EU nations relied heavily on Russian gas supplies; however, this conflict made them question their energy security and political relationships with Russia as a partner nation. As a top natural gas supplier to EU countries for an extended period, this conflict raised concerns about energy supply security and political dependability as partners with Russia. (Mbah and Wasum, 2022).

In response to Ukraine's invasion, The European Union (EU), among other countries, has imposed harsh sanctions on Russia. Financial transactions are restricted, assets of Russia's main banks and chosen persons are frozen, exports of high-tech equipment to Russia are prohibited, and the country's skies and waterways are closed (Funakoshi et al., 2022).

EU countries have detailed intentions to reduce their energy dependence on Russia more quickly than previously thought (European Commission, 2022a). Countries began limiting Russia's fossil fuel exports in addition to targeting financial markets and service industries. Furthermore, foreign oil corporations such as Equinor, Exxon Mobil, and Shell are limiting their operations in Russia (Funakoshi et al., 2022). Almost a thousand multinational corporations stopped operating in Russia. Costing Russia 40% of its GDP, effectively undoing almost three decades of foreign investment (Sonnenfeld et al., 2022).

The continuing rise of energy prices is a significant concern for businesses amidst the energy supply disruption caused by Russia. The European Union continues to depend significantly on Russia's energy supply, specifically in gas and oil, constituting 25% and 40% of Europe's energy supply (European Commission, 2022). The diminished availability of these resources has already led to fuel rationing and escalated costs, thereby potentially affecting heavily dependent enterprises.

Therefore, Europe has been actively seeking ways to reduce its reliance on Russian-produced oil by diversifying energy sources like wind or solar power while investing more in other avenues, such as the Southern Gas Corridor that can transport fuel from Central Asia directly into mainland Europe via pipeline systems (Halser and Paraschiv, 2022).

2. European energy dependency on Russia

The gas consumption of the 27 member states of the European Union in the year 2021 amounted to 412 billion cubic meters. Gas is primarily utilized for the purposes of power generation, household heating, and industrial processes. Gas is utilized for heating purposes in more than 30% of households across the European Union. (Eurostat, 2023a)

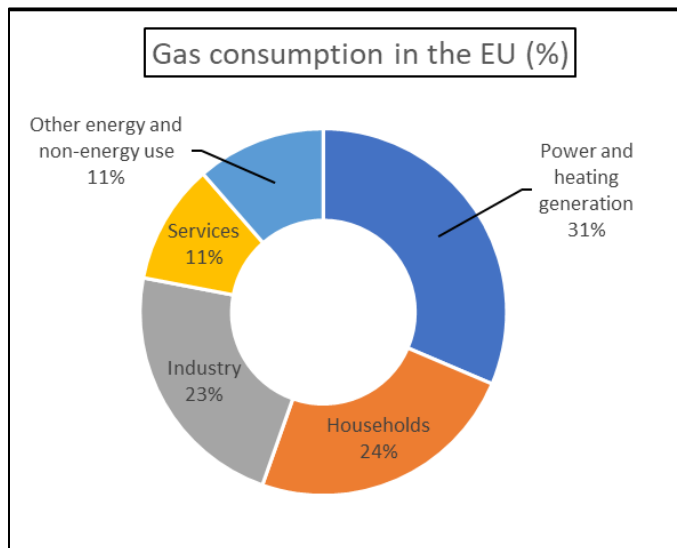


Figure 1. Gas consumption utilization in the EU, 2021

Source: From [Eurostat \(2023a\)](#)

The data in Figure 2 below indicates that Russia held the highest proportion of petroleum oil supply in the initial quarter of 2022, accounting for 26.0% of the total share. The invasion of Ukraine by Russia resulted in notable alterations in the distribution of primary partners due to a number of sanctions that had a direct or indirect impact on the trade of energy commodities. In the fourth quarter of 2022, Russia's proportion decreased by 16.0 percentage points in comparison to the first quarter of 2022, amounting to 9.9%.

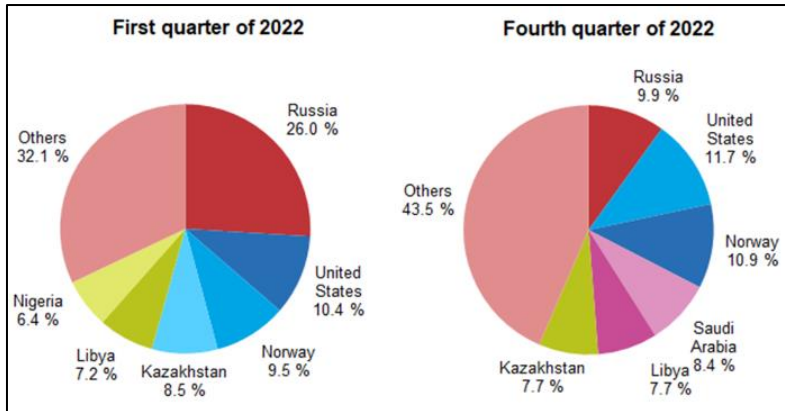


Figure 2. Extra-EU imports of petroleum oil by country, 2022

Source: From [Eurostat database \(Comext\)](#) and [Eurostat estimates](#)

The supply of natural gas from Russia progressively reduced after Russia invaded Ukraine and in light of sanctions implemented by the European Union. With a share of 31.3% in the first quarter of 2022, Russia was also the top natural gas supplier to the EU, followed by Norway (25.8%) and the US (16.1%) (see Figure 3). Russia's participation decreased by 15.5 percentage points compared to the first quarter of 2022 and was 18.8% in the fourth quarter. The shares of Qatar, Algeria, and the United Kingdom all climbed within the same time frame.

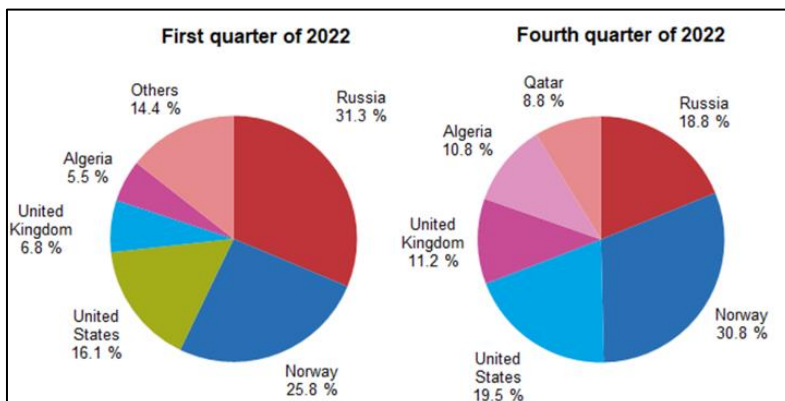


Figure 3. Extra-EU imports of natural gas by country, 2022

Source: From [Eurostat database \(Comext\)](#) and [Eurostat estimates](#)

24.4% of the energy used by the EU is imported from Russia. The proportion of each fuel in the energy mix and the reliance on fuel imports from a particular source determine how dependent a nation is on that nation for its energy needs. Although the critical sources of the EU's energy imports have varied in recent years, Russia has continued to serve as the EU's top supplier of all significant primary energy commodities, including natural gas, crude oil, and hard coal.

Energy dependency on Russia varies greatly depending on the nation due to its diverse energy mix and reliance on imports. Lithuania (96.1%) had the highest percentage of its EU energy demands met by imports from Russia in 2020, followed by Slovakia (57.3%) and Hungary (54.2%). Cyprus (1.7%) has the lowest dependence rate, followed by Ireland (3.2%) and Luxembourg (4.3%).

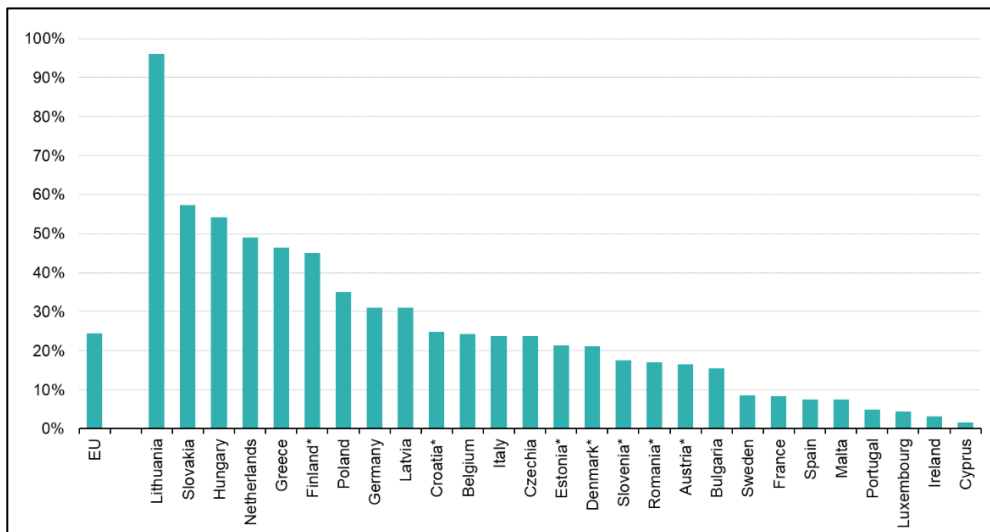


Figure 4. Imports from Russia in gross available energy, EU, 2020

Source: [Eurostat database](#), including estimates for non-reported data

According to the Eurostat (Crude oil imports and prices: changes in 2022, News Article). Between Q4 2021 and January 2022, the quantity of imports originating from Russia fluctuated between 39,657 thousand barrels and 49,698 thousand barrels, representing a proportion of 24% to 31% of the aggregate imports.

The incursion of Russia into Ukraine in February of 2022 had a notable effect on the importation of crude oil into the European Union. In the period spanning from February to April, we witnessed a volatile state of affairs in the domain of total imports, with figures of 33% and 30% pertaining to the same.

Between May and September of 2022, there was a notable reduction in the proportion of imports originating from Russia, which declined to 12% of the total imports and maintained a relatively stable trend after that.

The Council adopted the sixth package of EU sanctions against Russia in June, including a ban on importing Russian seaborne crude oil effective from December 2022. Commencing in September, imports gradually declined, ultimately resulting in a representation of 4% of the aggregate imports.

This decline was compensated by the increase in imports from other countries. Largely the United States and other sources like Libya and Kazakhstan.

3. Macroeconomic indicators

3.1. Energy prices

Crude oil prices are determined by two factors, namely, the spot market and the crude oil variety. Prior to the onset of Russian aggression towards Ukraine, crude oil prices remained relatively stable at approximately 80 US dollars per barrel, exhibiting minimal variation across different crude oil types (less than 4 US dollars per barrel).

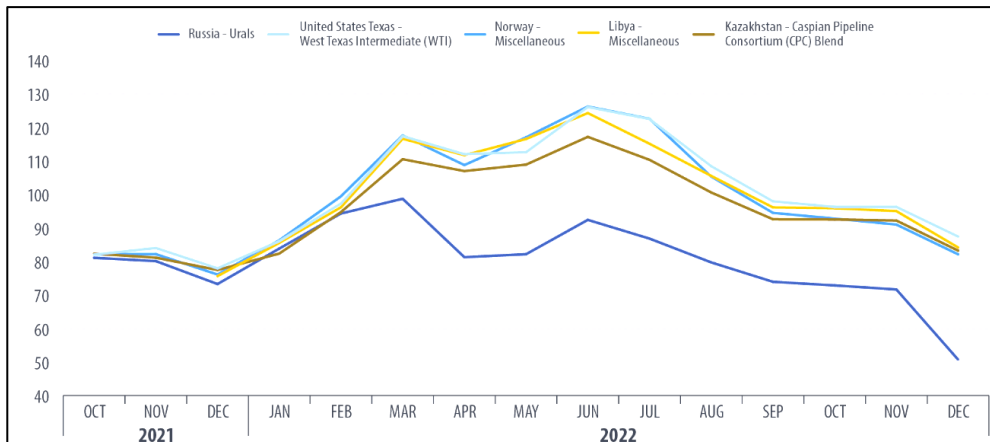


Figure 4. Price development of the 5 most important crude oils imported into EU, Average price – USD per barrel.

Source: [Eurostat database](#)

The market experienced high volatility due to the unstable geopolitical situation, resulting in a significant increase in crude oil prices from February 2022.

During March 2022, the price of Russian crude oil (Urals) was comparatively lower than other prevalent oil types, exhibiting a discount of around 16 US dollars per barrel in contrast to the mean price of the remaining four oil types. During the subsequent months, Urals crude oil from Russia was traded at a significantly reduced rate of approximately 30 US dollars per barrel.

Concurrently, the prices of alternative oil varieties began to exhibit more significant fluctuations.

During June and July 2022, the market showed lower stability, as evidenced by the price discrepancies among the four most prevalent oil types, ranging from 9 to 12 US dollars per barrel. These figures represent a three to four-fold increase compared to pre-war levels.

Towards the end of the year, a sense of stability was observed, as there was a decline in imports from Russia, a reduction in crude oil prices, and a decrease in price volatility. The European Union's primary crude oil providers comprised the United States, Norway, and Kazakhstan. This indicates that the EU successfully adjusted to the evolving oil market terrain and effectively eliminated its reliance on Russian oil.

3.2. Inflation and interest rates

According to the Deloitte European Chief Financial Officers study, many industries are impacted by this disruption of the supply chain. These industries countered that by diversifying their supply and localizing their supply sources. Strategic responses by manufacturers to supply chain disruptions have centered on increasing inventory levels. (Deloitte, 2022).

The increase in commodity prices fueled inflation; as of 2022, the European Union's average annual inflation rate almost reached 7%, coupled with reduced industries and enterprises capacity due to fuel costs increase. Figure 5 shows the spike in inflation, especially post-invasion.

Other factors hurting company performance include increasing interest rates due to skyrocketing inflation, which limits firms' ability to borrow money and reduce their investment activities. Rising energy costs also harm the trust of consumers and businesses.

Business confidence barely got back to normal as it recovered from the Covid-19 pandemic, just to significantly decline in 2021 due to the energy disruption caused by the war (Deloitte, 2022).

Overall, the energy price shock's potential to significantly disrupt spending and investment further amplifies its effects and limits growth prospects in the EU, with economic growth projected to be just 1.5% in 2023 due to high uncertainty caused by geopolitical risk and a decline in business confidence (European Commission Economic Forecast, 2022).

Moreover, the continuous increase in inflation negatively impacts the daily lives of people. Especially low-income households where energy and food make a significant portion of their consumption (Charalampakis et al., 2022).

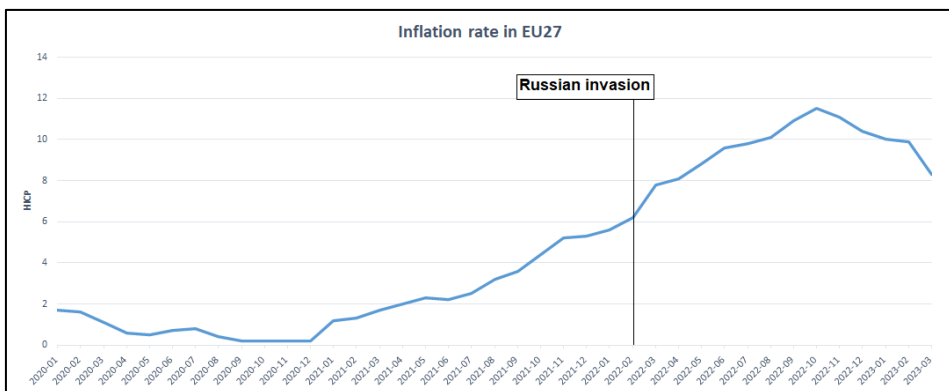


Figure 5. Price development of the 5 most important crude oils imported into EU, Average price – USD per barrel.

Source: [Eurostat database](#)

4. Alternative Energy Sources

On 18th of May 2022, The European Commission presented in Brussels the REPowerEU Plan, "A plan to rapidly reduce dependence on Russian energy sources and fast forward the green transition" As a response to the global energy market disruption caused by the Russian invasion of Ukraine in an effort to end Europe's dependency on Russian fossil fuels, which are exploited as economic and political weapons and cost taxpayers about billions of euros per year, and addressing the climate catastrophe is urgent (European Commission, 2022b).

The current responses reinforce the concept of a closely intertwined relationship between energy security, climate, and other factors in Europe. The REPowerEU strategy is centered on three pillars, two focused on sustainable energy: the acceleration of clean energy and energy savings. Regarding the pillar of accelerating clean energy transitions, the European Union has projected that renewable energy sources will supplant 20 billion cubic metres of gas imports by the conclusion of 2022.

As alluded to earlier, prior to the Russian invasion, the majority of gas imports to the EU came from Russia. Post-invasion and in light of the sanction on the Russian imports to the EU, wind, and solar played an important role in generating electricity to replace the deficit in gas. For the first time, in the EU, wind and solar energy sources generated more than gas. Figure 6 shows the share of electricity generation (%)

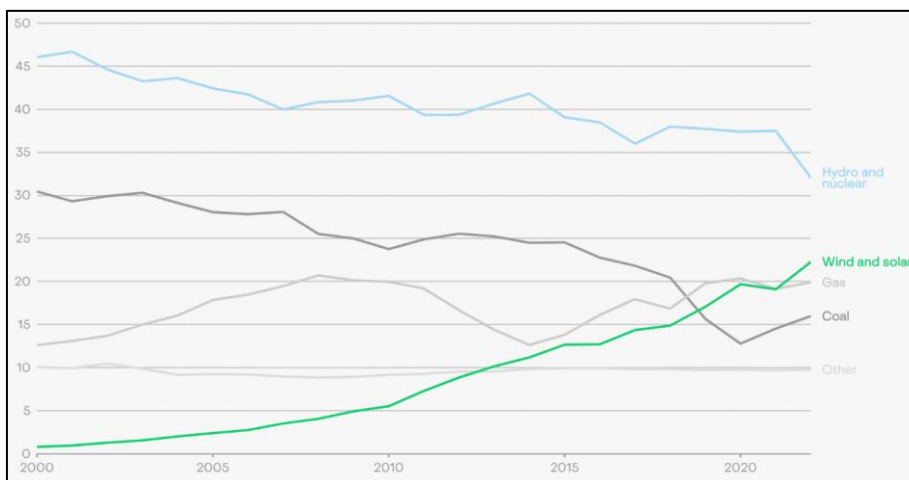


Figure 6. Share of electricity generation by the source of energy (%).

Source: [Ember Electricity Data Explorer](#).

The European Commission has implemented several measures to achieve its objective. These include increasing the 2030 renewables target to 45% from 40%, committing to a doubling of solar energy capacity by 2025, introducing a Commission Recommendation to address the issue of slow and complicated permitting for major renewable projects, and proposing an amendment to the Renewable Energy Directive to acknowledge renewable energy as a paramount public interest. In connection with this, it is worth noting that an extra EUR 29 billion will be allocated towards electricity projects of common interest, which include cross-border interconnected grid infrastructure. This investment aims to address the challenge of balancing increasingly variable grids (European Commission, 2022b). Several nations have recently declared significant modifications to their energy policies. For instance, Germany has pledged to achieve complete reliance on renewable electricity by 2035. Additionally, Denmark, the Netherlands, the United Kingdom, France, and Germany have disclosed plans to expedite the implementation of renewable energy projects (Rokkle N, 2022 & De Pous, 2022). Furthermore, Norway and Italy have unveiled new wind farm initiatives. Norway's proposed strategy to augment the number of wind turbines from the present two to 1500, with a capacity of 30 gigawatts, by 2040, indicates a shift in its renewable energy policy trajectory (Rokkle, 2022). The successful implementation of these renewable policies implies a significant expansion in Europe's utilization of solar, onshore, and offshore wind energy. The observed phenomenon pertains to a conspicuous hastening of prevailing patterns in sustainable energy (IRENA, 2022).

5. Conclusions and comments

In a nutshell, the invasion of Russia into Ukraine is primarily a humanitarian concern, compounded by the energy crisis that has far-reaching implications for the European Union and other global regions.

One plausible strategy for the European Union to address its dependency is prioritizing renewable energy sources and sustainability in energy policy. Expressing the pressing need to swiftly decrease reliance on Russian energy sources and accelerate the shift towards sustainable energy sources in REPowerEU Plan.

The current crisis has shifted political focus towards geopolitical supply security, but a greater emphasis on these other factors could help counter the EU's dependency. In light of this reorientation, implementing clean energy sources has surfaced as the most optimal resolution for ensuring long-term energy security in Europe, as demonstrated by the magnitude of recent pledges.

This mentioned shift in focus has shaped European policy decisions that have further compounded challenges related to energy affordability and accessibility. The current economic viability of renewable electricity has improved significantly due to a substantial price reduction. Finally, concerns regarding the security of short-term energy supply may prolong the utilization of coal and gas, and exacerbate the escalating global tensions concerning sustainable transitions, precisely when heightened international collaboration is imperative for achieving sustainable objectives.

This study has its limitation; from a methodology point of view, no analysis is made on the mentioned variable, which is something to be considered for future papers to view in detail the effect of the Russian invasion.

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