



Europe and Russia's Energy Problems in the Context of the Russian-Ukrainian War

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Abstract: Russia and Europe have very close economic relations. In 2020, Russia was the fifth largest trading partner of the EU, with the EU's trade with Russia accounting for 4.8% of its total foreign trade. Following the outbreak of the Russia-Ukraine conflict, political and economic relations between Europe and Russia have deteriorated significantly, and both economies have suffered as a result. International energy prices have risen sharply due to the uncertainty surrounding global energy supply, trade and transport. Here, using Nord Stream as an analytical example, we looked in depth at the Russian-Ukrainian conflict in the energy sector and the prospects for the development of the energy sector in the aftermath of the conflict, as well as the potential implications for other countries, such as Western Europe and the United States. We concluded that the Russian-European game reflects the power differential resulting from their unequal and compounded interdependence structure, which has been affected to some extent by the outbreak of the Russia-Ukraine conflict. As the implementation of alternatives between Russia and Europe accelerates, the interdependence between the two will tend to decline in the future. However, the Russian-Ukrainian conflict will hardly fundamentally change the mutual benefits of the Russian-European gas relationship, which will remain competitive and uncertain due to the security crisis, differences in energy security concepts between the two sides and interference from the US.

Keywords: Energy Sector, Europe and Russia, Knock-on Effect, International Energy Price, International Economics and Finance

1. Introduction

Russian-European energy cooperation has a profound history, from the post-World War II honeymoon period to the creation of a divide, and then to the complete confrontation between Russia and Ukraine after the conflict, through three historical stages [1]. The first phase was from 1965 to 2000: the honeymoon period of EU-Russia energy relations. Energy deals between the EU and Russia date back to the mid-1960s when some European countries traded gas with the Soviet Union. At this time Western European countries imported gas from the Soviet Union not only on a commercial basis but also as part of a policy of détente with the Soviet Union. Natural gas became an important area of trade to promote East-West European cooperation and thus

provide a sense of security for Europe on the front line of the Cold War. The second phase is 2000-2022: the cautious development of European-Russian energy relations [2]. As the 21st century progressed, the price of oil soared, from less than US\$10 per barrel in 1999 to US\$147 in 2008. The dramatic rise in crude oil prices raised concerns about energy security in the EU. At that time, the EU had a single source of energy imports, with 45% of its oil imports coming from the Middle East and 40% of its gas imports coming from Russia. At the same time, the EU lacked effective means to intervene in the international energy market, and price fluctuations in the energy market had a significant impact on the EU economy. In view of the rapidly rising energy prices, the European Commission has started to call for "a long-term strategy for the security of energy supply", and the EU's energy policy has changed from being oriented towards

economic interests to gradually incorporating more geopolitical factors and taking into account the issue of security of energy supply. The third phase begins in 2022 with the breakdown of the EU-Russia energy relationship, which has been brought to the fore again by Russia's special military operation against Ukraine. Unlike in 2014, when the EU still hoped to maintain cooperation, the EU showed a high degree of solidarity in response to this conflict, collectively condemning Russia's actions and imposing extremely severe sanctions, such as a ban on imports of coal, crude oil, and petroleum products from Russia in the energy sector (except for crude oil transported by pipeline), oil transport services, and a ban on exports of refining technology [3]. Meanwhile, although there is still no consensus on gas trade, the EU has made a high-profile commitment to cut gas imports to Russia by two-thirds by the end of 2022, and Germany, which has long advocated a policy of engagement with Russia, has announced that it will stop importing oil and gas from Russia altogether by 2024. Compared to the EU's sanctions against Russia in the energy sector following the Ukraine crisis in 2014, this time Europe's sanctions are more determined, more specific, and stronger.

Since the Russo-Ukrainian war, the issue of European energy security has become the most important issue for the EU. In order to stop Russia's military action in Ukraine, the EU intends to reduce its demand for Russian gas by two-thirds by the end of 2022, according to the European Commission's Joint Action on Affordable, Secure, and Sustainable Energy for Europe (REPowerEU). The EU has also embargoed coal and oil from Russia and is preparing to largely decouple from Russian oil. In response to a possible Russian 'gas cut-off' to the EU, EU members have also agreed to reduce gas demand by 50% by the winter of 2023. It is clear that the EU has subjectively mobilized comprehensive and extensive strategic resources to deal with Russia's energy supply problems in the wake of the 2022 conflict between Russia and Ukraine. At the same time, Russia has accelerated the diversification of its energy markets and taken measures to counteract EU restrictions and sanctions on Russian-European energy cooperation, further securitizing its energy strategy towards Europe. Prior to the Russia-Ukraine conflict, major energy deals had already been signed between Russia and China, with CNPC and Gazprom signing a Far East gas purchase and sale agreement in February 2022. As a result of the energy embargo, Russian energy prices were lower than international market prices and both China and India have since increased their purchases of Russian crude oil [4]. In the aftermath of the Russia-Ukraine conflict, both Russia and Europe have taken substantial steps to securitize their energy relations, resulting in an imbalance between energy supply and demand and a spike in energy prices, which has had a knock-on effect on the already inflationary EU and the rest of the world. This has had a cascading effect and security implications for the EU and the rest of the world.

This paper shows the performance of the energy game

between the EU and Russia with the analysis of the causes and measures from both the EU and Russia to find the best solution in an unstable situation. By using Nord Stream as an analytical example, we looked in depth at the Russian-Ukrainian conflict in the energy sector and the prospects for the development of the energy sector in the aftermath of the conflict, as well as the potential implications for other countries, such as Western Europe and the United States. We concluded that the Russian-European game reflects the power differential resulting from their unequal and compounded interdependence structure, which has been affected to some extent by the outbreak of the Russia-Ukraine conflict. As the implementation of alternatives between Russia and Europe accelerates, the interdependence between the two will tend to decline in the future. However, the Russian-Ukrainian conflict will hardly fundamentally change the mutual benefits of the Russian-European gas relationship, which will remain competitive and uncertain due to the security crisis, differences in energy security concepts between the two sides and interference from the US.

2. The Manifestation of the Energy Game Between Europe and Russia

The nature of the Russian-European gas game is a conflict between Russia's desire to stabilize and expand its share of the European market and the EU's desire to reduce its dependence on Russian gas [1]. The two sides have been engaged in a long-running debate over gas trading mechanisms, pipelines and transport management in order to gain an advantage.

2.1. Trading Mechanisms

Trading mechanisms: Russia's interests are better served by long-term gas contracts, which are supply-side-oriented mechanisms whereby the price of supply and the volume of trade are negotiated. It is also in Russia's interest to be able to sell gas at higher prices on a stable basis. In addition, long-term contracts have a financing function and provide a stable source of funding for Gazprom's ongoing investments. In the context of low international energy prices, long-term contracts will not only ensure Russian energy export revenues but also secure the market share of Russian gas in Europe and prevent the impact of unforeseen events on Russian gas exports [5]. In addition, the use of this mechanism would allow Russia to meet the challenges of other gas-exporting countries, and therefore Russia's energy strategy favors the use of long-term contracts for gas trading.

For Europe, it is more in its interest to use short-term contracts, which are demand-side oriented. In the context of increasing global gas supply, the gas trading pattern will gradually evolve into a "buyer's market", and lower gas prices should be a long-term trend. The EU is also aware of this, and the European energy market, dominated by the oil and gas peg, is characterized by a single source and little

price variation. The EU's high dependence on Russia for its gas sources and the introduction of long-term contracts has led to the EU being in a passive position when it comes to trading, with EU energy companies having to bear the losses arising from the difference between "purchase" and "sale" prices on the one hand and the loss of bargaining power on the other [6]. Therefore, the EU urgently needs to adopt short-term contract trading mechanisms in order to gain an advantageous position in natural gas pricing in Europe and to increase the diversity of import sources, and through short-term corporate trading mechanism, the EU can buy natural gas at lower prices, which can effectively reduce energy expenditure.

2.2. Russia's Consideration of Existing Pipeline Construction

On the issue of gas pipeline construction, Russia has learnt from the lessons of the Russian-Belarusian and Russian-Ukrainian gas disputes and has implemented gas transportation diversification in view of the importance and fragility of onshore pipelines the frequent "politicization" of cross-border transportation issues and the highly unstable security of energy transportation. The strategic objective is to reduce the interference of other countries in Russian gas exports while increasing the capacity to export gas to Europe, mainly through the construction of offshore gas pipelines, reducing over-dependence on individual countries for gas transportation and saving transportation costs.

The EU's consideration of the existing pipelines: for the EU, the number of pipelines does not change the nature of its control by Russia and does not qualitatively change the EU's passive position, while the increase in the number of pipelines increases Russia's ability to control the EU market. On the other hand, the EU wants to reduce its dependence on Russian gas and has taken a number of measures to do so, but the aim remains to diversify its imports [4]. The "Southern Gas Corridor" is a relatively large project, but it does not substantially change the position of Russian gas in the European market, and the "Nabucco" pipeline, which is a key project for the EU, is too costly, internally financially constrained and has a low supply capacity. The Nabucco pipeline, a key project for the EU, was terminated in 2013 due to high costs, internal financial constraints, low supply volumes and competition from Russia's South Stream.

"In the 2021 gas crisis, the construction and certification of the Nord Stream-2 pipelines has been the subject of intense debate between Russia and Europe, with the contradictions between the energy-producing countries and the transporting and importing countries. As each party has a different definition of energy security, it also has different considerations for the construction and layout of the pipeline. Russia is pushing hard for the project to break away from its dependence on gas transit countries. The EU is also divided over the project [4]. While Germany and France are the major countries that want to speed up the construction of the pipeline in order to gain economic benefits, ensure energy security and improve their own energy status, the Central and

Eastern European countries, represented by Ukraine, Poland and Lithuania, are opposed to the project, fearing that they will lose political leverage over Russia and the benefits of gas transit.

2.3. EU Restrictions on Russian Gas Companies

The EU's restrictions on Russian gas companies are mainly reflected in the "unbundling" requirements of the EU's energy market reform, which the EU hopes will prevent Russian gas companies from monopolizing the EU market and counterbalance the influence of Russian companies by fostering EU energy companies [4]. In response to the EU's "planned" restrictions, Gazprom has taken two measures: firstly, Russian companies have established stable partnerships with large energy companies in the EU and, through extensive and intensive cooperation with EU companies, have built "quasi-monopolistic alliances" so as to minimize the impact of EU energy reforms. The second is to set up subsidiaries that are completely independent of Gazprom and use accounting methods to avoid EU scrutiny.

3. Reasons for the Energy Game Between Europe and Russia

3.1. High Degree of Mutual Benefit

Since 2000, the scale of Russian-European gas transactions has been maintained at an average annual level of around 150 billion cubic metres. According to BP, the total volume of Russian-European gas transactions between 2000 and 2020 represents approximately 15.5% of the world's total gas transactions, with Russian gas exports to Europe increased from 130 billion cubic metres in 2000 to 200 billion cubic metres in 2018, an increase of 54% compared to 2000. Russia is the EU's largest source of gas imports, accounting for 45.3% of its gas needs in 2021, and the EU is also the main overseas market for Russian gas [17]. On one hand, the EU has access to a stable, sufficient and cheap supply of gas from Russia, and on the other hand, Russia can export gas to Europe to generate stable foreign exchange revenues to meet its financial needs [5]. The outbreak of the Russian-Ukrainian conflict has not changed the nature of the mutual benefits of gas cooperation between the two sides, and the future game between the two sides in the gas sector will continue to be based on mutual benefits.

3.2. Sensitive Interdependence

The interdependence between the sensitivities of Russia and the EU in the gas trade is evident, and although the Russia-Ukraine conflict has triggered a multi-field sanctions war between the two sides, both sides are aware that suspending gas cooperation as a means of sanctioning the other side would have a huge impact on themselves. As gas has different meanings for both sides, Russia and Europe exhibit different degrees of sensitive interdependence. For the EU, gas is a necessity, and its strategic attributes are

clear, as it is indispensable for social production activities such as industrial production and winter heating [6]. For Russia, gas is a commodity with a clear economic value, with gas exports accounting for approximately 23% of Russian state revenues, and the ability to have a stable overseas market is a matter of economic development. Nevertheless, when Russia is under sanctions, the issue of gas exports is no longer a purely economic one; its security significance rises significantly.

3.3. *Vulnerability Interdependence*

Vulnerability interdependence in the Russian-European gas relationship is measured primarily by the cost to both countries of finding alternatives in the event of a change in the relationship due to the difficulty of finding low-cost alternatives to each other's role in the short term. The outbreak of the Russia-Ukraine conflict has made the EU more determined to find alternatives, an act that will certainly contribute to the transformation of their interdependence, but the EU's move will have limited effect in the short term, and Russia and Europe will not easily choose the option of "gas decoupling" [7]. In the long term, both sides will accelerate the layout of alternatives to control excessive vulnerability to interdependence. For the EU, sanctions on Russian gas will inevitably trigger its own gas shortages, and the pain of the 2021 crisis will remain, making sanctions on Russian gas feasible only if there are sufficient alternatives.

3.4. *Lack of a System at All Levels*

In the history of Russian-European gas trade, the two sides have formed three levels of cooperation mechanisms, the first being the intergovernmental energy cooperation mechanism, which regulates the direction and principles of gas cooperation at the macro level, a more representative mechanism being the "European Energy Charter" signed by Russia and Europe in 1994 [8]. The EU-Russia Energy Dialogue of 2000 and the Russia-Europe Summit are examples of such mechanisms. The aim is to translate high-level strategic consensus into concrete and feasible energy projects. Finally, there is the transnational energy cooperation mechanism between energy companies and NGOs, which aims to facilitate the implementation of concrete projects [18]. Although Russia and Europe have made some breakthroughs in the gas cooperation mechanism, the development of this mechanism has stagnated due to institutional weaknesses and the changing political situation in Russia and Europe [9]. Russia has not yet ratified the European Energy Charter, and the crisis in Ukraine at the end of 2013 halted both the Russia-Europe Summit and the EU-Russia Energy Dialogue, although, in 2014, Russia, Europe and Ukraine formed a tripartite talks mechanism to ensure. Although the Russia-EU-Ukraine trilateral talks were held in 2014, which ensured the normal conduct of Russia-EU energy trade, most of the cooperation mechanisms have not yet been restored.

3.5. *Russian-European Demands the Establishment of a Mechanism*

Russia wants to build a system of cooperation that will safeguard its interests in European gas. In Russia's view, the ideal system would require obligations on the gas-transporting countries and a reasonable arbitration mechanism, which Russia hopes will ensure that Russian-European gas cooperation is not affected by the transporting countries [16]. The outbreak of the conflict between Russia and Ukraine will further prove the value of building a cooperation mechanism. However, in the short term, the conflict between Russia and Ukraine has not only had a dramatic impact on the existing weak mechanisms between the two sides but has also weakened the incentive for Russia and Europe to build cooperation mechanisms further.

4. **European Measures to Shift Towards Russian Energy After the Russo-Ukrainian War**

Before the outbreak of the Russo-Ukrainian conflict, the EU accelerated the negotiation process with all countries willing to expand their gas exports to Europe, including the US, Qatar, Norway, Algeria and other third parties as potential alternative sources of imports for the EU, in response to the Russian "energy weapon". On 8 March 2022, the EU launched a document entitled "Joint European Action for Affordable, Secure and Sustainable Energy", which plans to reduce Russian gas imports by 50% by the end of the year and replace them with LNG from other countries [10]. In the short term, the strategy of diversifying import sources is not feasible, and it will be difficult for other countries to fill the gap created by the withdrawal of large quantities of Russian gas in the short term [15]. For one thing, the energy industry has its own rules of development, unlike the production of other products. The increase in natural gas production is a long-cycle process that requires increased exploration and development of natural gas fields and increased investment in existing fields. The contraction in international gas investment caused by the Newcastle pneumonia epidemic has yet to recover, so it will be difficult to increase the inherent share of exports from the US, Norway or Algeria in the short term. Therefore, in the short term, this strategy will not change the EU's dependence on Russian gas. On the other hand, the economic viability of alternative sources of imports is low and forcing this strategy would significantly increase national spending [12]. According to the European Network for Economic and Fiscal Policy Research (ENEFPFR), if gas imports from Russia were suspended, Germany would need to spend an additional 3% of its GDP to pay for third-party gas supplies. According to the EU, it is planned to restore the EU's gas reserves from 20.4% to 90% by 1 October 2022. According to the US think tank CSIS, the EU would need to pay €160 billion to achieve

this target at current gas prices.

4.1. Accelerate the Development of New Energy Sources

The development of new energy sources in the EU is already well established, and replacing Russian gas with new energy sources will not only satisfy the EU's energy autonomy but also promote the implementation of the Green New Deal [11]. However, developing new energy sources will not be effective in the short term. In terms of the energy mix, new energy sources only account for 16% of the EU's total energy consumption, and the EU now hopes to increase the proportion of new energy consumption further. However, the development of the new energy industry is long-term, and its benefits are lower than those of traditional fossil energy sources, and it requires a large amount of capital investment [19]. In addition, as a clean energy source, nuclear energy can be an effective alternative, but the EU still needs to form a unified opinion on the use of nuclear energy. The EU still needs to form a unified opinion on the use of nuclear energy. While Germany and Italy are opposed to restarting nuclear energy, France has already launched a series of plans to restart nuclear power, which could, to a certain extent, alleviate the energy crisis but does not change the situation that the EU is still highly dependent on Russia's vulnerability [20].

4.2. Reduce the Demand for Natural Gas

The EU's "Joint European Action on Affordable, Secure and Sustainable Energy" document reveals that one of the main alternatives is to reduce the overall demand for natural gas in the EU, for example, by reducing the production of natural gas products and reducing the share of natural gas in electricity generation [14]. However, reducing the demand for natural gas is something that can only be achieved with a single document, as natural gas is an important raw material for industry and has an important role in national industrial production. The adjustment of natural gas demand implies the need to adjust the pattern and structure of industrial development, and it is difficult to see a structural decrease in natural gas demand in the EU in the short term.

4.3. The Introduction of a Unified Energy Policy

By establishing a unified gas policy, the EU can control demand and optimize gas distribution in order to improve the EU's overall ability to cope with the energy crisis. In the long term, such a policy could effectively reduce the EU's dependence on Russian gas, but in the post-Russian-Ukrainian conflict period, it would only be somewhat effective in the long term [13].

In general, the EU lacks the means to deal with Russian gas cut-offs, the alternatives in its toolbox are few and too costly, and indeed the EU is not fully confident that it will be able to reduce its dependence on Russian gas quickly in the short term, as media reports suggest that the European Commission is preparing a programme to move away from its dependence on Russian gas by 2027, further evidence that

the EU will not be able to move away from its dependence on Russian gas in the short term. This is further evidence that the EU will not be able to move away from its dependence on Russian gas in the short term [21].

5. Conclusion

European and Russian countries were able to establish energy cooperation due to the fact that importing energy from Russia was the best option from an economic point of view. But this cooperation is about to break down as political issues such as the Russian-Ukrainian conflict escalate [22]. Europe has at this time a stronger determination and practical measures to get rid of energy dependence on Russia, and European countries should keep these measures moving forward while reducing the cost of using other energy sources, which also reflects the shortcomings of what was once the energy policy of European countries and the risks of energy market reform. Russia once envisaged that Europe's dependence on Russian energy could be used to control European countries, but the overly tense relationship backfired and led European countries to take the initiative to develop other sources of energy. It is now more important for Russia to find a way to maintain its position as a major energy power and to keep energy as its mainstay, either by promoting energy exports externally or by developing other industries internally to replace its dependence on income from the energy sector [23].

The European gas crisis since 2021, fueled by the conflict between Russia and Ukraine, has continued to worsen, reflecting the shortcomings of EU energy policy and the risks of energy market reform. The Russian-European game reflects the power differential resulting from their unequal and compounded interdependence structure, which has been affected to some extent by the outbreak of the Russia-Ukraine conflict. As the implementation of alternatives between Russia and Europe accelerates, the interdependence between the two will tend to decline in the future. However, the Russian-Ukrainian conflict will hardly fundamentally change the mutual benefits of the Russian-European gas relationship, which will remain competitive and uncertain due to the security crisis, differences in energy security concepts between the two sides and interference from the US.

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