



The European Natural Gas Market: Navigating Sanctions, Shadow Fleets, and Future Uncertainties

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1. EXECUTIVE SUMMARY

The European natural gas market is undergoing a significant transformation due to geopolitical tensions, particularly the conflict in Ukraine, and the resulting sanctions on Russia, a former dominant supplier. This report analyses the current state of the market, focusing on supply and demand dynamics, pricing trends, and the increasing role of Liquefied Natural Gas (LNG) imports. International sanctions on Russia's gas and LNG sectors have disrupted traditional supply routes, leading to the emergence of "shadow fleets" and sanctioned vessels attempting to maintain energy flows to Europe. The report details the historical impact of these sanctions on Europe's energy security and price volatility, while also examining regulatory loopholes that allow continued Russian gas and LNG imports. Utilizing extensive data, this analysis culminates in a hypothesis about potential market shifts if sanctions on Russian LNG are lifted.

The cessation of Russian pipeline gas transit through Ukraine in January 2025 has tightened European gas supplies, increasing reliance on LNG. The United States has become the leading LNG supplier to the EU (45% in 2024), with Germany now largely dependent on US LNG. Despite diversification efforts, the EU imported a record amount of LNG in 2024, with a significant portion from Russia. Europe's LNG demand is projected to increase by 10% in 2025 due to the Ukraine transit halt. While Norway and the US are major suppliers, Russia, Algeria, and Qatar remain important. Notably, while overall EU LNG imports decreased by 19% in 2024, Russian LNG imports rose by 18%. The US was the top LNG source for Europe in 2024 (46%), followed by Russia (16%). Total EU gas imports decreased by 19.8% in 2023.

European natural gas demand saw a 13.2% decrease in 2022. The utility sector dominates consumption (39% in 2024), while the commercial segment shows resilience. Gas demand for electricity generation fell by 8% in 2024. EU gas markets have stabilised at lower consumption levels since 2022. Total EU gas consumption is projected to reach 10.6 TJ in 2024, a 23% decline since 2021. Europe's gas demand was at an 11-year low in 2024.

The European gas price benchmark, TTF, is currently around EUR 47/MWh, double pre-crisis levels. Prices have been volatile in early 2025. Wholesale gas prices in Q3 2024 averaged €36/MWh, a 7% year-on-year increase. Import prices rose again in early 2025. ICE TTF futures surpassed €50/MWh by the end of 2024. EU sanctions on Russia's energy sector lack a direct ban on natural gas for direct use. Existing sanctions target oil, coal, and LPG, and restrict investments in Russian LNG projects. The EU will ban transshipment of Russian LNG in its ports by March 2025. The UK and US have also increased sanctions on Russian energy, including targeting the "shadow fleet".

Russia increasingly uses "shadow" vessels, likely including LNG carriers, to bypass sanctions. In the third year of the invasion, 61% of Russia's seaborne oil exports used these vessels. Russia is estimated to have an LNG shadow fleet of around 50 vessels.

Sanctions have significantly reduced Russian piped gas to Europe (50% in 2022). Despite this, Europe avoided major shortages due to increased LNG imports and demand reduction. However, gas storage levels were low at the start of 2025. Sanctions have contributed to price volatility, with TTF prices remaining high. Europe has reduced its reliance on Russian gas, but a portion of Russia's fossil fuel revenues still comes from Europe.

Loopholes in EU sanctions include the absence of a direct gas import ban and continued servicing of Russian tankers by European shipyards. Russian gas continues to flow via TurkStream and limited volumes through Ukraine. Novatek has also increased LNG exports to the EU.

Data shows decreased overall EU gas imports since 2022, a sharp decline in Russian pipeline gas, and a record high in Russian LNG imports in 2024. The US has become the dominant LNG supplier.

If sanctions on Russian LNG were lifted, its supply to Europe would likely increase, intensifying competition and potentially lowering prices. European gas demand is projected to decline, but cheaper Russian LNG might slow this shift. Increased Russian LNG could lower prices but might also disincentivize renewable energy investment and renew Russia's political influence.

2. THE EUROPEAN NATURAL GAS MARKET: CURRENT SITUATION

- 2.1. Supply Dynamics

The supply landscape of the European natural gas market has been fundamentally altered since Russia's invasion of Ukraine. A significant development has been the cessation of Russian pipeline gas transit through Ukraine since January 2025 ¹. This halt has tightened natural gas supplies across the continent, as this route historically played a crucial role in delivering Russian gas to Europe. The termination of this long-standing transit agreement marks a permanent shift in European gas supply infrastructure, compelling a greater reliance on alternative sources, primarily LNG, which can be more susceptible to global market volatility and higher transportation costs. This event, occurring alongside average winter conditions in early 2025, has also highlighted the reduced buffer capacity within the European gas system compared to periods when multiple reliable supply routes were operational ¹. The simultaneous closure of a major supply route and typical winter demand underscores the vulnerability of the current system to even moderate increases in demand or further disruptions in supply.

In response to the reduced pipeline flows from Russia, the United States has emerged as the leading LNG supplier to the European Union, providing 45% of the bloc's LNG needs in the past year (2024) ². Notably, Germany, once heavily reliant on Russian pipeline gas, now sources almost all of its LNG from America ². This significant increase in US LNG supply to Europe represents a major geopolitical realignment in energy trade, strengthening transatlantic ties in this critical sector. The US has rapidly expanded its LNG export capabilities, establishing itself as a key partner for Europe in its endeavours to diminish dependence on Russian gas. This shift carries broader implications for the US's global influence and its own energy security. Germany's near-complete reliance on US LNG signifies a strategic decision by Europe's largest economy to prioritize energy security through a politically stable supplier, even if it entails higher costs compared to historical Russian gas prices.

Despite the geopolitical tensions and sanctions, the European Union imported a record amount of LNG in 2024, with a significant portion originating from Russia ³. This situation presents a paradox, as US LNG is considered a cleaner alternative but comes at a higher cost ³. The record Russian LNG imports, despite the war and international sanctions, reveal a considerable tension between the political objectives of reducing reliance on Russia and the economic realities faced by some EU member states. While aiming to decrease overall dependence on Russian energy, the cost competitiveness of Russian LNG, potentially due to the absence of direct sanctions on imports, has led to increased purchases. This suggests that price signals continue to exert a strong influence on the purchasing decisions of some European buyers. The cost differential between US and Russian LNG raises questions about the effectiveness and potential unintended consequences of sanctions that do not directly target Russian LNG imports. If cleaner alternatives are substantially more expensive, certain EU nations might prioritize affordability, even if it means continuing to procure from Russia, thereby partially undermining the intended impact of broader sanctions.

Looking ahead, Europe is projected to require 10% more LNG in 2025 compared to 2024, primarily due to the halt in Russian gas transit through Ukraine ⁵. This anticipated increase in LNG demand will further intensify competition in the global LNG market, potentially leading to higher prices and increased volatility. With a major pipeline route now closed, Europe will need to secure additional LNG volumes, competing with other major LNG importers in Asia and potentially driving up prices if the growth in LNG supply does not keep pace with

the rising demand. This situation underscores the immediate and tangible impact of geopolitical events on the fundamental dynamics of the energy market.

While Norway and the United States have emerged as major gas suppliers to Europe, Russia, Algeria, and Qatar also remain significant contributors ⁶. There is a noted risk of further declines in non-Russian imports in 2025, particularly if agreements for gas transit through other routes are not maintained ⁶. The continued presence of Russia among the top gas suppliers to the EU highlights the incomplete nature of Europe's energy decoupling efforts. Despite endeavours to diversify, Russia remains a notable source of gas, particularly in the form of LNG, indicating the challenges inherent in fully replacing its substantial volumes. The potential for declining non-Russian imports suggests possible vulnerabilities in the supply chain from alternative sources, potentially stemming from geopolitical factors or production limitations in those regions. Europe's energy security hinges on the reliability of its alternative suppliers, and any future disruptions from these sources could exacerbate existing supply challenges.

In 2024, Europe's overall LNG imports decreased by 19%, yet imports of Russian LNG simultaneously increased by 18% ⁷. The overall decrease in LNG imports suggests that successful demand reduction measures and potentially high storage levels at the beginning of the year played a significant role. However, the concurrent increase in Russian LNG imports within a shrinking overall market share indicates the continued cost competitiveness or the influence of pre-existing contractual obligations driving these purchases. Even with reduced overall LNG demand, Russian LNG remained an appealing option for some buyers, resulting in an increased proportion of the smaller import market. The record high EU imports of Russian LNG in 2024 further underscore the limitations of current sanctions in significantly curbing these flows ⁴. This trend raises serious questions about the EU's progress towards its stated goal of ending reliance on Russian fossil fuels by 2027. Data from 2024 indicates that the United States was the largest source of LNG imports for Europe, accounting for 46% of the total. Russia followed with 16%, while Algeria and Qatar contributed 11% and 10%, respectively ⁸. This data clearly quantifies the dominance of the US as an LNG supplier to Europe, reflecting the successful diversification efforts undertaken. However, Russia's 16% share, while lower than that of the US, still represents a substantial volume, highlighting its continued importance in the European LNG market. Despite the ongoing geopolitical tensions, Russia remains a key player in the European LNG supply mix. Total EU gas imports decreased by 19.8% in 2023 compared to 2022 ⁹. This substantial decrease indicates a significant adjustment in Europe's gas consumption and import patterns following the initial shock of the war in 2022. This reduction also reflects the success of Europe's strategy to reduce its overall reliance on imported gas.

- 2.2. Demand Sectors

The European natural gas market has witnessed a notable shift in consumption patterns, with data revealing a 13.2% decrease in natural gas demand in the European Union in 2022 compared to 2021 ¹⁰. This significant drop reflects the immediate impact of the energy crisis and the initial responses, including conservation efforts and industrial curtailments. The utility segment continues to dominate the European natural gas market, holding approximately 39% market share in 2024 ¹⁰. This dominance underscores the continued importance of gas for power generation and district heating at a large scale, despite the ongoing energy transition. Natural gas-fired power plants remain critical for providing flexible and reliable power generation capacity, particularly for balancing the intermittent nature of renewable energy sources. However, the commercial gas segment has emerged as the most resilient in the European natural gas market, demonstrating the strongest growth trajectory with the lowest decline rate of approximately -1.5% from 2024 to 2029 ¹⁰. This resilience suggests a

relatively inelastic demand for gas in these applications (businesses, hospitals, etc.), where switching to alternatives might be more challenging or costly in the short to medium term.

Natural gas demand for electricity generation in Europe continued to decrease in 2024, falling by 8% and marking the fifth consecutive year of annual declines ¹. This consistent year-on-year decline in gas use for power generation indicates a strong and sustained trend driven by the expansion of renewable energy sources. As more renewable capacity comes online, the reliance on gas-fired power plants for baseload and peak generation is decreasing. This trend has significant implications for the future role of natural gas in Europe's energy mix, suggesting a gradual shift away from its dominance in the power sector.

The gas market report for the third quarter of 2024 shows that EU gas markets continued the structural changes that began in 2022, with EU gas consumption and imports further declining and showing signs of stabilisation at significantly lower levels than before the 2022 supply crisis ¹¹. Demand for gas in power generation further contracted despite higher electrical cooling load during a hotter than usual summer ¹¹. The stabilisation of gas consumption at a lower level suggests that the initial shock-induced reductions have largely played out, and the market is finding a new equilibrium. The continued contraction in gas demand for power generation reinforces the ongoing displacement of gas by renewables.

The EU's total natural gas consumption is projected to reach 10.6 TJ in 2024, reflecting a 4% drop from 2023 and a 23% decline since 2021 ¹². This substantial cumulative decline in gas consumption since 2021 demonstrates a significant structural shift in Europe's energy usage patterns. This reduction is not just a temporary response to high prices but reflects deeper changes in energy policy and economic activity. While difficult to quantify, energy sufficiency has played an important role in reducing natural gas demand ¹³. The decline of energy-intensive industries has further reduced gas demand ¹³. High energy costs have affected the competitiveness of sectors such as metallurgy, non-metallic minerals, and chemicals, leading to sharp declines in their gas consumption. Europe's gas demand was at an 11-year low in 2024 ⁷. This historical low underscores the profound impact of recent events and policy changes on European gas consumption. In 2023, inland demand of natural gas in the EU decreased by 7.1 % compared with 2022 ⁹. This year-on-year decrease confirms the continuation of the downward trend in gas demand following the sharp reduction in 2022.

• 2.3. Pricing Trends

The main European gas price benchmark, the TTF, currently stands around EUR 47/MWh (or USD 14.50/MBtu) ¹. This is significantly below the highs seen in the aftermath of Russia's invasion of Ukraine in 2022, but it remains approximately double the pre-crisis levels ¹. This sustained higher price level compared to the pre-crisis era reflects the structural changes in the European gas market, including reduced Russian pipeline supplies and increased reliance on LNG. Natural gas markets in Europe have had a volatile start to 2025, with prices surging earlier in the month to their highest level in two years ¹. The TTF futures price for April 2025 increased by 16 cents from the previous week to \$4.247/MMBtu in March 2025 ¹⁵. This recent upward trend suggests renewed concerns about supply adequacy.

The third quarter of 2024 saw European wholesale gas prices average €36/MWh, a 7% increase year-on-year ¹¹. This year-on-year increase suggests that the downward trend in prices observed after the 2022 peak might be facing upward pressure due to factors like tighter global LNG markets. European natural gas futures fell to €41.5/MWh on Monday, extending a three-session decline as investors reacted to the possibility of increased gas flows if ceasefire talks lead to an easing of the Russia-Ukraine war ¹⁶. This demonstrates the strong influence of geopolitical developments on natural gas prices. Mild temperatures and strong winds across central and western Europe boosting renewable energy output are also reducing gas demand for heating ¹⁶.

Year-on-year household gas prices in the first half of 2024 decreased in 15 EU countries ¹⁷. Similarly, year-on-year non-household gas prices in the first half of 2024 decreased in all EU countries that reported their prices ¹⁷. This suggests that the pass-through of lower wholesale prices (compared to the 2022 peak) was starting to benefit consumers in early 2024. The European Union Natural Gas Import Price in February 2025 was at a current level of 15.34 USD per Million Btu, up from 14.66 last month and up from 8.148 one year ago ¹⁸. This suggests that while consumer prices might have seen some relief earlier in 2024, import costs were rising again in early 2025. European gas prices are surging as inventories dwindle faster than anticipated, driven by colder weather, reduced renewable energy production, and the end of Russian gas transit through Ukraine ¹⁹. In early January 2025, the Dutch TTF topped 50 EUR/MWh, marking a +50% year-on-year increase and its highest level since October 2023 ¹⁹. Natural gas EU prices averaged USD 15.35 per MMBtu in February 2025, up 4.6% from January, highlighting the volatile nature of the market ²⁰. After a steep decline in prices from late 2023 through Q1 2024, European natural gas markets rebounded sharply in Q2 and continued to climb through the rest of the year, with the ICE TTF Front-Month futures surpassing €50/MWh on December 31, 2024 ²¹. This increase was driven by heightened uncertainty over Russian gas supplies to Europe and increased gas consumption for power generation during Q4 2024 due to cold and windless conditions ²¹.

3. THE LANDSCAPE OF SANCTIONS ON RUSSIAN NATURAL GAS AND LNG

- 3.1. EU Sanctions

The European Union has implemented several rounds of sanctions targeting Russia's energy sector since the invasion of Ukraine. However, a notable aspect is the absence of a direct ban on natural gas delivered for direct use by member states, whether through pipelines or as LNG ². This omission stems from the significant dependency of some EU governments on Russian gas, highlighting the complex balancing act between sanctioning Russia and ensuring energy security within the bloc. Despite this, the EU is expected to release a roadmap outlining ways to reduce Russian gas imports ². The European Commission, however, will not include a proposal to ban Russian LNG in the upcoming 16th sanctions package, indicating persistent divisions among the 27 member states on this sensitive issue ²².

The EU's existing energy sanctions include a ban on the import of seaborne crude oil and refined petroleum products from Russia, covering 90% of current oil imports ²³. There is also an import ban on all forms of Russian coal and liquified petroleum gas (LPG), with a temporary exemption for existing LPG contracts ²³. Furthermore, the EU has prohibited future investments in, and exports to, liquified natural gas (LNG) projects under construction in Russia, such as Arctic LNG 2 ²³. A significant measure is the ban on the use of EU ports for the transshipment of Russian LNG to third countries, which is set to take effect in March ²³. Additionally, there is a ban on the import of Russian LNG into specific terminals that are not connected to the EU gas pipeline network ²³. The provision of goods, technology, and services for Russian LNG and crude oil projects is also prohibited, aiming to hinder Russia's ability to expand its energy production ²³. EU sanctions also enable the listing of vessels that support Russia's warfare against Ukraine, leading to port access bans and the prohibition of a broad array of maritime services ²⁶. The 16th sanctions package listed 74 such vessels ²⁶. However, it is important to note that EU sanctions do not directly prohibit the import of Russian LNG into its territories, allowing significant quantities to continue to flow ²⁸. The 16th package also introduces a prohibition

on the provision of temporary storage and placement under free zone procedure for Russian crude oil and petroleum products within the EU ²⁷.

- 3.2. UK Sanctions

The United Kingdom has also progressively increased sanctions on Russian commodities following the invasion of Ukraine ²⁸. These measures include a ban on the provision of maritime transport, insurance, and other financial services for ships carrying Russian crude oil/refined oil products above a specific price cap ³⁰. The UK has also prohibited the direct and indirect export, supply, and delivery of goods and technology for the energy industry (except nuclear and energy transport), including those for the completion of LNG projects ³⁰. Notably, there is a ban on the reloading of Russian LNG in the EU for the purpose of transshipment to third countries, aligning with EU regulations ³⁰. The UK has also sanctioned specific ships and entities involved in the Russian LNG sector, including those associated with the Arctic LNG 2 project, utilizing new ship specification powers ³¹. Furthermore, the UK has targeted vessels involved in Russia's "shadow fleet," including four LNG ships, to circumvent sanctions on Russian oil and LNG ³². A parliamentary motion in the UK welcomed these sanctions on Russian fossil fuels, indicating political support for these measures ³³. In January 2025, the UK joined the US in imposing asset-freezing sanctions on major Russian oil companies Gazprom Neft and Surgutneftegas ³⁴.

- 3.3. US Sanctions

The United States has also significantly increased its sanctions against Russia since the invasion of Ukraine ²⁸. In June 2024, the US designated seven Russian entities, one Chinese shipyard, and seven newbuild LNG tankers involved in Russia's future LNG projects ²⁸. January 2025 saw further intensification of US and UK sanctions, including asset freezes on Gazprom Neft and Surgutneftegas and targeting Russia's "shadow fleet" ³⁴. The US also prohibited the provision of petroleum services to Russia, effective February 27, 2025, with certain exemptions for specific oil and gas projects ³⁴. The US sanctions in January 2025 targeted Gazprom Neft and Surgutneftegas, 183 oil tankers in the shadow fleet, a ban on oilfield services, sanctions on two active LNG facilities (Portovaya and Vysotsk), and Russian maritime insurers ³⁵. Additionally, a crucial general license for energy-related payments was being phased out ³⁵. The US has also sanctioned nearly 80 individuals and entities in Russia's energy sector, including operators of oil and LNG projects, executives of Rosatom, and entities supporting Sovcomflot and Arctic LNG 2 ³⁵. A Russian LNG cargo from the sanctioned Portovaya plant was reported to be testing buyers' willingness to circumvent these new US measures ³⁸. However, Russia's Baltic LNG plants (Portovaya and Kryogaz-Vysotsk) suspended exports in February 2025 as the US sanctions took effect ³⁹. The US has also sanctioned numerous vessels, including several LNG carriers like Christophe De Margerie, Pskov, Velikiy Novgorod, and Vostochny Prospect ³⁵. Despite the sanctions on Portovaya and Vysotsk, LNG vessels continued to load at these terminals, heading to Europe and Asia, although the impact on Europe's overall gas supply was expected to be minimal due to alternative sourcing options ⁴⁰.

4. THE ROLE OF SANCTIONED VESSELS AND SHADOW FLEETS

- 4.1. Identification and Activities

Russia has increasingly relied on "shadow" vessels to transport its energy commodities, particularly oil, to countries that have not imposed sanctions or are willing to circumvent them ⁴¹. This tactic has been employed to bypass the oil price cap imposed by Western nations. Given the increasing sanctions on LNG tanker construction and operations, it is likely that Russia is also looking to the second-hand market to acquire LNG carriers through opaque ownership structures, forming a "shadow fleet" for LNG ²⁸. The US sanctions in January 2025 targeted 183 oil tankers, many of which are part of Russia's shadow fleet, indicating the scale of this operation in the oil sector ³⁴. The UK has also recognised this trend, sanctioning four LNG ships along with oil tankers that are part of Putin's shadow fleet, aiming to disrupt sanctions evasion ³².

Reports indicate that in the third year of the invasion of Ukraine, a significant 61% of Russia's seaborne oil exports were transported on "shadow" vessels ⁴¹. While the focus here is on oil, the substantial volume highlights the effectiveness of this method in maintaining Russia's export capabilities despite sanctions. The EU spent €7 billion on Russian LNG in the same period, with volumes rising by 9% year-on-year, suggesting that a shadow fleet for LNG could further facilitate these flows if sanctions on LNG intensify ⁴¹. However, the operation of a shadow fleet for LNG might present more logistical challenges due to the specialised nature of LNG carriers and handling requirements, as evidenced by a reported incident where a "shadow fleet" LNG tanker abandoned its voyage after five months ⁴⁴. Nevertheless, estimates suggest that Russia has assembled an LNG shadow fleet of around 50 vessels, with some being re-registered in countries like the UAE and India to obscure their ownership and jurisdiction ⁴². The EU has also taken note of these practices, with sanctions targeting vessels participating in the shadow fleet transporting Russian oil ²⁶. The scale of the oil shadow fleet is significant, with estimates suggesting over 600 tankers carrying 70% of Russia's oil exports, including vessels bought from European shipowners ⁴².

- 4.2. Estimated Volumes and Routes

The volumes of LNG transported by the Russian shadow fleet to Europe are difficult to ascertain precisely due to the clandestine nature of these operations. However, the increasing number of vessels identified as part of this fleet and the continued high levels of Russian LNG imports into the EU suggest that these vessels are playing a role in maintaining these flows. One reported instance involved a shadow fleet LNG tanker originating from the Arctic LNG 2 project, which embarked on a long and ultimately unsuccessful voyage to Russia's Far East, offloading its cargo to a floating storage unit ⁴⁴. This incident indicates that direct delivery to traditional LNG import terminals in Europe might be challenging for these vessels, potentially necessitating alternative routes and transfer methods. It is also anticipated that as the EU potentially tightens its restrictions on Russian LNG, the shadow fleet vessels might increasingly target Asian markets, which have less stringent sanctions regimes or a greater demand for LNG ⁴².

5. HISTORICAL IMPACT OF SANCTIONS ON EUROPEAN ENERGY SECURITY

- 5.1. Impact on Natural Gas Supply

The imposition of sanctions has significantly altered the sources and volumes of natural gas supplied to Europe. In 2022, Russian piped gas flows to Europe plummeted by more than 80 bcm, representing a 50% decrease ¹. Despite this drastic reduction, physical gas supply shortages were avoided due to a combination of factors, including increased renewable energy generation, higher sales of heat pumps, and improvements in energy efficiency across Europe ¹. However, by the end of 2024, European gas storage levels reached their lowest year-end point in three years ³. Furthermore, the volume of gas received by the EU from Russia through Ukraine had fallen to less than 14 bcm as of December 1, 2024, a stark contrast to the 65 bcm per year prior to the conflict ³. The cessation of the Ukraine transit agreement has raised concerns about a potential shortfall of LNG in Europe in 2025, as LNG will be needed to compensate for the lost pipeline volumes ⁵. Total EU imports of natural gas decreased by 19.8% in 2023, reflecting both reduced demand and diversification of supply sources ⁹. In the fourth quarter of 2024, EU imports of natural gas in gaseous state declined compared to the first quarter of 2021, while LNG imports saw a significant increase over the same period ⁴⁶. Overall, Europe has made progress in reducing its energy dependence on Russia, with gas imports from Russia dropping from 45% in 2021 to 18% in 2024 ⁴¹.

- 5.2. Impact on Price Volatility

The sanctions and the resulting disruption of traditional supply routes have contributed significantly to price volatility in the European natural gas market. European gas markets experienced a volatile start to 2025, with prices surging earlier in the year ¹. In 2024, European natural gas prices saw their most significant annual increase since 2021, driven by increased LNG exports globally and the completion of projects that began before the Biden administration's pause on new permits ³. The TTF prices, a key European benchmark, currently remain around double the pre-crisis levels of 2021 ¹. The Russian invasion of Ukraine in February 2022 triggered a sharp jump in natural gas prices, which was further exacerbated by subsequent reductions in Russian pipeline gas supply, leading to record price levels in August 2022 ⁴⁷. While European wholesale gas prices in the third quarter of 2023 averaged lower than in the same period of 2022, they still exhibited high volatility ⁴⁸. Similarly, the fourth quarter of 2024 saw volatility and price gains, with ICE TTF futures surpassing €50/MWh due to uncertainty over Russian gas supplies ²¹.

- 5.3. Impact on Energy Security

Despite the significant reduction in Russian piped gas, Europe has so far avoided widespread physical gas supply shortages, largely due to increased LNG imports from other sources, growth in renewable energy, and demand reduction measures ¹. However, the lower-than-average gas storage levels at the beginning of 2025 present a potential challenge for energy security in the coming year ¹. The supply cut-off from Ukraine has contributed to higher European natural gas prices, potentially impacting the affordability of energy ³. Europe faces an ongoing natural gas supply challenge in 2025, requiring significantly more LNG to meet storage targets, which could lead to further price increases ⁵. The UK's gas reserves have also reached concerning

low levels ⁵. While Europe has made progress in reducing its direct dependence on Russian gas, a substantial portion of Russia's fossil fuel export revenues still originates from Europe, indicating a continued, albeit reduced, reliance ⁴¹. The current situation presents an opportunity for Europe to further enhance its energy security by fully decoupling from Russian piped gas and investing in alternative supplies and renewable energy sources ⁴⁹. However, European leaders remain concerned that the ongoing energy crisis could negatively impact defence capabilities, economic development, and geopolitical relations ⁵⁰. EU countries bordering Russia have strongly cautioned against any return to reliance on Russian oil and gas, emphasising the threat to Europe's security interests ⁵¹.

6. UNVEILING THE LOOPHOLES: MECHANISMS OF CONTINUED RUSSIAN GAS FLOW

- 6.1. Exemptions and Ambiguities in Sanctions

A significant loophole in the EU sanctions regime is the absence of a direct ban on natural gas (both piped and LNG) intended for direct use by member states ². This exemption reflects the reluctance of some EU countries, heavily reliant on Russian gas, to impose measures that could jeopardise their energy security. The EU did not prohibit the import of Russian LNG into its territories, allowing substantial quantities to continue flowing ²⁸. Another loophole exists in the maintenance of Russian gas tankers, with European shipyards in France and Denmark reportedly continuing to service these vessels, which are crucial for transporting Arctic LNG ⁵². While some EU nations are pushing for a ban on such repairs, a consensus has yet to be reached ⁵³. Furthermore, the EU's ban on the transshipment of Russian LNG to non-EU countries might inadvertently lead to increased LNG imports into the EU as residual flows, as importing Russian LNG based on existing agreements is not yet sanctioned ⁵⁵. The lack of limitations on the Kremlin delivering LNG to European ports directly also represents a notable gap in the sanctions regime ⁵⁶.

- 6.2. Mechanisms of Continued Flow

Despite the sanctions and the cessation of major pipeline routes, Russian gas continues to reach Europe through various mechanisms. The TurkStream pipeline, along with its extension Balkan Stream, remains operational, supplying gas to countries like Hungary and Serbia ⁵⁷. Additionally, even after the halt of the main transit agreement, a limited volume of Russian gas continues to flow through Ukraine via the Sudzha entry point, primarily under long-term contracts with customers in Slovakia, Transnistria, Hungary, and Italy ⁵⁸. There have also been suggestions for European companies to directly purchase gas at the Russia-Ukraine border and arrange for its transit through the Ukrainian network ⁵⁷. Furthermore, the Russian private company Novatek has successfully continued and even increased its LNG exports to the EU, particularly from the Yamal LNG project, capitalising on the absence of direct import sanctions on LNG ⁶⁰.

7. DATA-DRIVEN INSIGHTS: TRENDS IN EUROPEAN NATURAL GAS IMPORTS

- 7.1. Overall Import Volumes (Pre- and Post-Sanctions)

Year	Total EU Gas Imports (compared to previous year)
2022	Significant decrease
2023	~20% decrease ⁹
Q3 2024	6% year-on-year decrease ¹¹
2024	LNG imports fell by 19% ⁷

- 7.2. Russian Import Volumes (Pipeline vs. LNG)

Year	Russian Pipeline Gas to Europe	Russian LNG Imports to EU
Pre-War	High volumes (e.g., 65 bcm via Ukraine annually ³)	Significant volumes (e.g., 10.99 million tonnes in 2021 ²⁹)
2022	Halved ¹	Increased to 15.12 million tonnes ²⁹
2023	Significantly reduced (e.g., <14 bcm via Ukraine ³)	Decreased to 14.90 million tonnes ²⁹
2024	Minimal (e.g., <14 bcm via Ukraine ³)	Record high (at least 16.65 million tonnes) ⁴ , 18% increase ⁷ , 16% of Europe's LNG imports ⁸
Q3 2024	67% of total Russian gas imports (11 bcm total) ¹¹	33% of total Russian gas imports (11 bcm total) ¹¹

- 7.3. Imports from Other Sources

Source	Share of EU LNG Imports (2024)	Change since 2021 (US LNG)
US	46% ⁸	Tripled ²
Norway	33% of total gas imports (Q3 2024) ¹¹	-
Algeria	11% ⁸	-
Qatar	10% ⁸	-

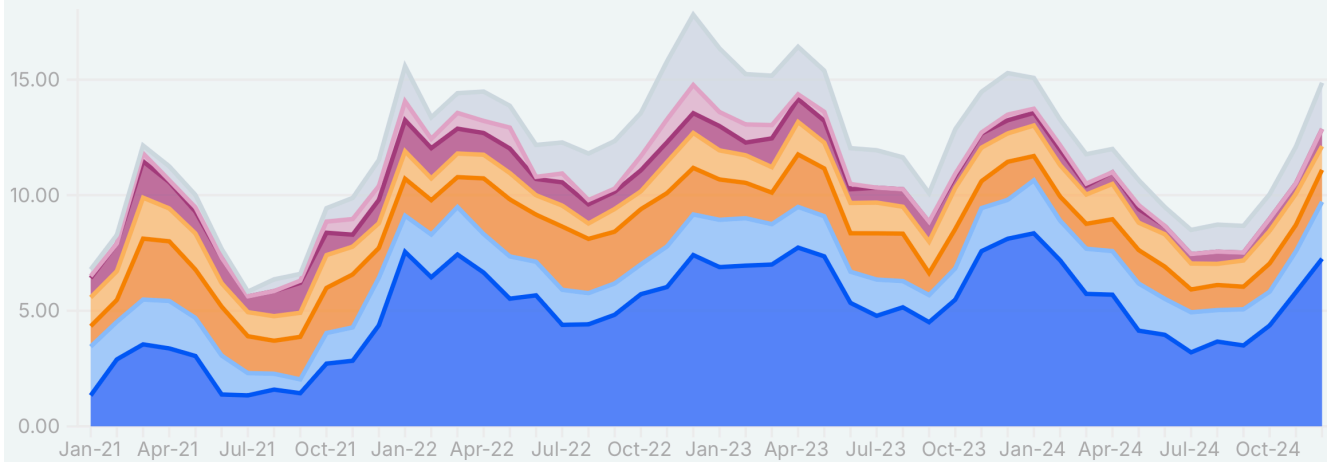
8. VISUALISING THE MARKET DYNAMICS

- Chart 1: Monthly LNG imports to all Europe by source

Monthly LNG imports to **all Europe** by source

Click to filter by country U.S. Russia Qatar Algeria Nigeria Egypt Others*

Billion cubic metres (bcm)



- Chart 2: European TTF Natural Gas Price Fluctuations



9. HYPOTHESISING THE FUTURE: MARKET CHANGES UPON LIFTING OF SANCTIONS

- 9.1. Potential Shifts in Supply

If sanctions on Russian LNG were to be lifted, a significant increase in Russian LNG supply to Europe would likely occur. Russia, with substantial natural gas reserves and a growing LNG production capacity, would be eager to regain its market share in Europe due to the potential for cost competitiveness. This influx of Russian LNG could displace some LNG from other sources, particularly the United States, Qatar, and Algeria, leading to a more competitive global LNG market. Russian producers like Novatek would gain greater access to European markets and infrastructure, potentially through existing or expanded long-term contracts. The existing demand for Russian LNG in several EU countries, such as France, Spain, and Belgium, suggests a readily available market for increased volumes. The inherent cost advantage of Russian LNG, as hinted at by its continued high import volumes despite sanctions, could make it an attractive option for European buyers seeking to lower energy costs.

- 9.2. Potential Shifts in Demand

European gas demand is projected to continue its downward trend, driven by ongoing energy efficiency measures, the expansion of renewable energy capacity, and potential structural shifts in energy-intensive industries. The availability of cheaper Russian LNG might slow down the pace of transition away from gas in certain sectors where switching to alternatives is more challenging or costly. However, it is unlikely to reverse the overall trend of declining demand, as the long-term drivers such as climate goals and technological advancements in renewable energy are expected to persist regardless of the source of gas supply. While lower prices due to increased Russian LNG availability might make gas more economically appealing in the short term, the overarching policy direction and technological progress favour a continued decrease in overall gas consumption.

- 9.3. Potential Shifts in Pricing

The re-entry of substantial volumes of Russian LNG into the European market would likely exert downward pressure on natural gas prices. Increased competition among LNG suppliers, including a resurgent Russia, would benefit European consumers and industries by potentially lowering the cost of living and improving the competitiveness of European industries compared to regions with higher energy prices. However, this potential price decrease could also have the unintended consequence of disincentivizing further investment in renewable energy infrastructure and energy efficiency measures, as the economic incentive for switching away from natural gas might be reduced. The extent of the price decrease would depend on the volume of Russian LNG supplied and the price elasticity of demand in the European market.

- 9.4. Geopolitical Implications

Lifting sanctions on Russian LNG would likely trigger a complex set of geopolitical consequences. On one hand, it could potentially ease tensions between Russia and some EU member states that remain reliant on its energy resources, possibly leading to a normalisation of relations in certain areas. On the other hand, such a move could be perceived as a weakening of the EU's stance against Russia's aggression in Ukraine, potentially straining relations with countries like Ukraine and the Baltic states, which advocate for a complete energy embargo. Increased reliance on Russian energy, even in the form of LNG, could also provide Russia with renewed political leverage over Europe, potentially undermining the EU's long-term objective of achieving energy independence. The ethical and political considerations of potentially funding Russia's war efforts through increased energy purchases would also need to be carefully weighed. The decision to lift sanctions on Russian LNG would necessitate a thorough evaluation of the potential economic benefits against the significant geopolitical risks and ethical implications.

10. CONCLUSION

The European natural gas market has undergone a period of significant upheaval and transformation in response to geopolitical events and the imposition of sanctions on Russia. While Europe has made considerable progress in diversifying its gas supply sources and reducing its overall reliance on Russian gas, particularly through a substantial increase in LNG imports from the United States and Norway, Russia remains a significant player in the market, especially in the LNG sector. The effectiveness of the current sanctions regime in fully curbing Russian gas and LNG flows is hampered by several loopholes and the continued dependence of some EU member states. The emergence of "shadow fleets" further complicates the picture, providing Russia with a means to potentially circumvent sanctions and maintain its export volumes. Should sanctions on Russian LNG be lifted, the European gas market would likely experience shifts in supply, demand, and pricing, with potentially significant geopolitical ramifications. While increased Russian LNG supply could lead to lower prices, benefiting consumers and industries, it could also slow down the transition to renewable energy and potentially renew Russia's political influence over Europe. The decision to lift or maintain these sanctions will require a careful consideration of the complex interplay between energy security, economic factors, and geopolitical objectives.

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