THE TRANSFORMATION OF EU ENERGY IMPORTS: IMPLICATIONS FOR ENERGY SECURITY AND GEOPOLITICAL RISK

DOI: https://doi.org/10.36004/nier.es.2026.1-01
JEL classification: Q4, Q5,F5,O3,H5, H56
UDC: 351.862.62(4)UE

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Received 20 marth 2026

Accepted for publication 29 may 2026

SUMMARY

The paper analyses the impact of the geopolitical conflict in the Middle East on the energy security of the European Union (EU) in the context of efforts to reduce dependence on Russian energy resources following the outbreak of the war in Ukraine and the subsequent adoption of European sanctions against the Russian Federation. In this context, the EU diversified its supply sources by increasing imports of liquefied natural gas and oil from countries such as Qatar, while also strengthening energy relations with suppliers in the Middle East and other regions. However, the escalation of regional tensions and the risks to maritime security in the Strait of Hormuz create new vulnerabilities for the European energy market and the stability of energy prices. The research is based on the hypothesis that the European Union has not eliminated the geopolitical vulnerability of its energy security but has instead transferred it to new external dependencies and trade routes exposed to geopolitical instability. The methodology combines qualitative analysis of European energy policies, particularly the European Green Deal and REPowerEU, with quantitative analysis of EU energy trade flows using COMEXT data. The study aims to assess the extent to which current European policies are sufficient to strengthen strategic energy autonomy and highlights the need to accelerate investments in renewable energy, green hydrogen, storage infrastructure, and nuclear energy as complementary solutions for reducing the European Union's external vulnerabilities.

Keywords: *decoupling, energy diversification, geopolitical risk, green deal, hydrogen, LNG, REPowerEU, strategic autonomy*

INTRODUCTION

The outbreak of the war in Ukraine in 2022 fundamentally reshaped the European Union's energy security architecture and accelerated efforts to reduce dependence on Russian energy resources. The successive rounds of sanctions imposed on the Russian Federation, combined with Moscow's gradual reduction in gas supplies to European markets, exposed the structural vulnerabilities of the EU's energy system, particularly its high dependence on external fossil fuel suppliers. In response, the European Union adopted a series of strategic measures to diversify energy imports, stabilise supply chains, and strengthen long-term energy resilience through initiatives such as REPowerEU and the European Green Deal.

The rapid decoupling from Russian energy resources generated significant changes in the geography of European energy imports. To compensate for the decline in pipeline gas deliveries from the Russian Federation, the EU increased imports of liquefied natural gas (LNG), strengthened partnerships with alternative suppliers, and expanded its reliance on global maritime energy trade routes. Within this context, the Middle East gained renewed strategic importance due to its role in global oil and LNG markets, particularly through suppliers such as Qatar and its influence on international energy prices.

However, the intensification of geopolitical tensions in the Middle East has introduced new uncertainties regarding the stability of global energy markets. The onset of new conflicts in the Middle East, particularly those involving Iran, has significant geopolitical and economic ramifications, especially concerning global energy markets and the energy security of regions such as the European Union (EU) (Rettig, 2026). The complexity of these dynamics is underscored by how regional actors adapt their policies and forge new alliances to mitigate the impact of supply disruptions and diplomatic challenges (Rettig, 2026). In particular, the strategic relevance of the Strait of Hormuz represents a major vulnerability for the international energy system, given that a substantial share of global oil and LNG trade transits through this maritime chokepoint. Any disruption to maritime security in the region may lead to supply shortages, price volatility, and additional pressure on European energy markets.

Against this background, the present study examines the extent to which the European Union's Current energy transition strategies can address not only climate objectives but also the geopolitical dimensions of energy security. The paper is based on the hypothesis that the diversification of EU energy imports following the reduction of dependence on Russian energy resources has not eliminated geopolitical vulnerabilities related to energy supply security, but has instead shifted them toward new suppliers and trade routes exposed to geopolitical instability.

Given the multidimensional nature of energy security, the present study adopts a focused analytical perspective. Rather than examining all dimensions of energy security, such as affordability, environmental sustainability, energy poverty, or the technical resilience of energy systems, the paper concentrates on the external dimension of energy security, namely the security of energy supply, import dependence, diversification of suppliers, and exposure to geopolitical risks within global energy value chains.

Hence, energy security is understood as the European Union's capacity to ensure stable and reliable access to energy resources while limiting strategic vulnerabilities arising from excessive dependence on external suppliers, critical transport corridors, and geopolitically unstable regions. Particular attention is therefore devoted to the transformation of EU energy import structures after

2022 and to the extent to which diversification strategies promoted through REPowerEU and the European Green Deal contribute to strengthening the Union's strategic energy autonomy.

Consequently, the analysis does not seek to provide a comprehensive assessment of energy security in all its dimensions, but rather to evaluate how changes in external energy dependencies and global supply chains affect the geopolitical dimension of EU energy security.

METHODOLOGY

Methodologically, the research combines qualitative analysis of European energy policies, particularly REPowerEU and the European Green Deal, with quantitative analysis of EU energy trade flows using COMEXT statistical data. The empirical analysis primarily covers the 2019–2024 period, while selected indicators for 2025 are included where partial data are available. The analysis focuses on several indicators, including the evolution of extra-EU imports of natural gas, liquefied natural gas (LNG), crude oil, and petroleum products, as well as the geographical diversification of energy suppliers. Particular attention is given to the decline of energy trade relations with the Russian Federation and to the evolution of imports from other alternative suppliers. Through this approach, the study seeks to determine whether diversifying energy imports has reduced the EU's geopolitical vulnerabilities or merely shifted them to other politically unstable regions. The study also evaluates whether current European policies are sufficient to strengthen the EU's strategic energy autonomy or whether additional investments in renewable energy, green hydrogen, energy storage infrastructure, and nuclear energy are required to reduce long-term external vulnerabilities. Furthermore, the paper contributes to the broader debate concerning the relationship among the energy transition, geopolitical risk, and strategic autonomy in an increasingly fragmented international system.

The present study is subject to several limitations. First, the highly dynamic geopolitical context in the Middle East and the ongoing evolution of the war in Ukraine may lead to rapid changes in energy markets, trade routes, and European energy policies that cannot be fully captured within the research timeframe. Second, the analysis is limited by the availability of statistical data, particularly for 2025, as complete and harmonised datasets for EU energy trade flows were not yet available at the time of writing for certain product categories.

In addition, the study focuses primarily on external energy trade relations and import diversification, without conducting a detailed assessment of domestic energy production capacities or the long-term technological feasibility of alternative energy solutions such as hydrogen infrastructure and next-generation nuclear technologies. Consequently, the findings should be interpreted within the broader context of ongoing geopolitical and economic developments affecting the global energy system.

THE EU ENERGY SECURITY – MAIN APPROACHES IN THE LITERATURE REVIEW

Recent literature increasingly emphasizes the strong interconnection between geopolitical instability and energy security, particularly in the context of the war in Ukraine and the escalation of tensions in the Middle East. Geopolitical conflicts in both regions have profoundly affected global energy markets and the European Union's energy security architecture by generating supply disruptions, market volatility, inflationary pressures, and the need for urgent policy responses focused on diversification and resilience (Basdekis et al., 2026; Torok, 2026). Existing studies underline that the EU energy market has entered a new phase characterized by structural uncertainty, where energy policy can no longer be separated from geopolitical and security considerations (De Jong, 2026; Wang et al., 2026).

A significant body of literature focuses on the consequences of the Russia–Ukraine war for European energy markets. Geopolitical shocks associated with the conflict increased tail risk in crude oil and natural gas markets, generating heightened volatility and substantial downside risks for European energy supplies (Basdekis et al., 2026; Kallel et al., 2026). Several studies also demonstrate that the efficiency of electricity and gas markets in Europe deteriorated after the outbreak of the war, particularly in Germany, where price discovery mechanisms weakened and market correction capacities became less effective during periods of crisis (Xin et al., 2026). In response to these disruptions, the European Union attempted to preserve market integration and maintain coordinated energy governance. Nevertheless, national governments increasingly prioritized energy security objectives, strategic reserves, and long-term supply contracts, contributing to the emergence of a more hybrid and interventionist energy market structure (Bolton, 2026).

The literature also highlights the environmental and social consequences of the energy crisis. Due to reduced gas supplies and rising prices, several Member States temporarily increased coal consumption in order to stabilize electricity production, generating significant environmental and public health costs associated with higher emissions (Liebensteiner & Kimani, 2026). At the same time, renewable energy sources acquired a more stabilizing role within European energy systems, while

fossil fuels became increasingly associated with market instability and geopolitical exposure (Wang et al., 2026). In this regard, recent studies introduced new analytical tools, such as the War-Induced Energy Intensity index, to evaluate the differentiated impact of geopolitical crises across EU Member States (Wang et al., 2026).

Another important research direction concerns resilience and diversification strategies. Decentralized energy generation systems, particularly bioresource-based systems, have been identified as effective instruments for strengthening energy resilience in politically unstable environments such as Ukraine (Fedoreiko et al., 2026). Similarly, studies examining Franco-German energy cooperation emphasize the strategic importance of hydrogen imports, large-scale energy storage infrastructure, and coordinated industrial policies for achieving long-term European energy security (Meisinger et al., 2026). The literature further underscores that the vulnerability of the EU energy system remains unevenly distributed, with smaller Member States particularly exposed to supply disruptions and price fluctuations, thereby reinforcing the need for diversification policies and targeted institutional support (Torok, 2026).

An expanding area of research investigates the relationship between geopolitical risk, financial markets, and energy transition policies. Recent studies demonstrate that geopolitical risk indices increasingly influence the dynamics of European carbon markets and improve the forecasting of market reactions compared to traditional economic indicators (Cao et al., 2026). Deep learning and AI-based forecasting models are also being developed to monitor geopolitical risks and provide early-warning mechanisms for policymakers and energy market surveillance (Bozkurt, 2026; Cao et al., 2026). Other studies analyze the effects of geopolitical instability on energy-related financial instruments, including clean energy and carbon ETFs, revealing significant spillover effects during periods of economic downturn and geopolitical uncertainty (Gabriel et al., 2026).

Beyond the energy sector itself, the literature increasingly recognises the cross-sectoral effects of energy crises. Price volatility in energy markets has amplified price transmission mechanisms within agri-food supply chains, as demonstrated by studies of Germany's malt-beer sector (Bublik & Čechura, 2026). Other authors stress that local realities, including phosphorus scarcity, fuel-switching practices, and municipal planning decisions, are closely connected to broader geopolitical transformations, although these dimensions are often insufficiently represented in public discourse and media coverage (Metson et al., 2026; Bettineschi et al., 2026). Furthermore, the war in Ukraine generated unprecedented concerns regarding nuclear safety and security, highlighting the necessity of international coordination and robust technical safeguards for critical infrastructure during wartime conditions (Dolin et al., 2026).

Several studies also point to the differentiated global effects of geopolitical crises. Research on the resilience of the United States stock market illustrates the asymmetric impact of conflicts across sectors and regions, while analyses of commodity co-movements indicate that crisis periods alter traditional relationships between energy assets and safe-haven commodities such as gold (Jardak & Belghith, 2026; Hkiri et al., 2026). At the same time, geopolitical events continue to accelerate the global reallocation of energy trade flows, often affecting Europe more severely due to slow energy transitions, technological lock-in, and persistent dependence on imported fossil fuels (Ren et al., 2026). A recent study shows that EU-level market design and shifts in external dependencies are connected to regional siting, municipal planning, and household-level perceptions (Radtke & Canzler, 2026).

Other contributions also explore how governance structures and policy responses evolved during the European energy crisis. Studies examining electricity pricing policies show that energy governance increasingly shifted toward national priorities focused on industrial competitiveness and energy security objectives (Bolton, 2026). In parallel, research on municipal gas companies in France and Spain demonstrates how local institutional and economic conditions influenced adaptation strategies in the post-war energy market environment (Fernandez & Larrinaga, 2026). Likewise, analyses of the so-called Iberian Exception implemented in Spain and Portugal indicate that, although the mechanism reduced electricity bills for consumers, it also increased gas demand and partially offset the expected reduction in price pressures (Lou et al., 2026).

Within the broader geopolitical context, the Middle East occupies an increasingly important position in discussions concerning European energy security. The adaptive strategies Israel developed in its oil import policies, including diversifying suppliers and investing in clean energy technologies, illustrate how regional actors respond diplomatically and technologically to trade disruptions and geopolitical instability (Rettig, 2026). However, despite growing attention to the consequences of the war in Ukraine, relatively little research examines in detail the long-term implications of renewed instability in the Middle East for the European Union's energy security architecture.

The existing literature therefore reveals several important research gaps. First, most studies focus on the immediate consequences of the Russia–Ukraine war and on short-term diversification policies, while fewer analyses address the long-term strategic implications of the EU's new external energy dependencies (Torok, 2026). Second, the environmental and social consequences of crisis-induced fuel switching remain insufficiently explored at the local and regional levels across the European Union (Liebensteiner & Kimani, 2026; Bettineschi et al., 2026). Third, the effectiveness and scalability of decentralized energy systems in politically unstable environments require further investigation (Fedoreiko et al., 2026). Existing research also underrepresents the broader cross-sectoral effects of energy insecurity, particularly

regarding agri-food supply chains and local governance structures (Bublik & Čechura, 2026).

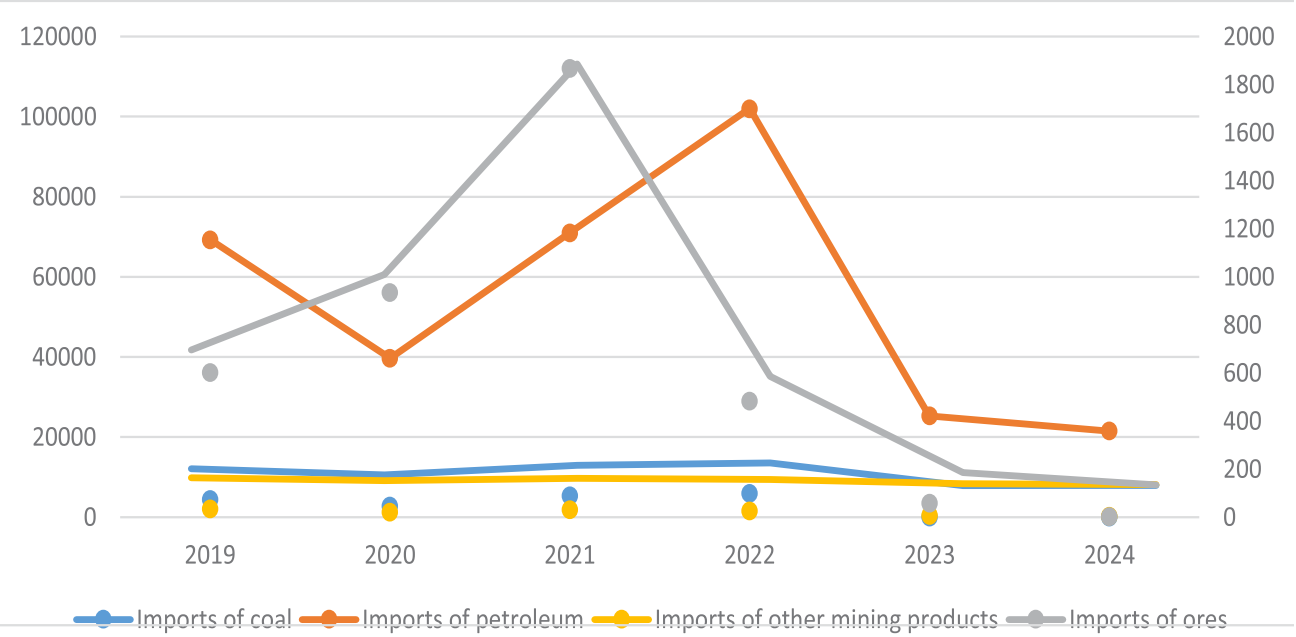
Most importantly, relatively little attention has been devoted to analysing how the escalation of geopolitical tensions in the Middle East may reshape the European Union's energy security following the decoupling from the Russian Federation. This study contributes to the literature by examining whether the diversification of energy imports after 2022 reduced the EU's geopolitical vulnerabilities or merely shifted them to alternative suppliers and to strategically vulnerable maritime routes, such as the Strait of Hormuz. In doing so, the paper seeks to connect the literature on energy transition, geopolitical risk, and strategic autonomy within the evolving context of European energy security.

MAIN RESULTS

THE IMPACT OF SANCTIONS IMPOSED ON THE RUSSIAN FEDERATION ON EU ENERGY TRADE

The sanctions imposed by the European Union against the Russian Federation between 2022 and 2025 represent one of the most extensive economic coercion mechanisms implemented in recent decades. From a theoretical perspective, economic sanctions are generally designed to generate sufficient economic pressure to alter the political behaviour of the targeted state by restricting access to strategic resources, financial markets, technologies, and international trade networks. Within the framework of interdependence theory and coercive economic diplomacy, sanctions are expected to increase the economic costs of conflict and reduce the targeted state's capacity to sustain military operations over the long term. In the case of the European Union and the Russian Federation, sanctions proved highly effective in accelerating the decoupling of bilateral energy trade relations (Figure 1). Figure 1 illustrates the evolution of EU–Russian Federation energy trade between 2019 and 2025. The selected timeframe allows the analysis to capture both the effects of the COVID-19 pandemic on international energy markets and, more importantly, the structural changes generated by the successive sanctions packages adopted after the outbreak of the war in Ukraine in 2022. The period also reflects the progressive decoupling of the European Union from Russian fossil fuel imports and the reconfiguration of European energy supply chains.

Figure 1.
The EU energy imports from Russian Federation, 2019-2024 (EUR million)



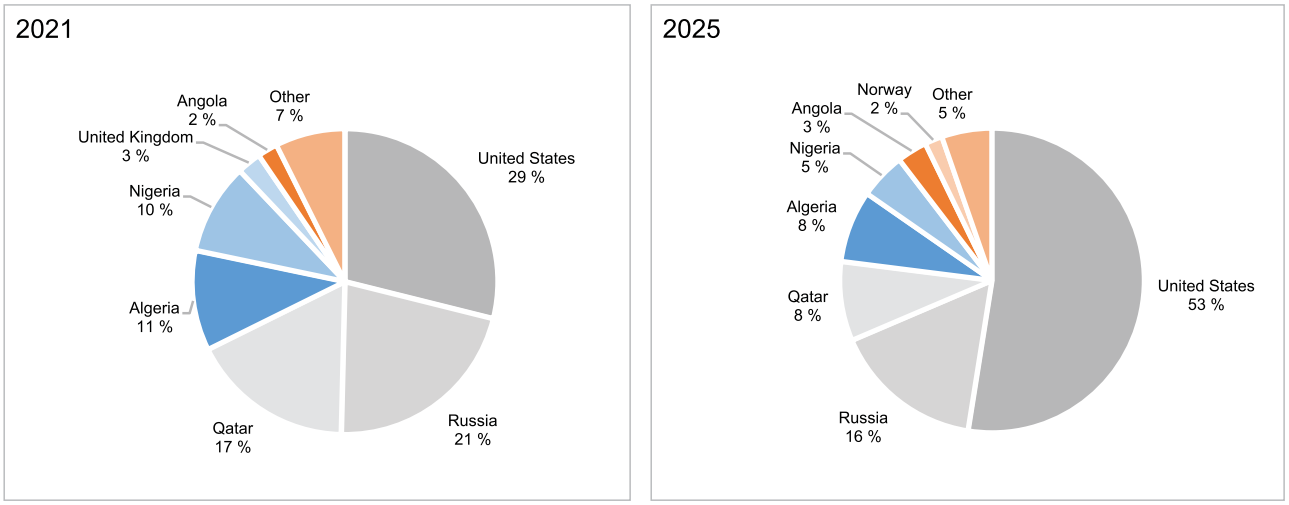
Source: *Author's processing based on COMEXT data (https://ec.europa.eu/eurostat/comext/newxtweb/setupdimselection.do)*

Note: *The 2019–2024 timeframe was selected to compare pre-war trade dynamics with the post-2022 transformations in EU–Russian Federation energy trade relations, induced by successive sanctions packages. The selected categories of energy imports aim to illustrate the reduction of the European Union's energy dependence on the Russian Federation in the context of economic sanctions. Data for 2025 are only partially available and will therefore be considered in future research. Trade values originally reported in EUR in the Eurostat COMEXT database were converted into million EUR for improved readability and graphical representation.*

The progressive embargoes on coal and oil imports, restrictions on maritime transport and insurance services, and the gradual reduction of pipeline gas imports significantly transformed the structure of EU energy supply chains. Statistical data from 2021 to 2025 indicate diversification of suppliers and expansion of LNG imports from alternative partners.

Figure 2.

The evolution of EU's LNG imports by partner, 2021–2025 (%)



Source: Author's processing based on COMEXT data (https://ec.europa.eu/eurostat/comext/newxtweb/setupdimselection.do)

However, the broader geopolitical effectiveness of sanctions remains more contested. Although sanctions contributed to the reduction of direct energy dependence between the EU and the Russian Federation, they did not produce the anticipated political outcome of ending the war in Ukraine or substantially limiting Russia's capacity to finance military operations. Existing literature increasingly highlights the adaptive capacity of sanctioned economies and the emergence of sanctions circumvention mechanisms within globalised markets. In the Russian case, the development of "shadow trade" networks and the so-called "shadow fleet" played a significant role in maintaining hydrocarbon exports despite Western restrictions. The concept of "shadow fleet" refers to a network of ageing tankers operating under opaque ownership structures, frequently registered under flags of convenience and employing complex maritime practices to circumvent sanctions and price caps. Similarly, "shadow trade" involves indirect commercial routes, intermediary states, re-export practices, oil blending operations, and alternative payment systems that allow sanctioned commodities to continue reaching global markets. Through these mechanisms, Russian hydrocarbons continued to circulate internationally, often through intermediary markets in Asia, the Middle East, or other third countries. At the same time, the escalation of geopolitical tensions in the Middle East placed additional pressure on global energy markets by heightening price volatility and concerns about supply security, particularly around the Strait of Hormuz. Rising oil and LNG prices indirectly helped sustain hydrocarbon revenues for major exporting states, including the Russian Federation. Consequently, the current geopolitical environment demonstrates that while sanctions can effectively reshape trade patterns and reduce direct dependencies, their capacity to generate rapid political change remains constrained by the flexibility of global energy markets, the adaptability of sanctioned actors, and the existence of alternative commercial and financial networks.

For the European Union, this process generated high economic and strategic costs. The rapid reduction in Russian energy imports required recalibrating supply chains, developing new LNG infrastructure, and establishing alternative partnerships with suppliers in the Middle East, North Africa, and the United States. Although these measures strengthened diversification, they also transferred part of the EU's geopolitical vulnerability toward new regions affected by instability and geopolitical tensions. As a result, the current energy transition highlights the complex relationship between sanctions, energy security, and strategic autonomy within an increasingly fragmented international system.

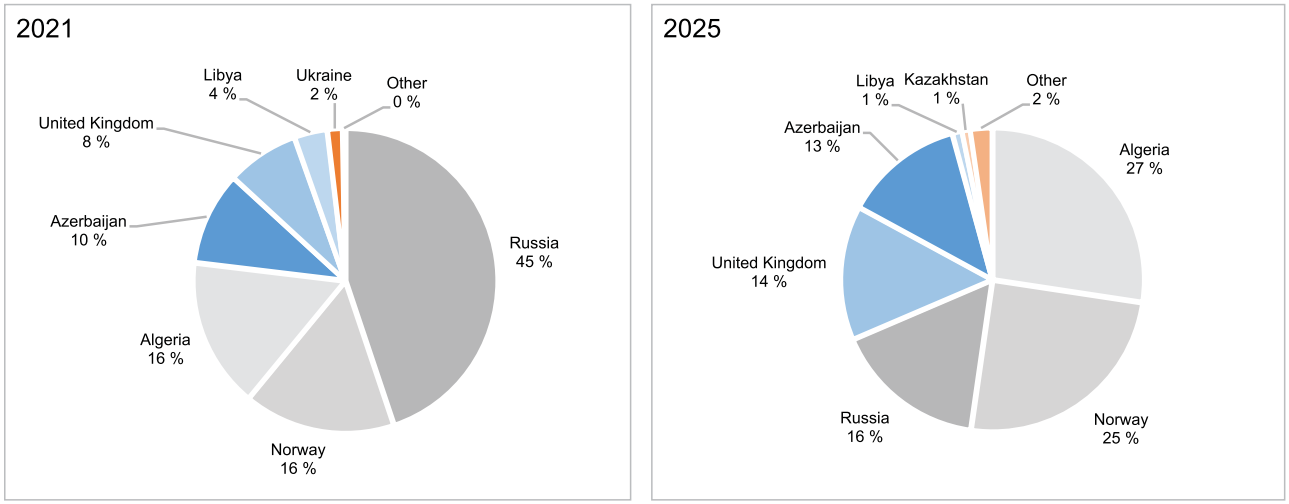
THE MAIN ENERGY SUPPLIERS OF THE EU IN THE CURRENT GEOPOLITICAL CONTEXT

The successive sanctions packages imposed on the Russian Federation after 2022 significantly accelerated the reconfiguration of the European Union's external energy supply structure. As direct energy trade relations with the Russian Federation progressively declined, the European Union intensified its efforts to diversify imports of crude oil, natural gas, and liquefied natural gas (LNG) through alternative suppliers. Within this

context, the strategic importance of the United States and the Middle East increased considerably, particularly regarding LNG exports, maritime oil trade, and global energy market stabilisation. The United States rapidly emerged as the European Union's main LNG supplier, benefiting from the expansion of transatlantic energy cooperation and the growing European demand for non-Russian gas supplies. At the same time, Middle Eastern producers, particularly Qatar and Iraq, consolidated their roles in the European energy market by increasing LNG and crude oil exports. These developments helped reduce direct dependence on Russian fossil fuels while increasing the EU's exposure to global maritime trade routes and geopolitical instability in strategically important regions, such as the Strait of Hormuz. Figures 3 and 4 illustrate the comparative evolution of the European Union's energy imports of natural gas and petroleum products between 2021 and 2025. The data highlight the structural transformation of European energy supply chains following the outbreak of the war in Ukraine and the implementation of sanctions against the Russian Federation.

Figure 3.

EU's imports of natural gas in gaseous state, 2021–2025 by partner (%)

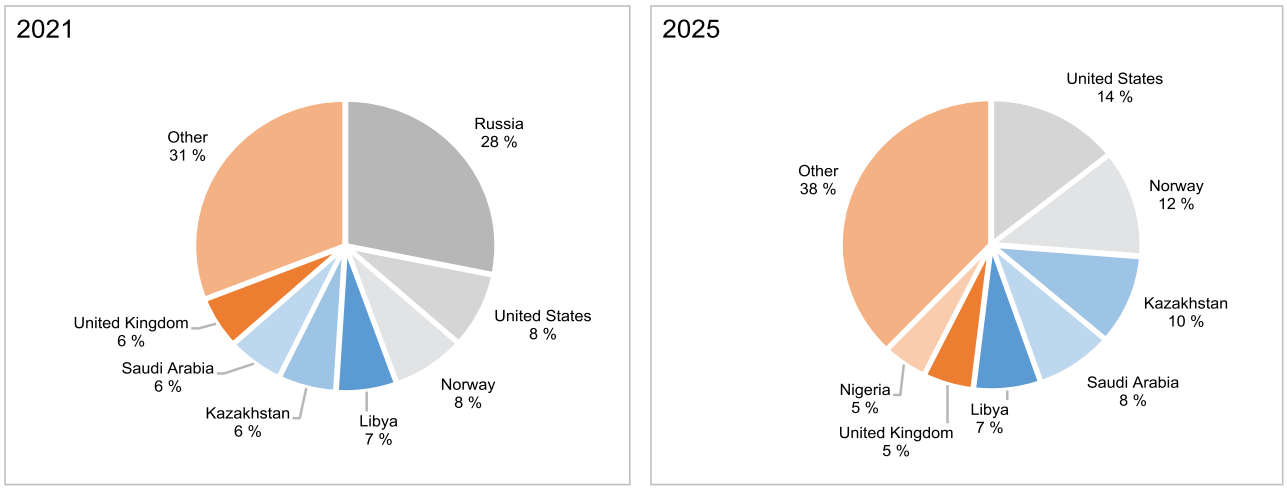


Source: Author's processing based on COMEXT data (https://ec.europa.eu/eurostat/comext/newxtweb/setupdimselection.do)

Figure 3 highlights that although the share of the Russian Federation in EU imports of natural gas in gaseous state declined significantly after 2022, Russian gas did not disappear entirely from the European market. At the same time, alternative suppliers such as Norway, Algeria, Azerbaijan, and the United Kingdom increased their relative importance, illustrating the European Union's strategy of regional diversification and supply substitution. The data also indicate that the diversification of natural gas imports differs structurally from LNG diversification. While LNG imports increasingly relied on transatlantic and global maritime suppliers, gaseous natural gas imports remained closely tied to regional pipeline infrastructure and geographic proximity. Consequently, the European Union's energy transition generated a complex redistribution of dependencies rather than a complete elimination of external vulnerabilities.

Figure 4.

EU's imports of petroleum oil, 2021–2025 by partner (%)



Source: Author's processing based on COMEXT data (https://ec.europa.eu/eurostat/comext/newxtweb/setupdimselection.do)

Figure 4 illustrates the profound transformation of the European Union's petroleum import structure between 2021 and 2025. While the Russian Federation represented one of the EU's largest petroleum suppliers before the war in Ukraine, its role declined substantially following the implementation of sanctions and embargo measures. At the same time, alternative suppliers such as the United States, Norway, Kazakhstan, Saudi Arabia, Libya, and Nigeria increased their relative importance within the European energy market. However, the diversification of petroleum imports also generated new geopolitical vulnerabilities. Several of the emerging suppliers are located in politically unstable regions or depend on strategically sensitive maritime trade routes affected by geopolitical tensions in the Middle East and North Africa. In particular, instability in Libya, tensions in the Red Sea region, and security risks surrounding the Strait of Hormuz highlighted the European Union's continued exposure to external energy shocks despite a reduction in direct dependence on the Russian Federation.

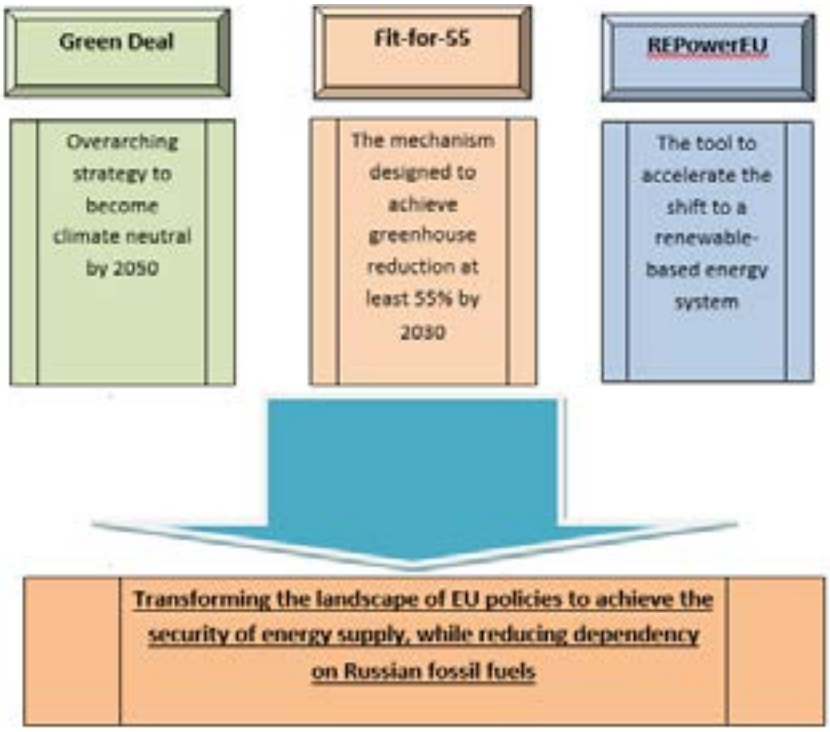
Consequently, the data suggest that the post-2022 restructuring of European petroleum imports did not eliminate geopolitical vulnerability, but rather redistributed it across a broader network of suppliers and transport corridors exposed to political instability and global market volatility.

EU STRATEGIC APPROACHES TO STRENGTHENING ENERGY SECURITY IN A CHANGING GEOPOLITICAL ENVIRONMENT

In recent years, the European Union has implemented several strategic initiatives to strengthen energy security while maintaining the objectives of the green transition. The outbreak of the war in Ukraine and the subsequent energy crisis highlighted the structural vulnerabilities generated by the European Union's dependence on imported fossil fuels, particularly those originating from the Russian Federation. At the same time, the geopolitical instability affecting global energy markets and strategic maritime routes emphasized the necessity of accelerating the transition toward a more resilient and diversified energy system.

As illustrated in Figure 5, the European Green Deal, the Fit-for-55 package, and the REPowerEU strategy represent the main pillars of the European Union's current energy transformation framework. While the European Green Deal established the long-term objective of achieving climate neutrality by 2050, the Fit-for-55 package introduced concrete legislative mechanisms designed to reduce greenhouse gas emissions by at least 55% by 2030. Complementary to these initiatives, REPowerEU emerged as a strategic response to the post-2022 geopolitical environment, focusing on reducing dependence on Russian fossil fuels, diversifying energy suppliers, accelerating renewable energy deployment, and increasing investments in energy infrastructure and storage capacities.

Figure 5.
Main EU approaches to enhancing energy security



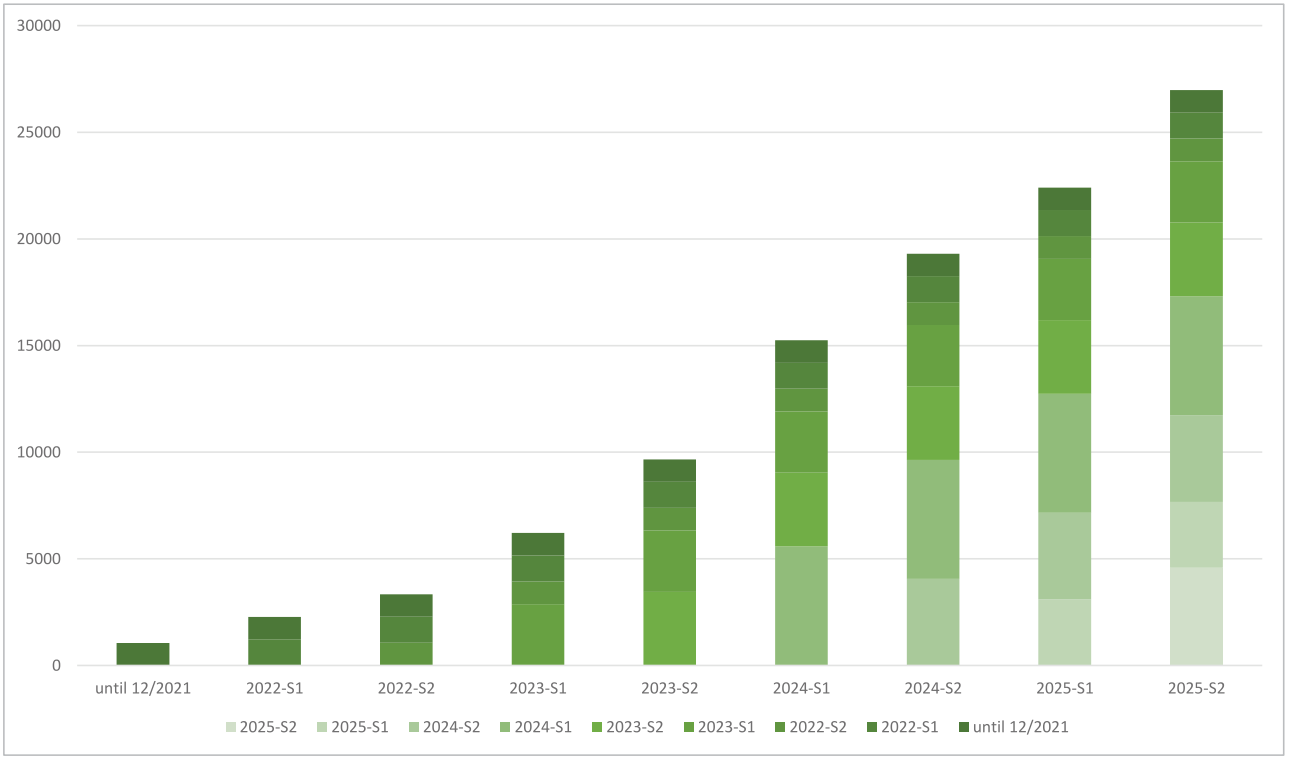
Source: Author's own representation.

Beyond the immediate objective of replacing Russian energy imports, these strategies also reflect the broader ambition of achieving greater strategic autonomy in the energy sector. In this context, renewable energy sources, hydrogen technologies, energy storage systems, and nuclear energy increasingly occupy a central role within the European Union's long-term security framework. However, the transition process remains complex, as the rapid diversification of suppliers and the growing reliance on LNG imports have also created new geopolitical vulnerabilities tied to maritime transport routes and politically unstable supplier regions.

Against this background, it should be noted that data provided by the Recovery and Resilience Scoreboard indicate a substantial increase in additional operational renewable energy capacity installed at the EU level after 2022, reflecting the strategic acceleration of the green transition in response to the energy crisis and geopolitical instability (Figure 6).

Figure 6.

Evolution of additional operational capacity installed for renewable energy in all EU Member States (MW)



Source: Author's own representation based on Recovery and Resilience Scoreboard data (/recovery-and-resilience-scoreboard/RRFCI02.html).

Note: Figure 6 illustrates the cumulative additional operational renewable energy capacity installed in the European Union, expressed in MW. The indicator is a stock indicator provided by the Recovery and Resilience Scoreboard, meaning that the installed operational capacities accumulate over time and can therefore only increase throughout the analysed period. The values presented for each semester include the operational capacities installed during the previous reporting periods. Data for Germany were unavailable due to ongoing verification procedures by the European Commission.

Consequently, the current geopolitical context demonstrates that energy security can no longer be understood exclusively through the lens of supply diversification. Instead, the European Union must simultaneously accelerate investments in clean energy technologies, strengthen internal energy production capacity, modernise interconnection infrastructure, and reduce strategic external dependencies to build a more resilient and sustainable energy system.

After four years of sanctions against the Russian Federation, formerly the largest supplier of fossil fuels to the European Union, the EU's energy security is once again exposed to geopolitical risks stemming from the ongoing conflict in the Middle East.

Against this background, the current state of the European energy market can be critically assessed through a SWOT analysis of the main achievements and remaining vulnerabilities of the European Union's energy security strategy (Figure 7).

Figure 7.
SWOT analysis of the EU's energy security under the current economic environment

Strengths	Weaknesses
• The coherent vision to achieve a climate-neutral economy • The increasing of diverse supply of fossil fuels from other destinations then Russian Federation • The increase of LNG and of renewables in the energy mix	• The higher cost of renewable energy • The persistence of fossil fuel dependence • Overlapping regulations that make the enforcement process more difficult
Opportunities	**Threats**
• New partnerships with the US to increase the energy supply • The Green Deal as a reallocation mechanism to foster investment shifts, while supporting vulnerable segments of society through the decarbonisation process.	• Geopolitical instability in the Middle East is affecting global energy supply chains • The current legal framework sets too ambitious targets, while lacking a more tailored approach for the specific needs of Member States

Source: Author's own representation.

As highlighted by the SWOT analysis, the European Union currently benefits from a relatively coherent legal and strategic framework that can accelerate the green transition while supporting more efficient resource use to strengthen energy security. Nevertheless, greater attention should be paid to the mechanisms of a just transition, particularly in underdeveloped regions and vulnerable industrial sectors that may face difficulties adapting to the ambitious objectives set by the European Green Deal, Fit-for-55, and REPowerEU strategies. In addition, the transition process requires substantial investments in workforce reskilling, technological innovation, energy infrastructure, and strategic energy storage capacity to reduce long-term external vulnerabilities.

CONCLUSIONS

The current geopolitical context demonstrates that the European Green Deal, Fit-for-55, and REPowerEU can no longer be interpreted exclusively as environmental or climate-oriented initiatives. Increasingly, these strategies also function as instruments of geopolitical resilience, industrial transformation, and strategic autonomy within a highly unstable international energy market. At the same time, the accelerated energy transition creates significant asymmetries among Member States, as differences in industrial capacity, infrastructure, technological development, and fiscal resources affect their ability to adapt to the new energy framework. Consequently, maintaining the balance between climate ambitions, economic competitiveness, and social cohesion will remain one of the European Union's main strategic challenges during the next decade. In this regard, investments in renewable energy, hydrogen technologies, energy storage systems, smart grids, and nuclear energy may gradually reduce the European Union's structural external vulnerabilities and strengthen its long-term capacity to respond to future geopolitical shocks affecting global energy markets.

The empirical analysis demonstrates that the structure of the European Union's energy imports has changed significantly after 2022. While the Russian Federation progressively lost its position as the EU's main external energy supplier, the strategic importance of the United States and Middle Eastern partners increased substantially, particularly for LNG and petroleum imports. However, this diversification process also generated new geopolitical vulnerabilities associated with global maritime trade routes, politically unstable supplier regions, and the growing dependence on external energy supply chains.

Against the backdrop of overlapping geopolitical and energy crises stemming from the prolonged conflicts in Ukraine and the Middle East, the European Union may increasingly need to strengthen its internal energy production capacity and reduce its excessive dependence on global energy value chains. Consequently, greater emphasis could be placed on the development of domestic renewable energy production, hydrogen technologies, strategic storage infrastructure, and, where politically and economically feasible, the modernisation or reopening of nuclear energy capacities. In the long term, the consolidation of European energy security will depend not only on supplier diversification but also on the European Union's capacity to enhance strategic autonomy and internal resilience in an increasingly fragmented geopolitical environment.

Data Availability Statement

The data used in this research are publicly available through the Eurostat COMEXT (EasyComext) database and were used to analyse the European Union's energy trade flows. The datasets can be accessed online at: https://ec.europa.eu/eurostat/comext/newxtweb/setupdimselection.do

The research is based exclusively on publicly available statistical data accessible to researchers and interested institutions. No original datasets were generated during the study.

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