

CHALLENGES TO ENERGY SECURITY IN THE EUROPEAN UNION

OS DESAFIOS DA SEGURANÇA ENERGÉTICA DA UNIÃO EUROPEIA

António Gonçalves Alexandre

PhD in International Relations from NOVA University Lisbon
Assistant Professor at Lusíada University
Integrated Researcher at the Centre for Legal, Economic, International and Environmental Studies of the Lusíada University
Research Associate at the Portuguese Institute of International Relations
Research Associate at the Research and Development Centre of the Military University Institute
amgalexandre527@hotmail.com

Abstract

Even though the European Commission wishes to maintain a trajectory that allows a sustained energy transition to so-called clean energies, the fact is that the European Union's energy mix still includes fossil fuels. However, to break free from dependence on Russia, it becomes necessary to diversify energy imports. It is under these circumstances that the producing regions of the Gulf of Guinea and the Mediterranean Basin gain increased prominence.

Using a constructivist ontological approach and an interpretivist epistemological framework, this article seeks, through a qualitative research strategy, inductive reasoning, and a case study research design, to answer the following starting question: How can the European Union overcome the current challenges to its energy security? The data collection and processing method focused primarily on the observation of documentary sources and their subsequent analysis. The conclusions show that access to energy resources from the Gulf of Guinea and the Mediterranean basin is essential for the European Union to become independent from fossil fuel imports from Russia and, thereby, achieve its energy security.

Keywords: European Union; energy security; Russia; fossil fuels; Gulf of Guinea; Mediterranean Basin.

Resumo

Ainda que a Comissão Europeia deseje manter uma trajetória que permita uma transição sustentada para as chamadas energias limpas, o facto é que o cabaz energético da União Europeia continua a incluir combustíveis fósseis. Porém, para se libertar da dependência da Rússia, torna-se necessário diversificar as importações de energia. É nestas circunstâncias que as regiões produtoras do Golfo da Guiné e da Bacia do Mediterrâneo assumem preponderância acrescida.

How to cite this article: Alexandre, A. G., (2026). *Challenges to Energy Security in the European Union*. *Revista de Ciências Militares*, May, XIV(1), 191-213. [https:// www.ium.pt/publist/](https://www.ium.pt/publist/)

Utilizando uma abordagem ontológica construtivista e um quadro epistemológico interpretativista, este artigo procura, através de uma estratégia de investigação qualitativa, um raciocínio indutivo e um desenho pesquisa do tipo de estudo de caso, responder à seguinte pergunta de partida: Como pode a União Europeia superar os desafios atuais à sua segurança energética? O método de recolha e tratamento de dados centrou-se essencialmente na observação de fontes documentais e na sua posterior análise. As conclusões mostram que o acesso a recursos energéticos do Golfo da Guiné e da Bacia do Mediterrâneo é essencial para a União Europeia se tornar independente da importação de combustíveis fósseis da Rússia e, desse modo, lograr alcançar a sua segurança energética.

Palavras-chave: *União Europeia; segurança energética; Rússia; combustíveis fósseis; Golfo da Guiné; Bacia do Mediterrâneo.*

1. Introduction

The main energy sources are fossil fuels (oil, natural gas and coal), nuclear energy and renewable energy (solar, wind, hydroelectric, biomass and geothermal energy). In the last few years, the European Union (EU) has become aware of the need to transition to an energy system¹ with low greenhouse gas emissions. To do so, it will have to reduce its dependence on fossil fuels. According to Yergin (2020), several types of power are currently in play. The first is the power of nations, which is influenced by military capabilities, economics and geography, but also by grand strategy and calculated ambition, by suspicion and fear (of other powers) and by the contingent and unexpected. The second type of power comes from oil, natural gas and coal, as well as from wind, solar and the power that comes from dividing atoms. The third type of power comes from policies that aim to protect the climate by reordering the world's energy system and transitioning to a net-zero carbon model (Yergin, 2020). The EU is firmly committed to take on a leading role in this transition. In December 2019, the European Commission announced the European Green Deal, a comprehensive package of policies designed to make the EU's economy environmentally sustainable and ensure that it becomes climate-neutral by 2050. At its core, the Green Deal is a commitment to change Europe's economy and consumption patterns. However, as this will require a major overhaul of Europe's energy system, and because it is high on the EU's policy agenda, it will also change the relationships between the EU and its neighbours and redefine Europe's global policy priorities (Leonard et al., 2021). Despite these efforts, the EU is still greatly dependent on fossil fuels (and this is unlikely to change in the near future). Moreover, a substantial part of the energy consumed in Europe is imported from Russia. This is especially relevant in light of the fact that the energy trade has long been a pillar of EU-Russia relations². For many years,

¹ An energy system can be defined as a chain of processes involving a series of actions, from the extraction of primary energy to the use of final energy to supply services and goods to States and communities (Pfenninger et al., 2014).

² In fact, the large-scale export of fossil fuels to European countries began during the Cold War, under the former Soviet Union (Siddi, 2020, p. 2).

Russia was the EU's main supplier of oil, natural gas and solid fuels. Russia has also been a uranium exporter to EU Member States such as France and Germany, as well as an important partner in the nuclear energy sector (Siddi, 2020).

As a result of the conflict in Ukraine, the EU is not only in a race against time to meet its medium and long-term climate goals (and, in doing so, make the transition to net zero). For geopolitical and energy security reasons, it has also committed to ending its dependence on imports of crude oil, refined products, natural gas and uranium from Russia as soon as possible³. As Figure 1 shows, this process has been underway since 2022.



Figure 1 – Russian energy imports into the EU compared by year

Source: (European Commission, 2025b)

On the other hand, alternative sources to fossil fuels, particularly natural gas, are insufficient to meet global demand and the EU's interest in investing in fossil fuel energy and enter into long-term trade agreements is very limited, given the climate targets it set in 2019. Perhaps the first (and most pressing) challenge facing the EU is how to deal with a short-term hydrocarbon shortage? The second is a long-term challenge: to develop stable alternatives that are more in line with the EU's long-term priorities (Akinci & Iyer, 2022). This article focuses on the first challenge.

The fact that the EU has acknowledged that it needs to reduce (and, in the short term, end) its dependence on Russian imports demonstrates the relevance of the topic addressed in this article, which examines the current challenges to the EU's energy security⁴ (regarding fossil fuels) and identifies alternative sources to obtain them. In 2021, Russian gas exports to the EU totalled 155 billion cubic metres (bcm⁵). The EU roadmap outlined in REPowerEU includes the following objectives: to phase out all imports of Russian gas by the end of 2027; with regard to oil, to take action to hinder the activities of Russia's shadow fleet⁶, whose vessels transport oil through various sea lanes that cross European waters; regarding nuclear energy, to restrict

³ The European Commission implemented its REPowerEU Plan to phase out all Russian fossil fuel imports in response to the threats and disruptions in the international energy market caused by Russia's invasion of Ukraine (European Commission, 2025b).

⁴ The key concept in this study, which is discussed in chapter 2.

⁵ Acronym for billion cubic metres.

⁶ Oil tankers used by Russia to evade Western sanctions.

the import of uranium, enriched uranium and other nuclear materials from Russia (European Commission, 2025b). Reverting this forced interdependence led to a sharp drop in the EU's energy supply and to a set of initiatives aimed at diversifying energy sources and developing new markets to replace Russian gas in record time (Proedrou, 2023). This article will look at alternatives for diversifying the EU's sources of fossil fuels (crude oil and natural gas) by importing from different countries.

The topic of this study is Europe's energy security. The article analyses the EU's energy situation and explores how it can strengthen its energy security in the near future, given the recent changes in energy geopolitics. The following question was chosen as a starting point which guided the study: How can the European Union respond to the current challenges to its energy security?

The study was delimited according to the usual boundaries of time, space and content, as suggested by Santos & Lima (2019). The period analysed in the study is the 21st century (from 2010 to the present day). Geographically, it focuses on the Gulf of Guinea and the Mediterranean Basin and on how the producer countries of the Gulf of Guinea and the Mediterranean Basin could help the EU strengthen its energy security.

This article is organised into five chapters. Chapter 1 is the introduction. Chapter 2 provides the theoretical and conceptual framework. Chapter 3 describes the methodology and methods used in the study. Chapter 4 discusses the findings. Chapter 5 outlines the study's conclusions, which confirm the need to diversify the EU's sources of fossil fuels and the importance of regions such as the Gulf of Guinea and the Mediterranean Basin to the EU's energy security. These two regions could prove instrumental to improve the EU's energy security by allowing it to diversify its energy imports.

2. Theoretical and conceptual framework

This chapter is divided into three sections: the first addresses energy geopolitics in the present day; the second analyses the key concept of the study – energy security; the third reviews the literature on EU energy security.

2.1. The new geopolitical energy landscape

On 10 and 11 March 2022, shortly after Russia's invasion of Ukraine on 24 February, the EU's Heads of State or Government held an informal meeting. The closing declaration⁷ explicitly stated that one of the three items on the meeting's agenda was how to reduce the EU's energy dependence on Russia (European Council, 2022). Since then, the EU has already implemented several measures. Since the REPowerEU Plan mentioned in Chapter 1 was launched in May 2022, the use of renewables and the adoption of energy-saving measures have led to a reduction in gas imports of more than 60 bcm per year (between 2022 and 2024), which has helped the EU phase out its imports of Russian gas. Despite these measures, the EU imported

⁷ Which became known as the Versailles Declaration (European Council, 2022).

52 bcm of Russian gas in 2024 (32 bcm via pipeline and 20 bcm via liquefied natural gas, or LNG), representing about 19% of the EU's total gas imports, 13 billion tonnes (Mt⁸) of crude oil and more than 2,800 tonnes of uranium (enriched or as fuel). That year (2024), ten Member States imported gas, three Member States imported oil and seven Member States imported enriched uranium (or uranium services) from Russia (European Commission, 2025c). This dependence on Russian energy imports poses serious risks to the security and economic stability of EU Member States, as Moscow has used its leverage as an energy producer to undermine EU stability and prosperity on multiple occasions. In light of this, the EU has defined a strategy⁹ to phase out its remaining energy imports¹⁰.

Figure 2 shows the evolution in EU energy imports from 2021 to 2024. In 2024, the EU imported €375.9 billion in petroleum (crude and refined) and natural gas (liquefied and piped). Compared to 2023, these imports decreased both in value (-16.2%) and volume (-7.1%). In the case of oil, there was a decrease in both the value of imported petroleum products (-4.7%) and the total volume of imports (-2.4%). Similarly, the value of LNG imports dropped significantly (-39.1%) and the volume also decreased (-15.1%) compared to 2023. Similarly, imports of natural gas in gaseous state fell by 30.2% in value, while the volume decreased by 4.4% (Eurostat, 2025a).

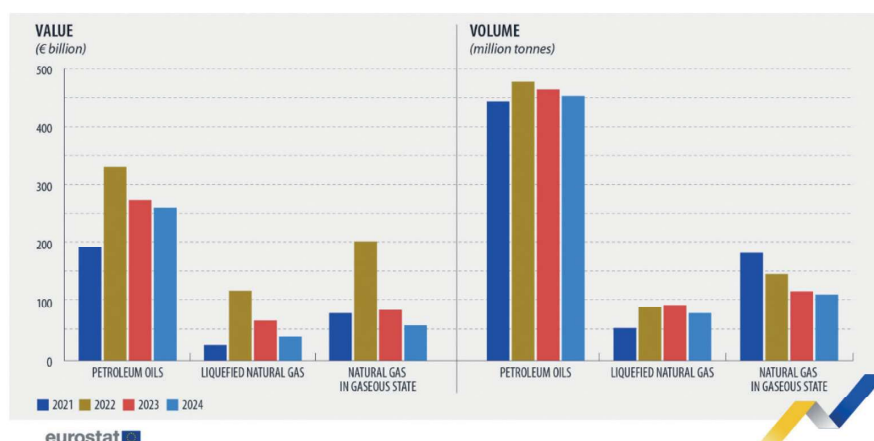


Figure 2 – EU imports of petroleum oils and natural gas (2021-2024)

Source: (Eurostat, 2025a)

⁸ Acronym for 'million tonnes'.

⁹ Which consists of phasing out imports of piped gas from Russia to EU Member States until a total ban is in place by early 2027. A full ban on Russian LNG will take effect from autumn 2027 (Pplware, 2026).

¹⁰ The EU has already significantly reduced its dependence on Russian energy and its imports from Russia, mainly through a series of sanctions packages banning imports of Russian coal and oil into the EU and prohibiting transshipments of LNG from Russian vessels through EU ports. Additionally, the issue of how Russia is able to circumvent EU sanctions by using its 'shadow fleet' to transport oil covertly also needs to be addressed (European Commission, 2025c).

Figure 3 shows the EU's energy imports in 2024.

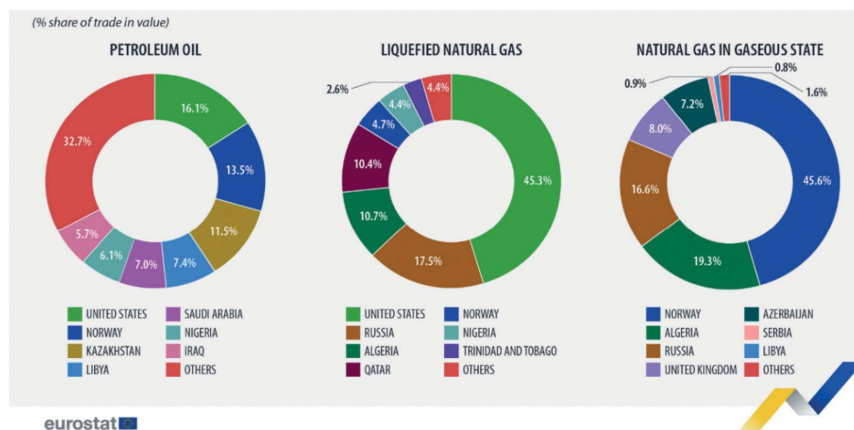


Figure 3 – Fossil fuel imports into the EU in 2024 by partner

Source: (Eurostat, 2025a)

In 2024, the EU's main trade suppliers of petroleum oil were the US (16.1%), Norway (13.5%) and Kazakhstan (11.5%). The US also supplied almost half of all LNG imports (45.3%), followed by Russia (17.5%) and Algeria (10.7%). Norway supplied a large share of natural gas imports in gaseous state (45.6%). Algeria ranked second, accounting for 19.3%, followed by Russia with 16.6% (Eurostat, 2025a).

In the first nine months of 2025, the average monthly imports of petroleum oil into the EU dropped by 18.3% in value and 6.6% in volume compared to 2024. Conversely, the value of LNG imports increased by 36.1% in value and 25.9% in volume. Imports of natural gas in gaseous state went up by 3.1% in value, while the volume decreased by 4.9% (Eurostat, 2025b). This trend is shown in Figure 4.

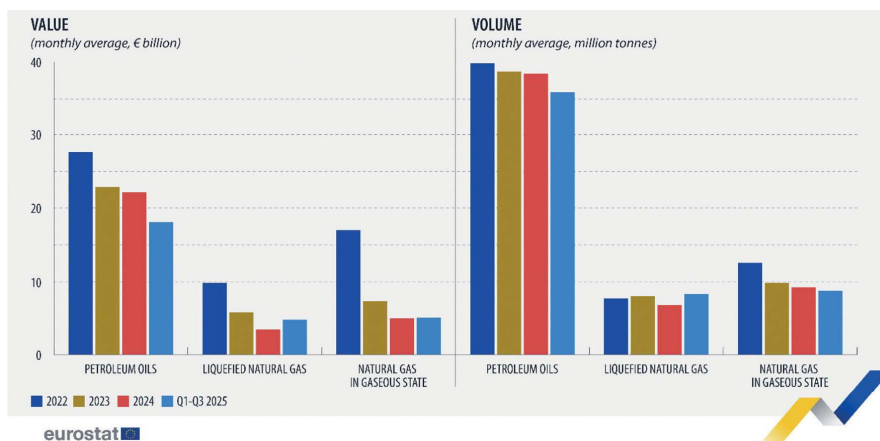


Figure 4 – Petroleum oils and natural gas imported into the EU (2022 - T1 to T3 2025)

Source: (Eurostat, 2025b)

Looking only at the third quarter of 2025, Europe's main petroleum oil suppliers were Norway (14.6%), the United States (14.5%) and Kazakhstan (12.2%). The US was the main supplier of LNG (59.9%), followed by Russia (12.7%) and Algeria (7.7%). Norway was, again, the main supplier of piped natural gas (51.8%). The second largest supplier was Algeria (14.6%), followed by the United Kingdom (13.4%). Figure 5 shows fossil fuel imports to the EU by partner in the third quarter of 2025.

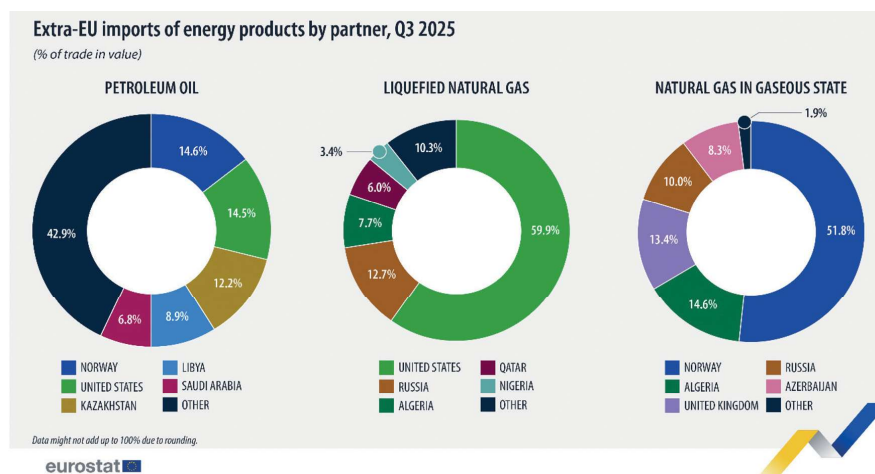


Figure 5 – Fossil fuels imported into the EU by partner (3rd quarter 2025)

Source: (Eurostat, 2025b)

The reconfiguration of the geopolitical energy landscape in the wake of the conflict in Ukraine has had a clear impact on the EU. Since February 2022, the EU has taken steps to reduce fossil fuel imports from Russia (which will be phased out completely by 2027) by seeking alternative energy markets. The US is an increasingly important partner, particularly with regard to LNG (it supplied nearly 60% of the EU's total imports by the end of the third quarter of 2025). On the other hand, new producers of hydrocarbons, such as the Gulf of Guinea and the Mediterranean Basin, are now included among the EU's main suppliers. Over the past two years, both Algeria and Nigeria have ranked among the top six suppliers.

2.2. Energy security

According to Yergin (2006), the concept of energy security can be traced back to the events leading up to World War I, when Winston Churchill, then First Lord of the Admiralty, made a historic decision that would change the Royal Navy's ships' traditional coal-based power to oil. The reasoning was simple: if the ships in his fleet were faster than the enemy's (Germany), they would have a strategic advantage in a conflict that seemed increasingly likely. However, this decision did not come without risk: the Royal Navy would no longer rely on coal, which came mainly from Wales, depending instead on oil from the Persian Gulf (which could prove unreliable, despite the plans to secure a constant supply). Energy security became an issue

of national strategy, but Churchill, when questioned, answered that “Safety and certainty in oil [...] lie in variety and variety alone” (Yergin, 2020, p. 69). Since then, energy security has remained a critical issue. Yergin argues that, during the last decades of the 20th century, energy security was viewed too narrowly and that the concept should be expanded to include new concerns. Yergin also observes that energy security should not be viewed as an isolated issue, but rather as part of a larger framework of international relations and interactions between States (Yergin, 2020).

Similarly, Cherp & Jewell (2014) highlight that the academic debate on energy security dates back to the 1960s, having intensified during the oil crises of the 1970s. By the end of the 1980s, scholarly interest in energy security began to steadily decline (mainly due to oil prices having stabilised by energy security). It was reignited during the 2000s due to developments such as a rise in demand across Asia, disruptions to Europe’s gas supply and growing pressure to decarbonise energy systems. The authors point out some differences between classical and modern studies on energy security. Earlier studies (1970s and 1980s) defined energy security as the uninterrupted supply of low-priced oil, given the threat of embargoes and price manipulation by oil-exporting countries. In contrast, contemporary challenges to energy security involve issues that go beyond securing a steady supply of oil (Cherp & Jewell, 2014)¹¹.

The issue of energy security is also a priority for the Asia-Pacific region. In 2007, the Asia Pacific Energy Research Centre (APERC) warned that an increase in energy demand was inevitable, given the region’s growing economy and population. As energy resources were limited and there was a risk of shortages, the region would need to implement strategies to deal with fluctuations in supply and demand (APERC, 2007). The APERC 2007 report (pp. 1–2) introduced the “four As of energy security: availability, accessibility, acceptability and affordability”, four factors which it claims are essential to achieve true energy security. According to the same report, the meaning of energy security as a concept has changed since it was first coined. After the 1970s oil shocks, energy security meant reducing the risk of oil supply shortages due to interruptions in the flow of petroleum from the Middle East. Since the turn of the century, factors such as geopolitical disputes, natural disasters, terrorism and energy-related environmental challenges have been included in the definition of energy security, as they drive their prices and contribute to instability in the supply of fossil fuels (APERC, 2007, p. 5).

The International Energy Agency (IEA) (2014, p. 13) has defined energy security as “the uninterrupted availability of energy sources at an affordable price” (IEA, 2014, p. 13). This definition reflects humanity’s growing dependence on energy in all aspects of daily life, as a reliable and consistent supply of energy is essential for society to function normally. This includes ensuring sufficient energy to power artificial lighting, as well as for heating and food preparation (University of Plymouth, 2026).

¹¹ Energy security is now tied to other energy policy issues, which include ensuring equal access to modern sources of energy and combating climate change (Cherp & Jewell, 2014, p. 415).

Bluszcz described energy security as an interdisciplinary concept that combines three perspectives: the energy, economics and environmental perspective. The energy perspective includes balancing supply and demand, the technical aspects of infrastructure and infrastructure management and the diversification of energy sources. The economic perspective consists of ensuring acceptable prices for energy resources. The environmental perspective focuses on ensuring the “proper state” of the environment for future generations (Bluszcz, 2016, p. 1532).

The concept of energy security has evolved since the second half of the 20th century. During the 1970s and the decades that followed, it referred specifically to petroleum and reflected concerns about possible oil shocks. In the early years of the 21st century, there was a significant diversification of the energy market. Since 2015, the climate change and the need to transition to clean energy became a growing concern. Most recently, the resurgence of war to Europe in 2022, along with the rise of new energy dependencies, has once again driven an evolution in the concept of energy security.

2.3. Energy security in the European Union

Several authors (most of whom are European) have published studies on the EU’s energy security. These articles explore challenges and possible responses, and some also address the transition to clean energy. This subchapter contains a brief overview of some relevant works.

In 2012, the Chatham House think tank raised the issue of reforming global energy governance, stressing that energy policy is one of the most important challenges of the present. The report states that governments’ energy policies should not only balance security and cost of supply, but should also focus on the national and global environment, as well as on economic growth and development, job creation, eradicating poverty, imports, national resources, technological leadership and diplomatic relations (Hirst & Froggatt, 2012), making this a highly complex issue.

A few years later, Pascual (2015) looked at the relationship between energy and geopolitics. Pascual states that energy and geopolitics have always been interconnected and that, for most of the 20th century, access to energy resources was decisive in determining the outcome of the wars waged during that period. The article provides a framework to understand the relationship between energy geopolitics and energy markets (2015, p. 3). Pascual argues that neither energy markets nor States’ foreign policies are static. To understand how energy markets and foreign affairs intersect, one must understand the dynamics between the two, which further highlights the complexity of the issue.

On 25 February 2015, the European Commission (2015, p. 2) submitted a proposal to create an Energy Union. The document set out an ambitious goal: it urged Member States to make fundamental changes to the European energy system in order to pursue “[...] a vision of the Energy Union as a sustainable, low-carbon and climate-friendly economy that is designed to last” (European Commission, 2015, p. 2).

In an article published the following year, Graaf & Colgan (2016) analysed energy governance at the global level. The authors describe how the topic emerged as a new field of enquiry in international studies, look at its origins and roots and observe that scholars studying this field have sought to understand how the energy sector is governed at the global level, by whom, and with what consequences (Graaf & Colgan, 2016). The conclusions include three important lessons about global energy governance. The first is that there are significant gaps between its potential and its actual scope, even though, paradoxically, there is no shortage of international institutions, forums and networks dedicated to different aspects of governance. The second is that the “core” of this energy complex would depend on the objectives that are defined. The third is that, while some gaps resulted from inaction (or a lack of political will), others were a consequence of differences in the national interests of States (2016, p. 8).

Siddi (2020) discusses EU-Russia energy trade relations (focusing on Europe’s dependence on imports from Russia). Siddi points out that, until the mid-2000s, this interdependence was seen as a successful example of cooperation between Russia and the EU in the post-Cold War era. However, more recently, both the EU and Russia have attempted to reduce their dependence on fossil fuel imports (for the EU) and exports (for Russia). The trade relations between the two countries had become more fragile since the beginning of the Ukraine crisis and the ensuing rift in EU-Russia relations, with politicians and scholars now viewing this interdependence as a vulnerability for both sides (p. 21).

Similarly, Akinci & Iyer (2022) argue that Europe is not only in a race to meet its climate targets (in the medium and long term) and support the energy transition. For geopolitical and energy security reasons, it is also fast-tracking the process to end its dependence on imports of petroleum, refined products and natural gas from Russia as quickly as possible (Akinci & Iyer, 2022). The conflict in Ukraine prompted the EU to step up its search for alternative sources of fossil fuels, especially natural gas, as the current sources were clearly insufficient. This posed a complex problem for Europe, as promoting investment in fossil fuels (by committing to long-term supply agreements) was incompatible with its ambitious climate targets¹².

The 2024 report of the International Renewable Energy Agency (IRENA) estimates that renewables will account for 77% of the global energy mix by 2050, up from 16% in 2020, based on its most optimistic scenario of limiting global warming to 1.5°C¹³ (IRENA, 2024, p. 10). The report forecasts that, in this best-case scenario, electricity will become the main source of energy, and that, in the future, consumption will increase to more than double (from

¹² Those targets are set out in the European Green Deal, an ambitious policy package designed to make the European Union’s economy environmentally sustainable. In addition to the goal of becoming climate-neutral by 2050, the programme also aims to ensure that the energy transition provides economic and industrial benefits for Europe (Leonard et al., 2021).

¹³ This target is set out in the Paris Agreement, in which participating countries have committed to drastically reduce greenhouse gas emissions on a global scale in the long term in order to prevent the average Earth surface temperatures from rising more than 2°C compared to pre-industrial levels, and to make a continued effort to further reduce this increase to 1.5°C (United Nations, 2015, p. 3).

22% to 51% by 2050). The IRENA states that, by then, the use of biomass and hydrogen will have grown substantially, and that, combined, their share of the total energy mix will exceed that of fossil fuels by a large margin (Figure 6).

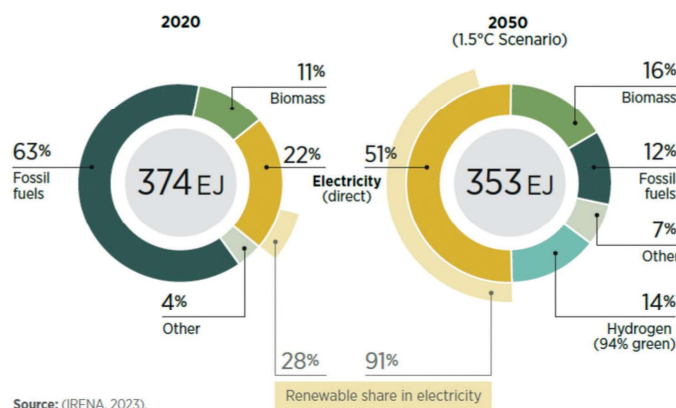


Figure 6 – Total energy consumption under a 1.5°C rise scenario

Source: (IRENA, 2024)

The Regulation on the Governance of the Energy Union supports the EU in achieving its 2030 climate and energy targets by setting common rules for planning, reporting and monitoring. To comply with the Governance Regulation¹⁴, EU Member States are required to develop their national integrated energy and climate based on a common framework. These plans should address each of the five pillars of the Energy Union: decarbonisation; energy security; energy efficiency; the internal energy market; and research, innovation and competitiveness (European Commission, 2025a).

For the past three decades, Europe's economic stability and industrial growth have depended on foreign energy imports. Since the early 1990s – with the collapse of the Soviet Union – EU Member States began to recognise the benefits of integrating the former socialist and Soviet countries into the European energy market. Massive projects, such as the Nord Stream I and II gas pipelines, are examples of this policy, but the risks associated with this energy dependency – particularly on Russia – were apparent from the outset. In 2021, Russia supplied more than 40% of the natural gas, 46% of the coal and 27% of the petroleum consumed by EU Member States. Additionally, the EU's import dependency rate (which Eurostat defines as the share of energy a country must import to meet its total energy needs) was approximately 60% (Aydin, et al., 2025).

¹⁴ Regulation 2018/1999 of the European Parliament and of the Council of the European Union, which sets out the legal framework for reliable, inclusive, cost-efficient, transparent and predictable governance of the Energy Union and Climate Action (governance mechanism), to ensure that the Energy Union achieves its 2030 and the long-term objectives and targets, as set out in the 2015 Paris Agreement on climate change (European Union, 2018).

3. Methodology and method

The methodology used in this study, as recommended by Santos & Lima (2019), involves a subjectivist approach in which reality is seen as a social construct and social phenomena are produced through interactions between social actors, and between them and their environment.

The study uses an interpretivist epistemological framework, which sets it apart from works that seek to understand the social world using the principles and techniques of the natural sciences, and instead seeks to understand how social reality is constructed.

A qualitative research strategy was chosen, as the aim of the study is to understand real-life social phenomena through patterns found in the data, using inductive reasoning to draw generalisations from the examination of specific facts. A case study research design was used to collect in-depth data on a single research topic (the EU's energy security).

The data collection method consisted of non-structured, non-participant observation (that is, the researcher did not intervene in the situation analysed in the study) as well as a review of documentary sources (both primary and secondary).

4. Discussion of findings

This chapter answers the question defined at the beginning of the study: How can the European Union overcome the current challenges to its energy security? Clearly, the EU must diversify its suppliers of petroleum and natural gas (which are essential to ensure its economic growth and the well-being of the citizens of its Member States). This will require reducing its dependence on a single market (and especially on the US) and opening up to new fossil fuel-producing regions (such as the Gulf of Guinea and the Mediterranean Basin). Both these aspects will be discussed in the next subchapters.

4.1. The risks of energy dependence on the US

The EU has been trying to reduce its imports of fossil fuels (albeit gradually) to become progressively less dependent on Russian energy imports (especially since the invasion of Ukraine in 2022) and, simultaneously, invest more in clean energy. The general consensus is that Europe will need to import natural gas and petroleum at least until 2050, at which point it should have become climate-neutral, as set out in the European Green Deal (European Council, 2026).

However, the EU remains a net importer of energy, as its needs greatly exceed its domestic production. In 2020, approximately 58% of the energy available in the EU was sourced from non-EU countries¹⁵. In the case of natural gas alone, these figures are even higher: in 2024, about 90% of the natural gas consumed in the EU came from outside the EU. That year, imported gas via pipelines came mainly from Norway, Algeria, Libya, Azerbaijan, Russia and

¹⁵ That year, the figures varied greatly between Member States: Estonia's dependency rate was 10.5%, while Germany's was 63.7%, Greece's was 81.4% and Malta's was over 97% (European Council, 2024).

the United Kingdom, representing 62% of all imported gas, while LNG imports accounted for the remaining 38% (Strategic Perspectives, 2026).

Securing a sufficient supply of petroleum and natural gas to meet the needs of EU Member States remains critical, as reducing fossil fuel imports does not mean eliminating them entirely (at least in the near future). Therefore, in the short term, the main priority is reducing imports from Russia. At the same time, this supply (of petroleum and, most importantly, natural gas) will have to be replaced by imports from other energy-producing regions.

To offset the reduction in imports from Russia, the EU has begun to purchase more LNG from the US, especially since 2022. Figure 7 shows the volume of natural gas imports into the EU in 2021 (before the Russian invasion of Ukraine) and in 2024.

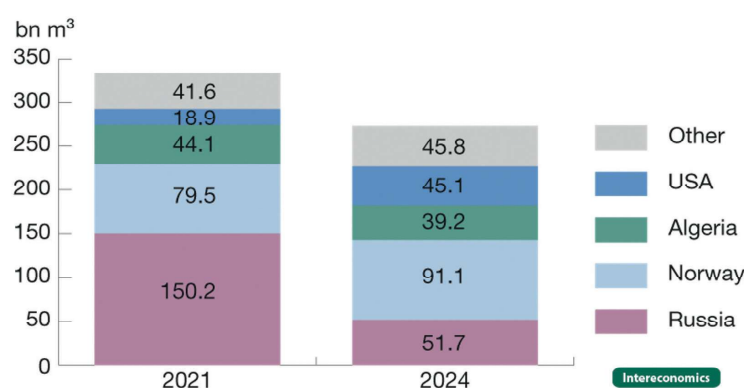


Figure 7 – Natural gas imports into the EU in 2021 and 2024

Source: (Heuck, et al., 2025)

Imports of natural gas from the US into the EU have increased considerably since 2021. That year, the US was the fourth largest individual exporter, supplying only 18.9 bcm, well behind Russia, Norway and Algeria. In 2024, the US delivered 45.1 bcm to the EU, overtaking Algeria and nearly matching to the volumes imported from Russia, while Norway continued to be the largest supplier. Similarly, gas imports from Russia fell significantly (from 150.2 bcm in 2021 to 51.7 bcm in 2024). In other words, during this period, Europe has turned to the US to replace its gas imports from Russia.

In mid-2025, the European Commission and the US signed a trade and tariffs agreement¹⁶ in which the EU has committed to purchasing LNG, petroleum and nuclear energy products from the US to meet an estimated demand of \$750 billion over the next three years (\$250 billion per year). According to Eurostat, EU imports of energy products from the US amounted to €77 billion (\$83 billion) in 2024 and €86 billion (\$93 billion) in 2023. This means that, under the agreement, the EU will have to almost triple the volume of energy it imports from the US

¹⁶ A comprehensive trade deal that imposes a 15% tariff on most European products (Euronews, 2025).

between 2026 and 2028 (Enerdata, 2025), which could hinder the efforts to diversify its natural gas sources and ensure its energy security. Furthermore, three years after the supply disruptions of 2022, and even though the EU was able to navigate the challenges it posed at the time, it has not succeeded in diversifying its sources of natural gas, as many countries simply replaced one dependency for another. That is, the EU still has a long way to go to meet its objective of achieving energy independence and building resilience to crises (Heuck, et al., 2025).

The possibility that the EU may become dependent on the US for natural gas in the short term¹⁷ raises a different set of issues, mainly related to geopolitics. On the one hand, the Trump administration may pose a genuine threat to the EU's energy security, as LNG shipments can be used leverage to pressure the EU into accepting certain compromises on trade (Strategic Perspectives, 2026). On the other hand, over-reliance on natural gas imports from a single source (the US) will hinder the EU's efforts to ensure its energy security, as it prevents from diversifying its energy sources, which is what best practices (and common sense) recommend – as demonstrated recently when the Russian invasion of Ukraine forced the EU to look for alternatives to replace the natural gas it imported from Russia. Furthermore, it is not yet clear how relations (political, diplomatic, military and economic) between the two blocs (the US and the EU)¹⁸ will evolve in the near future.

4.2. The role of the Gulf of Guinea in the European Union's energy security

The scenario described in the previous subchapter means that, to avoid becoming dependant on the US for energy, the EU needs to increase its fossil fuel imports from other sources. It is not surprising that the Gulf of Guinea¹⁹ region is increasingly seen as an alternative energy market for the near future: it is a vast region and the EU has been present in the area for many years, having implemented numerous programmes²⁰ to enhance maritime security in these waters.

¹⁷ The US is the EU's largest supplier of LNG by a clear margin (by July 2025, it supplied approximately 55% of the EU's total imports) (TV Europa, 2025).

¹⁸ While it is not the purpose of this study to analyse the US National Security Strategy (NSS) enacted by President Donald Trump in late November 2025 (President of the United States, 2025), when looking at the US's role as an energy supplier to the EU, it would be wise to remember the criticism directed at Europe and its leaders (centred mainly on the decline of Europe and the EU's inability to address existing threats, in particular those related to migration policies). Despite this, the document states that Europe remains a strategic partner for the US, particularly in the industrial, technological and energy sectors. US energy exports to the EU (in particular natural gas) do not appear to be at risk, but is the EU prepared to remain openly dependent on its historic transatlantic ally for its energy needs, especially when the US has made a claim on the territory of a European ally in the North Atlantic Alliance (specifically, Greenland) after the NSS was published? Clearly, this level of dependence on the US for energy carries risks for the EU, a fact that cannot be ignored when the tariff and trade agreement of mid-2025 is up for renegotiation.

¹⁹ The region includes 19 States – 17 coastal countries and two archipelagos (Cape Verde and São Tomé and Príncipe) – located between Senegal and Angola (Council of the European Union, 2014).

²⁰ These programmes – which are mainly aimed at improving the region's regulatory framework, operational rules, information sharing, training and capacity building – seek to enhance maritime security in the Gulf of Guinea by helping the region's coastal nations improve their preparedness and readiness to tackle the challenges facing them. Notable examples include the Gulf of Guinea Inter-Regional Network, the Support to West Africa Integrated Maritime Security Programme, the Support Programme to the Maritime Security Strategy in Central Africa, and the Improved Regional Fisheries Governance in Western Africa programme (European External Action Service, 2021).

According to the Energy Institute's annual report (2025), in 2024, the West Coast of Africa (which includes the Gulf of Guinea and the region's main hydrocarbon-exporting countries²¹) only ranked fourth among crude oil exporters. Of the 463.4 Mt of crude oil imported by Europe, only 55.7 Mt came from the West Coast of Africa, compared to 95.8 Mt from the US, 80.9 Mt from the Commonwealth of Independent States (excluding Russia), and 57.8 Mt from North Africa (Energy Institute, 2025, p. 34). In 2024, Europe also imported 111.7 bcm of LNG, although Nigeria supplied only 5.6 bcm and Angola only 1.1 bcm. The EU imported 6.7 bcm from the countries of the Gulf of Guinea. Together, these countries were the EU's fourth largest supplier, but were still well behind the US (49.1 bcm), Russia (20.9 bcm) and Qatar (13.6 bcm), and only slightly ahead of Norway (5.6 bcm) (p. 44).

Given that both crude oil and LNG from the Gulf of Guinea will have to be transported to Europe by sea²², it makes sense to analyse the main threats to ships travelling through those waters: piracy and armed robbery at sea. Based on reports by the International Maritime Bureau (IMB)²³, Figure 8 shows how incidents of this nature in the Gulf of Guinea region have decreased between 2018 and 2025. It is worth noting that the region was the main global hotspot for piracy and armed robbery at sea against ships between 2018 and 2020 (Alexandre, 2024, p. 39).

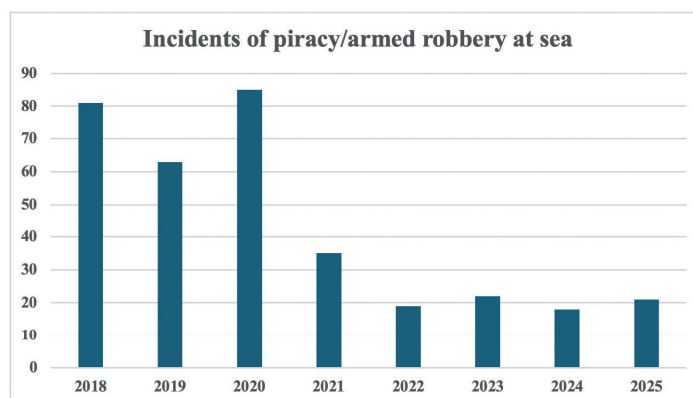


Figure 8 – Incidents of piracy/armed robbery at sea in the Gulf of Guinea (2018-2025)Fonte: (IMB, 2023), (IMB, 2026)

Figure 8 shows a significant drop in incidents after 2020, after which the total number of incidents has remained relatively stable (at approximately 20 per year). Also relevant is the number of incidents involving oil tankers. Figure 9 shows the total number of incidents (and their geographic location on the Gulf of Guinea).

²¹ Such as Nigeria and Angola. In 2024, Nigeria was Africa's largest producer of petroleum (with 79 Mt), while Angola ranked third at 57 Mt (Energy Institute, 2025, p. 21).

²² At least until the Trans-Saharan gas pipeline – which will run from Nigeria to Algeria (via Niger) – is built and can be used to transport natural gas (Alexandre et al., 2025).

²³ A specialised division of the International Chamber of Commerce created in 1981 to act as a focal point in the fight against all types of maritime crime (International Chamber of Commerce, 2026).

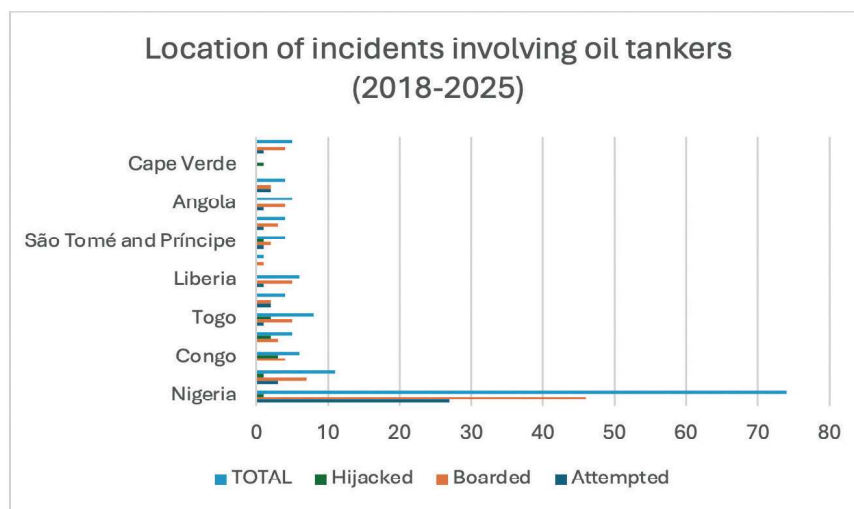


Figure 9 – Incidents involving oil tankers, Gulf of Guinea (2018-2025)

Source: (IMB, 2023), (IMB, 2026)

The data above shows that, between 2018 and 2025, most incidents of piracy/armed robbery at sea against ships in the Gulf of Guinea happened in Nigerian waters. However, only one tanker was successfully hijacked by pirates out of 74 incidents recorded by the IMB (the other incidents included 46 boardings by pirate groups, who stole property from the ships and crew members' belongings, as well as 27 failed boarding attempts). During that period, 11 ships were hijacked in the region. The Congo recorded the highest number (3), followed by the Ivory Coast and Togo (both countries reported two hijackings in their respective territorial waters).

Based on the data shown above, the security situation in the region's waters has remained stable (with relatively few incidents) for the past few years and is not expected to change significantly in the near future. Given that the region accounts for only a small share of fossil fuel exports (both petroleum and LNG) to Europe, it is reasonable to predict an increase in hydrocarbon shipments from the Gulf of Guinea to the EU in the coming years. This would reduce the EU's dependence on US imports and improve its energy autonomy (and security).

4.3. The role of the Mediterranean Basin in the European Union's energy security

The Mediterranean Basin is (another) potential supplier of energy to the EU. Of the 463.4 Mt imported in 2024, 57.8 Mt came from North African producer countries –slightly exceeding the volume of imports from the Gulf of Guinea (55.7 Mt) –, which accounted for only 3.1% of all exports (Energy Institute, 2025, pp. 33–34). Of the 345 Mt of oil extracted in Africa, 147 Mt came from four Mediterranean countries: Algeria (59 Mt), Libya (56 Mt), Egypt (31 Mt) and Tunisia (1 Mt) (about 43% of the total production of the African countries) (p. 22).

African nations produced 239.6 bcm of natural gas in 2024. Algeria is Africa's main producer (94.7 bcm), followed by Egypt (47.5 bcm) and Libya (14.3 bcm). Overall, the African countries were responsible for only 5.8% of the global production of natural gas, that is, considerably less than regions such as North America, which accounted for 30.6% (the US alone produced 25% of the region's output), the Commonwealth of Independent States (19.7%, Russia being the second largest individual producer, accounting for 15.3% of the total output), the oil-producing countries of the Middle East (17.9%) and the Asia-Pacific region (17.2%) (Energy Institute, 2025, p. 37). Another relevant fact is that, in 2024, EU Member States imported 157 bcm via pipeline and 111.7 bcm of LNG. The natural gas supplied to the EU via pipeline in 2024 came from Norway (87.3 bcm), Algeria (29.3 bcm), Russia (27.2 bcm), Azerbaijan (11.9 bcm) and Libya (1.3 bcm) (p. 45). Nearly all of the LNG imported by the EU in 2024 came from the following countries: the US (49.1 bcm); Russia (20.9 bcm); Qatar (13.6 bcm); Algeria (9.7 bcm); Nigeria and Norway (5.6 bcm each) (p. 43).

The data above suggest that the Mediterranean Basin region could be a viable option for the EU to diversify its fossil fuel imports. The region's fossil fuel exports, which currently account for a relatively small share of the EU's energy mix, have significant potential for growth. Thanks to the large number of pipelines already in place, natural gas can be transported between countries almost entirely by land, even though the level of insecurity in the Mediterranean Sea in 2024 (according to the annual report of the Maritime Information Cooperation & Awareness Centre [MICA] of the French Navy) (2025) for merchant ships is relatively low²⁴. The report lists the issues that could compromise maritime security in the Mediterranean: the region is a transit route for drug traffickers, who operate mainly around the Strait of Gibraltar; several migration routes cross the Mediterranean, which could impact maritime trade (especially in the Strait of Gibraltar and off the coasts of Tunisia and Libya); the threat of maritime terrorism remains high, notably in areas close to major ports and chokepoints²⁵ (such as the Suez Canal and the Bosphorus Strait) (MICA, 2025, p. 95).

Finally, the natural gas reserves discovered in the Eastern Mediterranean in the turn of the 21st century should not be overlooked: the offshore Gaza Marine field (Palestine), the Leviathan, Tamar and Karish fields (Israel), the Aphrodite field (Cyprus) and the Zohr field (Egypt) (Figure 10).

²⁴ According to the report, the conflict between Israel and terrorist organisations Hamas and Hezbollah had no impact on commercial shipping in the Eastern Mediterranean (MICA, 2025).

²⁵ Chokepoints are channels that connect major sea lanes, creating natural bottlenecks for ships crossing those areas. This makes them vulnerable to maritime crimes such as piracy and armed robbery at sea, as well as to attacks launched from land (Popescu, 2016).

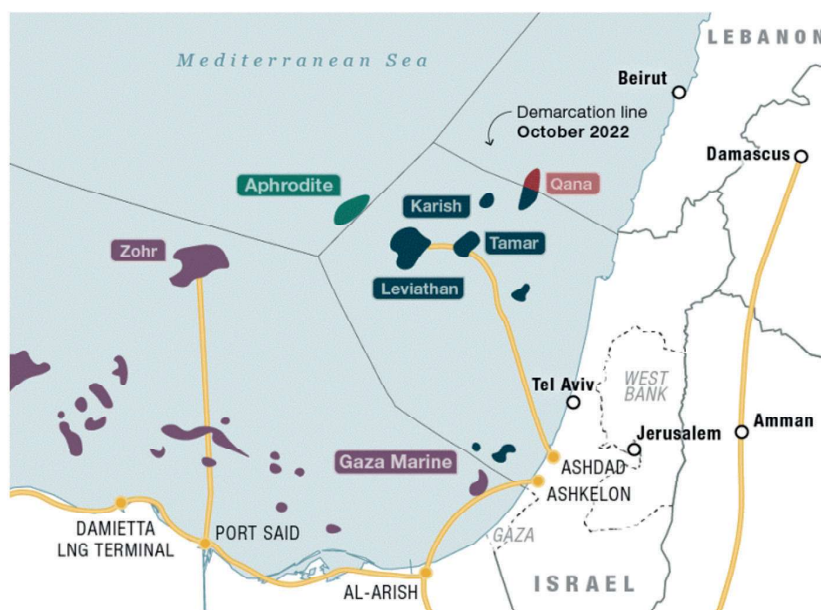


Figure 10 – Natural gas reserves in the Eastern Mediterranean

Source: (Farook, 2023)

The plan was to start extracting gas from the Karish field in September 2022. Israel would then have a gas surplus that would allow it to export around 10 bcm to EU countries annually. The EU's interest in Israeli gas came from the need to quickly diversify its gas suppliers following Russia's invasion of Ukraine, which led to a drop in the volume of imports from that country (Zielińska, 2022). Israel had planned to use the infrastructure linking its gas fields to the LNG terminals in Egypt, as agreed in a Memorandum of Understanding signed by Egypt, Israel and the EU in June 2022²⁶. However, in 2024, the EU Member States only imported 0.3 bcm of LNG from Egypt, while no imports from Israel were recorded (Energy Institute, 2025, p. 44). On the other hand, the Leviathan field is expected to ramp up production to approximately 14 bcm by 2026 (Offshore Technology, 2025), which could lead to an increase in natural gas imports from Israel (via Egypt) if (or when) the EU chooses to pursue this option. More recently, in January 2023, Ente Nazionale Idrocarburi (Eni) announced the discovery of a large gas deposit in an exploratory well located in the Nargis offshore concession, off the coast of Egypt (Eni, 2023). This means that, eventually, if it chooses to do so, the EU would be able to import more natural gas from Egypt.

²⁶ The memorandum was signed in Cairo on 15 June 2022 by the Egyptian Minister of Petroleum and Mineral Resources, the Israeli Energy Minister and the EU Energy Commissioner (European Commission, 2022).

Overall, the EU has imported very little natural gas from two trade partners in the Eastern Mediterranean (Egypt and Israel) with whom it has signed a memorandum of understanding. It stands to reason that the EU will bear in mind the recent discovery of new natural gas reserves in Egypt and the increase in output from Israel's offshore fields when the memorandum of understanding with the US on natural gas expires (or is renegotiated).

5. Conclusions

This article examines the current challenges to the EU's energy security. The most pressing and immediate concern is whether the EU will be able to respond to a short-term hydrocarbon supply crisis. The EU has been taking steps to drastically reduce the volume of fossil fuel it imports from Russia. It has done so by importing high volumes of energy, particularly LNG, from the US. However, this comes with significant risks, as it prevents the EU from diversifying its energy imports and may pose a threat to its energy security. The second challenge is less time-sensitive and involves finding sustainable alternatives that are better aligned with the EU's long-term priorities (which include gradually replacing fossil fuels with what is known as clean energy, in order to become carbon neutral by 2050). This study focused on the first challenge. The following question was used as a starting point for the study: How can the European Union respond to the current challenges to its energy security?

The EU has committed to phase out all hydrocarbon imports from Russia until the end of 2027. Despite the fact that several EU Member States still import large volumes of energy, especially natural gas, from Russia, there has been a significant shift in Europe's LNG imports, with a noticeable increase in trade with the US, prompting the US and the EU to sign an agreement setting US customs tariffs on European products at 15%. This agreement is also a commitment by the EU to purchase an estimated \$750 billion of energy from the US over the next three years. By the end of the third quarter of 2025, the US supplied nearly 60% of the EU's imports of natural gas, which is a clear (and worrying) sign that Europe is now dependent on the US energy market. While it is true that energy security means having access to sufficient available resources, it also hinges on the diversification of markets. The first requirement (availability) is largely addressed by importing LNG from the US (in the short term, this allows the EU to mitigate the considerable impact of drastically reducing imports from Russia). On the other hand, the second requirement (diversification) means that importing large quantities of LNG from the US is counterproductive, as it leads to over-reliance on a single exporter and could even threaten the EU's energy security. As Winston Churchill said on the eve of World War I, security in the oil sector lies in variety and variety alone. Therefore, the EU will have to rethink its energy mix in the near future by seeking out new exporting countries (while continuing to import from the US, albeit in much smaller quantities). These developments could open up alternative energy markets, particularly in the Gulf of Guinea and the Mediterranean Basin, which could help the EU diversify its energy sources (a goal it has so far failed to achieve, since it has merely replaced Russia with the US as its quasi-monopolistic gas provider).

This answers the starting question: as the study shows, the EU may choose to diversify its suppliers of fossil fuels in the near future (most likely after the expiry of its current tariff agreement with the US), keeping the US as a supplier while reducing its share in the mix and diversifying into other fossil fuel-exporting countries from regions such as the Gulf of Guinea and the Mediterranean Basin.

This article provides new insights into the issues discussed here by analysing recently published data still not widely disseminated in the academic community. These data not only highlight the current gaps in the EU's energy security but also point to possible solutions in the short term.

The main research limitation is the fact that it is not possible to analyse, in the same article, the two most important challenges to the EU's energy security: how to respond to a short-term hydrocarbon supply crisis; and finding alternative solutions that are in line with its long-term priorities. This article examines only the first challenge and the ways in which it can be overcome, given that it is the most immediate threat to the EU's energy security at this time.

Future studies into the topic (Europe's energy security) should be conducted to examine the second major challenge facing Europe's energy sector: finding sustainable alternatives that are in line with its long-term priorities.

References

- Akinci, E. & Iyer, S., 2022. European Union Offshore Wind Strategy. *Oxford Institute for Energy Studies - Energy Insight*: 116, pp. 1-15.
- Alexandre, A. G., 2024. Os desafios securitários nos espaços marítimos do Corno de África e do Golfo da Guiné no século XXI. [Security Challenges in the Maritime Spaces of the Horn of Africa and the Gulf of Guinea in the 21st Century.] *Lusíada. Política Internacional e Segurança*, 27-28, pp. 33-70.
- Alexandre, A., Simões, J. & Costa, A., 2025. Segurança Energética Europeia: O Papel da Bacia Mediterrânica. [Europe's Energy Security: The Role of the Mediterranean Basin.] *Revista Nação e Defesa* no. 170, pp. 31-61.
- APERC, 2007. *A Quest for Energy Security in the 21st Century*, Tokyo - Japan: Asia Pacific Energy Research Centre.
- Aydin, T. et al., 2025. *The Geopolitics of the European Green Deal: From Fragile to Strategic Dependencies?*, Paris: European Chair for Sustainable Development and Climate Transition at Sciences Po.
- Bluszcz, A., 2016. European economies in terms of energy dependence. *Qual Quant* 51, pp. 1531-1548.
- Cherp, A. & Jewell, J., 2014. The concept of energy security: Beyond the four As. *Energy Policy* 75, pp. 415-421.
- Council of the European Union, 2014. *EU Strategy on the Gulf of Guinea*. https://www.eeas.europa.eu/sites/default/files/eu_strategy_on_the_gulf_of_guinea_7.pdf.
- Enerdata, 2025. *The EU commits to tripling energy imports from the US*. <https://www.enerdata.net/publications/daily-energy-news/us-eu-transatlantic-historical-energy-trade.html?>

- Energy Institute, 2025. *Energy Institute Statistical Review of World Energy 2025*, London: s.n..
- Eni, 2023. *Eni Announces a New Gas Discovery in the Eastern Mediterranean Sea, offshore Egypt*. <https://www.eni.com/en-IT/media/press-release/2023/01/eni-announces-a-new-gas-discovery-in-the-eastern-mediterranean-sea-offshore-egypt.html>.
- Euronews, 2025. *US-EU trade deal wards off tariff escalation but threatens growth*. <https://www.euronews.com/business/2025/07/29/us-eu-trade-deal-wards-off-tariff-escalation-but-threatens-growth>.
- European Commission, 2015. *A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate*. https://eur-lex.europa.eu/resource.html?uri=cellar:1bd46c90-bdd4-11e4-bbe1-01aa75ed71a1.0001.03/DOC_1&format=PDF.
- European Commission, 2022. *EU Egypt Israel Memorandum of Understanding*. <https://webgate.ec.europa.eu/circabc-ewpp/d/d/workspace/SpacesStore/5e740003-b81b-43ee-aec7-87399d537090/download>.
- European Commission, 2025a. *Governance of the Energy Union and Climate Action*. https://climate.ec.europa.eu/eu-action/climate-strategies-targets/governance-energy-union-and-climate-action_en.
- European Commission, 2025b. *REPowerEU at a glance*. https://commission.europa.eu/topics/energy/repowereu_en.
- European Commission, 2025c. *Roadmap towards ending Russian energy imports*. [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52025DC0440R\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52025DC0440R(01)).
- European Council, 2022. *Versailles Declaration*. <https://www.consilium.europa.eu/media/54773/20220311-versailles-declaration-en.pdf>.
- European Council, 2024. *How dependent are EU member states on energy imports?* <https://www.consilium.europa.eu/en/infographics/how-dependent-are-eu-member-states-on-energy-imports/>.
- European Council, 2026. *REPowerEU plan: energy policy in EU countries' recovery and resilience plans*. <https://www.consilium.europa.eu/en/policies/repowereu-plan/>.
- European External Action Service, 2021. *EU Maritime Security Factsheet: The Gulf of Guinea*. https://www.eeas.europa.eu/eeas/eu-maritime-security-factsheet-gulf-guinea_en.
- European Union, 2018. *Regulation (EU) 2018/1999 of the European Parliament and of the Council*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1999>.
- Eurostat, 2025a. *Imports of energy products to the EU down in 2024*. <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20250321-1?>.
- Eurostat, 2025b. *Drop in petroleum imports in 2025*. <https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20251219-2?>.
- Farook, O., 2023. *Is Israel at war in Gaza to exploit Palestinian oil and gas reserves?*. <https://blackdotresearch.sg/israel-war-gaza-exploit-palestine-oil-gas/>.
- Graaf, T. V. d. & Colgan, J., 2016. *Global energy governance: a review and research agenda*. PALGRAVE COMMUNICATIONS, pp. 1-12.

- Heuck, L., Kreysel, M.-A. & Schiffer, H.-W., 2025. Geopolitics and Europe's Natural Gas Supply: Aspects and Consequences from a Gas and Electricity Markets Perspective. *Intereconomics*, Volume 60, Number 6, pp. 346–354.
- Hirst, N. & Froggatt, A., 2012. *The Reform of Global Energy Governance*, London: Grantham Institute for Climate Change In partnership with Chatham House.
- IEA, 2014. *Energy Supply Security - Emergency Response of IEA Countries*, Paris: International Energy Agency.
- IMB, 2023. *Piracy and Armed Robbery Against Ships - Annual Report 2022*, London: International Chamber of Commerce.
- IMB, 2026. *Piracy and Armed Robbery Against Ships - Annual Report 2025*, London: International Chamber of Commerce.
- International Chamber of Commerce, 2026. *ICC International Maritime Bureau*. <https://iccccs.org/imb/>.
- IRENA, 2024. *Geopolitics of the energy transition: Energy security*, Abu Dhabi: International Renewable Energy Agency.
- Leonard, M. et al., 2021. *The geopolitics of the European Green Deal*, London: European Council on Foreign Relations.
- MICA, 2025. *Maritime Security. Annual Report 2024*, Brest: French Navy.
- Offshore Technology, 2025. *Israel resumes natural gas exports from Karish and Leviathan gas fields*. <https://www.offshore-technology.com/news/israel-gas-field/?cf-view>.
- Pascual, C., 2015. *The new geopolitics of energy*, New York: Columbia University.
- Pfenninger, S., Hawkes, A. & Keirstead, J., 2014. Energy systems modeling for twenty-first century energy challenges. *Renewable and Sustainable Energy Reviews*, volume 33, pp. 74–86.
- Popescu, A. I. C. (2016) Control of Key Maritime Straits - China's Global Strategic Objective. Supplement Geostrategic Pulse, issue n° 225 , pp. 3-22.
- Pplware, 2026. *UE proíbe formalmente as importações de gás da Rússia. [EU formally bans gas imports from Russia.]* <https://pplware.sapo.pt/motores/ue-proibe-formalmente-as-importacoes-de-gas-da-russia/>.
- President of the United States, 2025. *National Security Strategy of the United States of America*. <https://www.whitehouse.gov/wp-content/uploads/2025/12/2025-National-Security-Strategy.pdf>.
- Proedrou, F., 2023. EU Decarbonization under Geopolitical Pressure: Changing Paradigms and Implications for Energy and Climate Policy. *Sustainability* 2023, 15, 5083, pp. 1-14.
- Santos, L. B. & Lima, J. V., 2019. *Orientações metodológicas para a elaboração de trabalhos de investigação*. 2nd Ed., revised and updated. Lisbon: Instituto Universitário Militar.
- Siddi, M., 2020. EU-Russia Energy Relations. *ResearchGate*, pp. 1-25.
- Strategic Perspectives, 2026. *EU Gas Insight*. <https://strategicperspectives.eu/eu-gas-insight/>.
- TV Europa, 2025. *Acordo comercial UE-EUA sobre importações de energia pela UE aos EUA*. <https://www.tveuropa.pt/noticias/acordo-comercial-ue-eua-sobre-importacoes-de-energia-pela-ue-aos-eua/>.

- United Nations, 2015. *Paris Agreement*. https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf.
- University of Plymouth, 2026. *What is energy security?*.
<https://www.plymouth.ac.uk/discover/what-is-energy-security>.
- Yergin, D., 2006. Ensuring Energy Security. *Foreign Affairs*. Volume 85, No.2, pp. 69-82.
- Yergin, D., 2020. *The New Map: Energy, Climate, and the Clash of Nations*. London: Penguin Books Limited UK.
- Zielińska, K., 2022. Israel's Mediterranean gas: the potential for gas export to Europe and the dynamic of regional cooperation. *OSW Commentary, Number 466*, pp. 1-10.