LUISS Guido Carli
LIBERA UNIVERSITÀ INTERNAZIONALE DEGLI STUDI SOCIALI

Department of Political Sciences

Master's degree in International Relations

Chair of International Economics

ENERGY SECURITY AND STRATEGIC AUTONOMY IN THE EUROPEAN UNION

SUPERVISOR

Professor Marco Simoni

CO-SUPERVISOR

Professor Marco Magnani

CANDIDATE
Gianmarco Geneletti
ID Number: 656812

Academic year: 2024- 2025

INDEX

Introduction

Energy has always been a fundamental pillar for Europe's economic and political stability. In recent decades, geopolitical changes and energy crises have highlighted the vulnerability of the European energy market, which is dependent on external sources and unable to govern the changes that occur internally and externally. An emblematic case is the outbreak of the Russian-Ukrainian conflict which has seen us closely involved not only because of the geographical proximity in which the conflict is taking place but also because of the economic consequences that have directly affected European states and its citizens. Europe is stagnating in the position of impotence to which it has always been determined, unable to determine itself and decide its own economic and political fate. The European community, made up of its rulers and its citizens, is therefore necessarily in a position to act by accelerating the process of energy independence, which can be translated into strategic security and opportunities for self-determination. This goal must and will be achieved by implementing a transition to a more sustainable energy model, as evidenced by initiatives such as the European Green Deal and the Fit for 55 package. Europe's real challenge lies in its ability to translate legislation into concrete and tangible actions, so that the objectives set do not remain theoretical but become reality. This process will require a collective involvement of all sectors, private and public, and of the social fabric that makes up the European sociological structure. Communication will play a crucial role in all this, as the urgency of making significant progress on this issue is also central to the achievement of broader European objectives, such as defensive autonomy and internal security, which cannot be separated from a drastic reduction in energy dependence on external actors.

The analysis that will be proposed will be a manifesto of hope and a request for clarity regarding the steps taken by the Union from the years of its foundation to its main developments. Why after decades of existence is the EU not able to isolate itself and react in a mature and organic way to an external geopolitical shock? What is the real meaning of "Union" if a crisis, which deontologically is a factor that unites people, is not able to

make the EU express a clear and unambiguous political direction capable not only of responding to the needs of its citizens but also of demonstrating that Europe, as it was conceived, is not just an aggregation of states but, a collaboration between states?

To answer the questions posed, it is necessary to analyze the current situation in a technical and empirical way, highlighting the historical path that has led the EU to the current situation and what are the factors that drive European development. The research focuses on the European energy market and its development, considering this strategic sector as central to being able to express both all the political fragilities of the EU and the hopes in which the European community must believe. The following question is proposed to be answered:

What are the factors that have driven the development of the European energy market and what geopolitical and geostrategic benefits would the EU derive from a new energy approach?

The research aims to analyze the geopolitical, economic and infrastructural dynamics that influence the European energy sector, exploring the existing structural barriers and investigating possible solutions to make the Union's energy market more resilient and independent. The empirical relationships between energy independence and greater defensive security, translatable into state and European strategic resilience, will be highlighted, highlighting how energy autonomy can contribute to the construction of an autonomous defense policy. To this end, the analysis will focus on two main strands of research: the first focuses on the analysis of the complex interdependence and resilience of the energy system, starting from studies on interdependence and security strategies, while the second strand analyzes the economic and infrastructural challenges related to decarbonization and energy transition, with particular attention to European climate policies.

The issue of energy dependence and security in Europe has aroused a broad academic debate, which has developed along different lines of interpretation since decades ago. The theme of energy dependence and the link with the security of a state

evokes the theme of interdependence that has been dealt with over the years by numerous scholars and academics. In the course of the research, for example, Keohane and Nye's Theory of Complex Interdependence theorized and proposed in 1977 will be analyzed. This theory suggests that high levels of economic interdependence between states reduce incentives to use force. Historically, the energy relationship between Europe and Russia has been seen as an example of stabilizing interdependence, capable of making friendly a relationship with a historically hostile state organized in a way that is diatremly opposed to the dictates of the Western democracies born and evolved under the American umbrella. The war in Ukraine, however, has highlighted the negative aspects of asymmetrical interdependence, in which a revisionist actor, such as Russia, has exploited its control over energy resources to pursue geopolitical ends, demonstrating that interdependence does not automatically guarantee peace unless accompanied by a cunning game of checks and balances. This evokes the concept of "malevolent interdependence" or "weaponized interdependence" postponed by Farrell & Newman in 2019, in the work "*Weaponized Interdependence: How Global Economic Networks Shape State Coercion*" which made it evident how exchange networks, such as gas pipelines and global supply chains, can be transformed into levers of coercion. A fundamental contribution at the academic level is also proposed by more realistic authors, such as Waltz and Mearsheimer, who sponsor the Theories of Security and Vulnerability. They stress that energy security is intrinsically linked to national security as absolute supporters of state self-sufficiency as a key factor in balancing and protecting their state interests in an interconnected environment such as that of international relations. In this regard, the EU's security policies should therefore be integrated with its energy policy to reduce vulnerability and prevent the use of energy as a "weapon" by external actors. The energy crisis linked to the war in Ukraine has accelerated this process, highlighting the need to reduce dependence on external actors, especially Russia, to strengthen its geopolitical position. Furthermore, the energy issue is intrinsically linked to the transition and vulnerability process that the EU has been implementing for several decades now. EU climate policies, such as the Green Deal and the Fit for 55 package, are designed to reduce dependence on fossil fuels and promote a sustainable energy model. At the academic level, authors such as Erik Gartzke, in his work *"The Diffusion of Prosperity and Peace by Globalization"* and Eckhard Weede, in his work "*The Capitalist Peace*", see the

process of energy and sustainable transition as central to achieving a global balance that can guarantee peace and prosperity. This exhumes the indissoluble, and underlined by this research, link between energy and geopolitical power, already recently underlined by Micheal LaBelle, in “Energy as a Weapon of War: Lessons from 50 Years of Energy Interdependence”, which analyzes, and demonstrates, how the war in Ukraine has highlighted how energy can be used as a means of coercion, and therefore a geopolitical tool, but also how European unity can reduce the impact of these pressures, favoring policies of internal solidarity.

This research aims, through a qualitative and quantitative methodological approach, to fit within the already existing academic framework by applying the explicit theories relating to interdependence to the European framework. Integrating both historical, economic, social and geopolitical analyses, using empirical data Starting from a historical analysis of the evolution of EU energy policies, with particular attention to market liberalization and integration, it will be accompanied by an empirical investigation of consumption trends, investments, price volatility and energy dependence by applying economic, social and geopolitical analyses. In addition to a photographic analysis of the current situation and its political path, the research will include the application of case studies to understand how EU Member States have responded to the energy crisis resulting from the Russian-Ukrainian conflict and how they have implemented diversification and energy transition strategies. Specifically, a comparative analysis between Germany and Moldova is proposed to analyze and understand how countries, structurally and geostrategically different, coming from two different starting situations have responded to the energy crisis, induced by the Russian-Ukrainian conflict. Germany, for example, is a crucial example of an EU country that has faced significant challenges in managing its energy dependence, especially in relation to the gas crisis and the economic effects of reduced Russian supplies. The German case is emblematic of the difficulties and solutions potentially applicable to the entire European energy system, offering ideas for understanding the political, infrastructural and diversification choices of energy sources. On the other hand, Moldova, a country located in the heart of Eastern Europe and closely linked to energy and geopolitical dynamics with Russia, is an example

of how a country can be vulnerable to energy action from external actors, but also of how solidarity and diversification policies can help reduce this vulnerability. Moldova, in fact, has faced not only an energy crisis resulting from Russian supply disruptions, but also strong geopolitical pressure, which has highlighted Europe's critical issues in terms of energy dependence and the need to strengthen the resilience of the entire system, and within the system. The inclusion of these studies in the research aims to empirically demonstrate the theoretical relevance proposed by the thesis. In particular, the analysis of Germany and Moldova hopes to be able to validate theories on complex interdependence, on the fragility of energy interdependence and on the political and infrastructural responses adopted in crisis situations expecting to demonstrate the effective link between energy independence and strategic resilience.

The thesis is divided into 4 main chapters that aim to create a clear and effectively exhaustive roadmap. The first chapter analyzes the historical process that led to the liberalization of the European energy market through the study of the political and legislative instruments implemented by the European Union and its competent bodies. Subsequently, after having clearly explained the functioning of the European energy market, the study of the impact of the Russia-Ukraine conflict and the moves made by the EU as emergency remedies will be proposed. This will involve deepening the economic and infrastructural obstacles that the EU has had to face in responding to the crisis and how they have negatively impacted the energy transition that the European community is implementing. In the third chapter, the relationship between energy interdependence and strategic defensive resilience will be empirically analyzed by deepening the existing academic literature and applying the theory through the construction of a stylized model, in which Germany and Moldova will be protagonists, which can help to understand the dynamics of the relationship. The research will conclude with an analysis of the future prospects that await the EU and the possible choices, political and field, that member states will have to implement in order to guarantee a prosperous, secure and independent future for its population. This research aims to provide a structured analysis of the dynamics that are shaping the future of the European energy market, identifying the problems that hinder its strategic positioning and proposing concrete solutions to

overcome them. The expected contribution of the research is to clarify how the EU can reduce its energy vulnerability and position itself as an autonomous and strategically competitive actor in the global context, without compromising the sustainability and feasibility of the ecological transition.

CHAPTER 1

FROM FRAGMENTED MARKETS TO ENERGY UNION: EUROPE'S STRATEGIC JOURNEY

1.1 Evolution of the European energy market

"*The merger of coal and steel production will immediately ensure the establishment of common bases for economic development, the first stage of the European Federation, and will change the destiny of these regions which for a long time have devoted themselves to the manufacture of instruments of war of which they have been the most constant victims*"[1]

This is what the Schuman Declaration said in one of its verses, a milestone in the development, and origins, of European integration, which immediately emphasized the need for and importance of communicating a sector of imperative importance such as energy and industrial production. As stated by the Declaration itself, the intent to harmonize and make production common between Germany and France was a historical necessity that had been placed on the part of the nations to avert further winds of war and definitively "normalize" the difficult interstate relations that ran between France and Germany. This is a confirmation of what this thesis aims to analyze and confirm: energy represents a key sector of today's geopolitical balance and this characteristic is inherent in its nature, transcending the historical period that surrounds it.

However, let's go in order and quickly retrace the historical developments that led to the creation of the European United Market. The European states decimated by war are preparing to embark on a path of communitarization and economic integration so as to guarantee peace and prosperity to the continent by placing at the basis of all actions the need to avert new fearful tensions between states. Within this context, the creation of the European Single Market was achieved and in particular the establishment of an integrated energy market that underwent new changes every day due to the new challenges that stood between legislators and the objectives they set. The origins of European integration can

[1] Schuman, R. (1950, May 9). *Declaration of 9 May 1950*. Retrieved from European Union official website: https://europa.eu/european-union/about-eu/symbols/europe-day/schuman-declaration_en

be found in the signing, on 18 April 1951, of the Treaty of Paris in which the signatory countries (France, Belgium, West Germany, Italy, Luxembourg and the Netherlands) established the European Economic Community for Coal and Steel, following up on what Robert Schuman hoped for in his declaration. The Treaties of Rome of 1957 followed up the Treaty of Paris by establishing the European Economic Community (EEC), which laid the foundations for the establishment of the European Single Market, and the European Atomic Energy Community (EUROATOM) which had the objective of governing and administering European cooperation in the field of nuclear energy[2]. Despite these legislative developments, the situation still remained stagnant until the eighties, given the resistance of numerous barriers that hindered free movement and therefore prevented the establishment of a real area of free movement within the continent. The turning point came in 1896 when, thanks to the signing of the Single European Act, real and tangible measures were put in place for the removal of these barriers by 1992, constituting a stable legislative, economic and political framework for the establishment of the European Single Market. Finally, in 1992 we have the signing of the Maastricht Treaty which will transform the European Economic Community into the European Union and consolidate the process of establishing the single market. Within this international political context, a progressive liberalization of energy markets is developing in parallel.

Before the advent of Liberalization in the 1990s, European energy markets were mainly characterized by national monopolies in which each country had its own state-owned company that controlled all phases: production, transmission and distribution of energy. For example, in France there was the presence of EDF for the distribution of electricity and Gaz de France for the supply of gas. In Italy there was the presence of ENEL for energy and ENI for the supply of gas. In all European countries, there was essentially an absence of competition and therefore an absence of alternatives for consumers, making the market static given the limited interconnection between countries. As mentioned, a step envisaged since the principles of the establishment of a European Single Market was also the need to liberalize the energy market so as to ensure a reduction in prices for businesses and consumers, to separate the production and distribution phases

[2] European Economic Community. (1957). *Treaty establishing the European Economic Community (Treaty of Rome), 25 March 1957*. Official Journal of the European Communities. Retrieved from https://eur-lex.europa.eu/legal-content/IT/TXT/PDF/?uri=CELEX:11957E/TXT

to limit waste and increase efficiency, to facilitate the mutual exchange of supplies between countries to ensure greater energy security and make the sector more innovative and sustainable both from an environmental point of view but above all from an economic point of view. Historically, we can argue that the liberalisation phase of the European energy sector took place in three phases comprising three different legislative packages:

1. **First Energy Package** (1996-1998): This first phase is characterized by the adoption of Directive 96/92/EC which established common rules for the internal market in electricity by introducing some key elements for achieving this. This European Directive paved the way for the gradual opening up of national energy markets by allowing independent producers access to transmission and distribution networks. A fundamental step was the separation of accounting relating to generation, transmission and distribution activities that was imposed on companies operating in the sector in order to avoid discrimination and cross-subsidies that could have altered competitiveness and competition in the sector. Finally, to ensure transparency and efficiency in the energy sector, a series of criteria were defined for the issuance of authorizations for the construction of new energy generation plants and transparent tender procedures were introduced[3].

2. **Second Energy Package** (2003): Marked by Directive 2003/54/EC which further strengthened the measures envisaged by the first package by implementing the functional separation (unbundling) between transmission, generation and supply activities to ensure greater independence of transmission and distribution system operators. It included an obligation for Member States to set up independent regulatory authorities with the task of monitoring the market and ensuring compliance. This second package also introduced respect for the consumer into European legislation by introducing a series of clauses that defended the consumer's

[3] European Parliament, & Council of the European Union. (1996, December 19). *Directive 96/92/EC concerning common rules for the internal market in electricity*. *Official Journal of the European Communities*, L27, 20–29. Retrieved from https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31996L0092:EN:HTML

right to have free choice over the supplier and that he was guaranteed a series of minimum standards of service[4].

3. **Third Energy Package** (2009): on 13 July 2009, Directive 2009/72/EC was adopted, which further strengthened the consolidation of the internal energy market by providing for further clauses for the ownership unbundling of the three phases of production, supply and transmission. Through this Directive, ACER, the Agency for the Cooperation of Energy Regulators, was established, which had the task of coordinating and supporting national regulatory authorities by facilitating cross-border cooperation and market integration[5].

Together, these three packages have progressively transformed and changed the landscape of the European energy market. In the space of thirteen years, we have witnessed a development of internal markets that have gone from a monopoly situation to a competitive, competitive and integrated landscape, making the circuit healthier both for consumers, who have had a general reduction in prices, and from the point of view of efficiency.

To understand in a practical way what has happened over the years, let's analyze the evolution of ENEL and how its role and its operation in the energy market has changed after the development of the European market and after the consequences brought about by the adoption of the three legislative packages. From 1996 to 2013, the Italian energy market underwent a profound transformation, moving from a monopolistic system dominated by Enel to a competitive and liberalized market, with new rules, players and price dynamics[6]. The gradual adoption of the three European legislative packages has

---

[4] European Parliament, & Council of the European Union. (2003, June 26). *Directive 2003/54/EC concerning common rules for the internal market in electricity and repealing Directive 96/92/EC*. *Official Journal of the European Union*, L176, 37–56. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003L0054

[5] European Parliament, & Council of the European Union. (2009, July 13). *Directive 2009/72/EC concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC*. *Official Journal of the European Union*, L211, 55–93. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0072

[6] Dassenibus, A. (2001). *The liberalisation of the electricity market in Italy*. International Atomic Energy Agency (IAEA) – International Nuclear Information System (INIS). Retrieved from https://inis.iaea.org/records/ghq97-n4x80

forced Enel to redefine its operating model, separating some of its activities and adapting to new market conditions. At the beginning of the period, in 1996, Enel was a vertically integrated public company, with full control of the production, transmission, distribution and sale of electricity. Prices were regulated by the state, with minimal variations over the years. According to ARERA data, in 1998 the consumer price index for electricity stood at 94.7 (base 1995=100), a sign of a system that is still stable and protected[7]. However, Directive 96/92/EC, part of the First Energy Package, required EU member states to gradually open their markets to competition, necessitating a change in the Italian model. In 1999, the Italian government initiated the partial privatization of Enel, with its listing on the stock exchange. Although the company remained dominant, this operation marked the beginning of a transformation process that led to the creation of separate companies for the management of the different activities. In terms of prices, the initial effects were limited: large industrial companies began to benefit from more advantageous offers thanks to emerging competition, while for households and small businesses there were no significant reductions in tariffs.

With the Second Energy Package of 2003, the liberalization process accelerated. Directive 2003/54/EC required a clearer separation between transmission and production and sales activities, to avoid conflicts of interest and ensure that access to network infrastructure was fair for all energy producers. This led to the separation between Enel and Terna, a crucial step in the reorganization of the sector. Until then, Enel owned the transmission grid and used it to distribute its energy, maintaining a strong competitive advantage.

In 2005, in order to comply with the new European rules, the Italian state decided to spin off Terna from Enel, making it an independent company in charge exclusively of the management of the high-voltage grid. This change favored the growth of competition, because it guaranteed all operators the same right of access to energy transport infrastructure. Enel, for its part, had to change its strategy, focusing on production and sales, rather than on network management.

[7] Autorità per l'Energia, Reti e Ambiente (ARERA). (1999). *Lo stato dei servizi: il settore elettrico – Anni 1998-99* [PDF]. ARERA. Retrieved from https://www.arera.it/allegati/relaz_ann/00/cap2300.pdf

Prices in this phase showed an interesting dynamic. With the introduction of the Single National Price (PUN) in 2004, the Italian energy market had a new reference for wholesale transactions. In that year, the average PUN stood at €51.6/MWh, but in the following years there was a significant increase, reaching a peak in 2008 with €86.99/MWh. This increase was mainly due to rising raw material costs and growing demand. However, in 2009, with the global economic crisis, there was a collapse in energy demand, bringing the PUN to 63.72 €/MWh[8].

With the Third Energy Package in 2009, the market entered the final phase of liberalization. Directive 2009/72/EC imposed an even stricter separation (ownership unbundling) between network management activities and production and sales activities. This meant that companies involved in the production and supply of energy could no longer own or control transmission and distribution infrastructure.

For Enel, this meant a further reorganization. The company completed the separation of the distribution network, entrusting it to e-distribution (formerly Enel Distribution), while focusing exclusively on production, sales and new growth strategies. To maintain its leadership position, Enel focused on three main directions: expansion in foreign markets, with acquisitions in Spain and Latin America; investments in renewable energy, through the creation of Enel Green Power in 2008; and the development of more flexible offers for consumers, who in the meantime had finally acquired the right to choose their supplier[9]. From the point of view of prices, the completely liberalized market became more volatile. Between 2010 and 2012, the average PUN increased from €64.12/MWh to €75.48/MWh, partly due to the recovery in raw material costs and global energy dynamics. However, in 2013, there was a new reduction to €62.99/MWh, thanks to increased production from renewable sources and lower demand[10].

---

[8] Di Cosmo, V. (2013, September). *Modelling and forecasting the Italian electricity price*. Paper presented at the Annual Conference of the Italian Economic Association (SIE), Bologna, Italy. Retrieved from https://www.siecon.org/sites/default/files/oldfiles/uploads/2013/09/DiCosmo.pdf

[9] Enel S.p.A. (2009). *Annual report 2008* (p. 15). Rome: Enel S.p.A. Retrieved from https://www.annualreports.com/HostedData/AnnualReportArchive/e/OTC_ESOCF_2008.pdf

[10] ARERA – Autorità per l'energia elettrica, il gas e il sistema idrico. (2014). *Annual report on the state of services and on the activities carried out – Year 2013* (Resolution 406/2014/I/COM). ARERA. https://www.arera.it/fileadmin/allegati/docs/14/406-14.pdf

In short, the path of liberalization has taken Enel from a vertically integrated state monopoly to a private international group, focused on production, sales and innovation. The market has moved from a condition of stable but high prices under state control, to a situation of increased competition and volatility, with phases of rising and falling prices in response to supply and demand dynamics. The separation of Terna and the reorganization of Enel were the key steps to ensure fair competition, while the opening of the market gave consumers the opportunity to choose between different suppliers, encouraging greater efficiency and innovation in the Italian energy sector

1.2 Liberalization and Regulation of the European Energy Market

Let's start with a question: What is the European Energy Market?

Before understanding the mechanisms and how they work, it is necessary to ask what this single market in the energy sector really is.

"The European energy market is competitive, customer-centric, flexible and non-discriminatory. Energy market measures address issues such as market access, transparency and regulation, consumer protection, interconnections and security of supply. They also strengthen the rights of individual consumers, energy communities and vulnerable consumers, clarify the roles and responsibilities of market participants and regulators, and promote the development of trans-European energy networks."[11]

As stated above, the EU energy market has been liberalised through a series of directives and regulations known as 'energy packages' which have enabled the establishment of a competitive, consumer-oriented, flexible and non-discriminatory free market area. We can argue today that the energy market has a multilevel structure organized as follows:

1. **Wholesale market**: This is the first level of the supply chain and is the origin of the process. At the wholesale market, energy is bought and sold before being distributed to end consumers. Within this space operate energy producers, i.e. power plants, wind and solar plants, nuclear power plants, gas and coal plants, retail energy suppliers and traders who buy and sell energy to maximize their profits and consequently stabilize the market. The price at this stage is determined by energy exchanges such as the European Energy Exchange (EEX) operating in Germany, the Nord Pool in

[11] 1. European Parliament, *Internal Energy Market*, last modified , https://www.europarl.europa.eu/factsheets/it/sheet/45/mercato-interno-dell-energia.

Scandinavia and the OMIE in Spain. These markets operate according to the model of maginal pricing, i.e. the fixing of the price of energy based on the last unit of energy needed to meet demand. There are several types of market that move according to different dynamics: there is the Day-Ahead Market where the price of energy for the following day is determined on the basis of offers and requests; the Intraday Market where real-time adjustments are allowed to balance any imbalances between supply and demand; and finally the Futures & Forwards Market where there is the possibility for operators to set the price of energy for the future, thus drastically reducing the risk of price volatility[12].

2. **Retail market**: the second phase of energy sale and supply takes place through the retail market within which the supply of energy to end consumers is included. This is where private operators come into play, offering services at certain prices, guaranteeing the supply of energy to families and businesses. As a result of the globalisation of the sector that we have had thanks to the packages provided by the European Union, providers now have the opportunity to freely choose their supplier without there being a monopolization of the market. Within this market operate national energy suppliers (Enele, EDF, Iberdrola...), energy distributors, for example in Italy distribution is entrusted to Terna Driving Energy, end consumers such as households, businesses and industries and finally we also find the key role of regulators and operator protection bodies, such as ARERA in Italy and Bundesnetzagentur in Germany. The role played by these supervisory authorities is of fundamental importance: they monitor the transparency and fairness of prices, thus avoiding anti-competitive practices and keeping the market fundamentally liberalised. The characteristics that distinguish the retail market are the variability of prices, determined by the market and indexed to the energy exchanges, the presence of controlled pores that guarantee the protection of consumers from market volatility and

[12] European Parliamentary Research Service. (2016). *Understanding electricity markets in the EU* (EPRS Briefing 593519). European Parliament. Retrieved from https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/593519/EPRS_BRI%282016%295935 19_EN.pdf

the dynamic tariffs offered by private energy suppliers who aim to incentivize consumption in time slots at lower cost[13].

3. **Balancing Capacity and Services Market**: This market ensures the stability and reliability of the energy system and serves to ensure that there is sufficient energy storage to always cover the energy demand, avoiding blackouts and imbalances. At this level, the main actors are the transmission operators who manage the high-voltage grid and ensure the stability of supply, the producers of reserve energy such as gas and hydroelectric power plants that guarantee an energy reserve that can be quickly activated in case of urgent need and, finally, the demand aggregators who manage the reduction of demand in difficult or critical situations. involving companies and end users[14].

Why this multi-level system? It conntes, at the European level, to balance competition and energy security, ensuring price transparency and system stability on the consumer side. What is now really fundamental and central to the policy-debate is how to adapt this multilevel system to the energy transition that Europe, and more generally the whole world, is preparing to make. Policies to implement renewable and more sustainable energy require investments to facilitate interconnection between the countries of the European Union, improve distribution networks to manage the increase in renewable energy, and investments in energy storage technologies to ensure grid stability. These are the objectives that the European Union has set itself through the Green Deal and the REPowerEU, initiatives that we will address in more detail in the following chapters.

As is well known, the European continent is not self-sufficient in energy and this necessarily leads it to enter into contracts for the import of energy from third countries.

On the surface, it may seem like a concept of global integration and sharing of energy resources, but this sector plays a key role at the geostrategic and geopolitical level.

---

[13] Florence School of Regulation. (n.d.). *Electricity markets in the EU*. European University Institute. Retrieved September 3, 2025, from https://fsr.eui.eu/electricity-markets-in-the-eu/

[14] Misiorek, A., & Neuhoff, K. (2025). *Electricity market design for the energy transition: A review of recent developments*. arXiv. https://arxiv.org/pdf/2504.13919

Robert Keohane and Joseph Ney, international relations theorists and authors of the theory of "complex interdependence" called energy with the following words:

"*Energy is one of the main defining forces for the distribution of power in the international system. Without access to energy resources, no power can maintain its global influence*."[15]

Therefore, the European Union is significantly dependent on energy imports despite efforts to increase the production of renewable sources and increase the degree of independence from supplies from third countries. In 2021, the EU imported natural gas from three main countries: 43% from Putin's Russia, 21% from Norway, 8% from Algeria and 5% from Qatar[16]. The same countries of origin as regards oil with the only addition of two other international players such as Saudi Arabia and the United States. Domestic electricity production, on the other hand, would deserve a separate chapter, but we can, telegraphically, argue that there are three main sources of energy supply and generation in Europe by dividing the latter into four large macro-regions: Northern and Southern Europe, driven by leading countries in the sector such as Denmark and Sweden, but also by Spain, which in the past 2024 generated 21% of its electricity through photovoltaics, it has used and exploited resources such as wind, hydroelectric and solar energy, making renewable energy the main source of electricity production in Europe in 2023[17]; Western Europe, thanks to the presence of France and its 58 nuclear reactors, has contributed to making nuclear energy a slice of 23.7% of electricity production within the EU[18]'s borders; finally, coal, used mainly in Eastern Europe, whose use has been in sharp decline over the last decade, accounted for a share of electricity production of less than 10% in 2024[19].

---

[15] Robert O. Keohane e Joseph S. Nye, *Power and Interdependence* (Boston: Little, Brown and Company, 1977).

[16] Chamber of Deputies, Energy Markets Dossier, 2021, https://documenti.camera.it/leg19/dossier/pdf/AT008.pdf.

[17] Euronews, The boom in renewables: Europe's first source in 2023, 27 June 2024, https://it.euronews.com/green/2024/06/27/il-boom-delle-rinnovabili-prima-fonte-in-europa-nel-2023

[18] Reuters, Solar power overtook coal in EU's electricity mix in 2024, Ember says, 22 gennaio 2025, https://www.reuters.com/business/energy/solar-power-overtook-coal-eus-electricity-mix-2024-ember-says-2025-01-22.

[19] Eurostat. (2025, July 2). *Energy mix in the EU in 2024: Renewables on the rise, fossil fuels in decline* [News release]. European Commission. Retrieved from https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20250702-1

1.3 European Energy Packages: Legislative Instruments for a Sustainable and Integrated Market

The process of European integration and evolution in the field of energy has not ended with the adoption of the three energy packages analysed above. The challenges posed by climate change have forced the EU to update its sustainability plans, which has led to the adoption of new packages. With Directive 2019/944, the European Parliament and the Council launched the Fourth Energy Package**,** also known as *Clean Energy for All Europeans*[20]. This program was adopted to complete the process of liberalisation of the European electricity market and to accelerate the transition to a more sustainable energy system. It is known for being a very broad EU regulatory effort comprising no less than eight pieces of legislation regulating different aspects of European energy policy. It had a direct impact on the policies adopted by the member states in the field of energy through the RED III directive and the obligation to submit NECPs. The latter are perhaps the main novelty introduced by the Fourth Energy Package, they are medium-term planning tools adopted by the Member States of the European Union to implement the objectives of the Energy and Climate Union for 2030[21]. Each Member State must draw up a NECP to describe how it intends to contribute to the achievement of the common objectives, ensuring coherence and comparability between national strategies[22]. These plans are structured according to the five dimensions of the Energy Union: energy efficiency, internal energy market, decarbonisation, energy security and innovation. NECPs must include measurable targets and specific policies to ensure the transition to cleaner and

[20] European Parliament, & Council of the European Union. (2019, June 5). *Directive (EU) 2019/944 on common rules for the internal market for electricity and amending Directive 2012/27/EU*. *Official Journal of the European Union*, L158, 125–199. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32019L0944

[21] European Parliamentary Research Service. (2016). *Understanding electricity markets in the EU* (EPRS Briefing 593519). European Parliament. Retrieved from https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/593519/EPRS_BRI%282016%29593519_EN.pdf

[22] European Parliament, & Council of the European Union. (2018, December 11). *Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action*. *Official Journal of the European Union*, L328, 1–77. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018R1999

more sustainable energy, providing a basis for investment certainty in the energy sector[23]. The analysis of the NECP proposals highlighted the risk of insufficient ambition in some key areas, such as energy efficiency and renewable energy. If fully implemented, the measures envisaged would achieve a reduction in greenhouse gas emissions above the minimum target of 40% by 2030, with a possible reduction of 45% compared to 1990 levels[24]. However, there was a need to strengthen measures to fill the gaps that still existed. The NECPs play a crucial role not only in the framework of the Paris Agreement, but also in the EU's long-term strategy to achieve climate neutrality by 2050. They are key tools for ensuring a competitive and sustainable industry, attracting investment and stimulating economic growth. The main objectives of this package are to increase the share of renewable energy in the EU's energy mix with a binding target of 32% by 2030 and the parallel reduction of 32.5% in energy consumption[25]. The directive also looks at the general balance of the market, supporting the need to establish a more integrated and competitive energy market, also placing consumers themselves at the centre, allowing them, through appropriate instruments, to produce and sell energy by implementing a more decentralised model. Energy diversification, and the consequent diversification of supplies, is a further focal and central point of the European manoeuvre combined with the commitment to accelerate the decarbonisation process of the electricity sector, facilitating the closure of coal-fired power plants and promoting low-emission technologies. The legislative framwork that gave birth to the Clen Energy for All Europeans is as follows:

---

[23] European Parliament, & Council of the European Union. (2018, December 11). *Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action*. *Official Journal of the European Union*, L328, 1–77. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018R1999

[24] European Commission. (2020, September 17). *Stepping up Europe's 2030 climate ambition: Investing in a climate-neutral future for the benefit of our people* (COM/2020/562 final). Brussels: European Commission. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0562

[25] European Parliament, & Council of the European Union. (2018, December 11). *Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources (recast)*. *Official Journal of the European Union*, L328, 82–209. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018L2001

- EU Directive 2018/2001 which gave rise to the RED III project on the promotion of renewable energy and which set the target of 32% of renewables in gross final consumption by 2030[26]
- Regulation EU 2019/943 which has made the electricity market more flexible and integrated[27]
- Directive 2019/944 which affected the rights of European consumers by increasing transparency regarding the formation of energy prices[28]
- Regulation EU 2018/1999 requiring the submission of National Energy and Climate Plans (NECPs) QWE[29]

Fit for 55 is the name of the Fifth Energy Package and aims to reduce greenhouse gas emissions by 55% by 2030 compared to 1990 levels[30]. This additional package further implemented the Fourth Energy Package and introduced new regulatory revisions and new proposals to accelerate the ecological transition and align the energy sector with the objectives of the European Green Deal. The main objectives and legislative instruments set by the aforementioned legislation are the reform of the ETS (Emission Trading System), a system that incentivizes decarbonization through an emissions trading mechanism that imposes costs on companies proportional to the environmental impact of their activity, through the expansion of the emission allowance market, including new

[26] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast). *Official Journal of the European Union*, L 328, 82–209. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L2001

[27] Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity. *Official Journal of the European Union*, L 158, 54–124. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0943

[28] Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU. *Official Journal of the European Union*, L 158, 125–199. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0944

[29] Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU, and 2013/30/EU, and Council Directives 2009/119/EC and (EU) 2015/652, and repealing Regulation (EU) No 525/2013. *Official Journal of the European Union*, L 328, 1–77. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018R1999

[30] European Commission. (2021, July 14). *'Fit for 55': Delivering the EU's 2030 Climate Target on the way to climate neutrality* (COM/2021/550 final). Brussels: European Commission. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0550

sectors such as maritime transport and construction[31]. Include, also, revision of the Renewable Energy Directive (RED III) which provides binding targets for the heating and cooling sectors of buildings, specifically provides for a binding increase of 0.8% per year at national level until 2026 and 1.1% from 2026 to 2030 in the share from renewables, through the increase of the binding target for renewables to 42.5% by 2030[32]- Regulation introduced, through EU Regulation 2023/955, of a new Energy Efficiency Directive (EED) that sets more ambitious targets to lead to a 39% reduction in energy consumption in the primary sector and 36% in the final sector by 2030 and add a tax, Carbon Border Adjustemnt Mechanism (CBAM) on carbon at the borders of European Union countries to avoid the phenomenon of "carbon leakage"[33]. Finally, we had a gradual reduction of subsidies to fossil fuels with the subsequent implementation of incentives in favor of renewable sources and green hydrogen and support for an acceleration of electricity in sectors such as transport and industry.

The impact of these two additional measures have complemented and complemented the long EU process that began in the nineties with the First Energy Package. The adoption of these additional legislative instruments reflects the need for EU countries to govern an acceleration in climate and energy issues that has undergone a radical change in the last decade with the issues of sustainability and the production of political energy that have occupied, and will occupy, national and international political agendas. These last two European packages reflect the need for the EU to put in place new measures capable of achieving the objectives set internationally. However, their implementation is still partial today as it is strongly influenced by geopolitical factors, such as the energy crisis caused by the outbreak of the Russia-Ukraine conflict in 2022 to which the EU has responded through the REPowerUE plan which aims to reduce

[31] European Commission. (2021). *'Fit for 55': Delivering the EU's 2030 Climate Target on the way to climate neutrality*(COM/2021/550 final). Brussels: European Commission. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0550

[32] European Parliament, & Council of the European Union. (2023). *Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652*(RED III). Official Journal of the European Union, L, 2023/2413. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32023L2413

[33] European Parliament, & Council of the European Union. (2023). *Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast)*. *Official Journal of the European Union*, L 231, 1–128. Retrieved from https://eur-lex.europa.eu/eli/dir/2023/1791/oj?locale=en

dependence on Russian fossil fuels. These legislative packages not only redefine the EU's energy governance, but represent a model for other economies that are facing similar challenges in the ecological transition. The path to a fully decarbonised market will be complex and will require further investment in innovative technologies, network infrastructure and financing instruments to ensure a fair and sustainable transition.

The evolution of European energy governance is part of a broader framework of market transformation, in which regulation and sustainability policies play an increasingly central role. The integration of the new legislative measures, through the recent energy packages, not only responds to the need to accelerate the ecological transition, but also reflects the urgency of strengthening energy security in an unstable geopolitical context. This combination of environmental and policy objectives has made it essential to adopt stronger regulatory instruments that can guide Member States towards a resilient, fair and independent energy system.

The European energy market is a complex and articulated system, in which various actors, both institutional and private, operate, with the aim of ensuring a secure, stable and competitive supply for the Member States. The European institutions play a fundamental role in defining the legislative and regulatory framework, promoting the integration of the energy market and encouraging the transition to sustainable sources. In this context, the European Commission is the main body responsible for energy policy-making, with key initiatives such as the European Green Deal, aimed at reducing net greenhouse gas emissions by 55% by 2030 and achieving climate neutrality by 2050. Another important initiative is the REPowerEU plan, introduced in 2022 with the aim of reducing dependence on Russian fossil fuels and accelerating the development of renewable sources. At the same time, the ETS (Emission Trading System) incentivizes decarbonization through an emissions trading mechanism, which imposes costs on companies proportional to the environmental impact of their activities. The energy market is further strengthened by infrastructure programmes such as the Connecting Europe Facility, which finances cross-border projects to improve the resilience and integration of the European energy system.

1.4 Europe and the Challenge of Energy Independence

It remains a fundamental necessity for the EU to create energy storage that allows it to guarantee full energy independence from third countries. This aspect is important not only to achieve zero environmental impact in the best possible way, but above all to create a "security regime" with respect to unstable geopolitical situations that can have repercussions on the global balance and the internal national balance both from a political and economic point of view. In this context, the outbreak of the Russia-Ukraine war in 2022 is a case study since these geopolitical instabilities have had heavy repercussions on fossil fuel imports.

Each country provides for its own energy needs and these are represented within the European energy balances by the gross energy variable. Starting from this data, and to calculate European energy dependence, it is necessary to calculate the aggregate value of the energy dependency rates of each individual country. This figure relates a given country's net imports to its gross energy.

But the question we must first ask is: why are European countries unable to self-sustain their energy needs? Energy production goes through two phases, starting from the act of extracting the resource and transforming it into a usable product. Within this first phase, called primary energy production, all those energy products extracted or obtained directly from natural resources are obtained. The exploitation of coal mines and oil fields, hydroelectric production, the manufacture of biofuels, the heat produced by a nuclear power plant and the production of electricity from renewable sources are therefore considered. The extracted resources can be consumed for energy or non-energy purposes The transformation of these primary energy sources leads to secondary energy products[34]. Within the energy segment, there are three main components: electricity, transportation,

[34] Eurostat. (2023). *Energy statistics — an overview.* Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview

and heating. Each can be supported through an energy mix of renewable and extractive resources. Where primary energy is not sufficient for consumption, imports are used, which can be composed of both primary and secondary sources. The difference between imports and net energy consumption is referred to as energy dependence. To have a measure of how efficient the use is, on the other hand, the gross consumption of energy is related to the level of economic production, represented by GDP. This is the energy intensity indicator. The European Union is one of the world's leading energy importers and this dependence is due to structural, economic, geographical and political factors. First of all, we must denote a historical insufficiency of domestic production of energy resources. In recent decades, the production of oil and natural gas within the EU's borders has drastically decreased, as well as the extraction of coal and gas as the fields have been intensively exploited over the years and this has led to making it economically disadvantageous to continue with extractions[35]. Another key factor is the high energy demand on European soil mainly due to the high presence of heavy industry and manufacturing and the dependence on fossil fuels in the transport and road transport sector. Moreover, traditionally, the EU has built its energy system based mainly on coal, oil and natural gas despite the fact that it does not have significant reserves of them and therefore remains forced to import them from third countries, and this, in some cases, is also economically advantageous, especially if it is imported from geographical regions that have numerous reserves, such as, for example, Russia and the countries of the Middle East[36]. The energy transition aimed at reducing the environmental impact that the EU is proposing to pursue presupposes the development of renewable energy which, however, requires strategic raw materials for batteries, solar panels and wind turbines that Europe does not have and which therefore also must be imported. For this reason, in recent years, imports of lithium and cobalt, to produce batteries, from countries in South America, Africa and China, imports of silicon, also from China, for the production of photovoltaic

[35] European Central Bank & Federal Reserve Board. (2025, April 16). *European energy import dependency.* FEDS Notes. Board of Governors of the Federal Reserve System. Retrieved from https://www.federalreserve.gov/econres/notes/feds-notes/european-energy-import-dependency-20250416.html

[36] Eurostat. (2024). *EU imports of energy products — recent developments.* Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_imports_of_energy_products_-_latest_developments

panels[37], and finally uranium, from Kazakhstan, Canada and Niger for nuclear power, have increased significantly[38]. Over the years, the EU has adapted to this necessary and forced energy dependence, constantly underestimating the geopolitical implications that these strategic choices presupposed, increasingly integrating international energy markets and developing import infrastructures such as the Nord Stream gas pipeline with Russia, the TAP with Azerbaijan and the Megadaz connecting Algeria and Spain[39]. New LNG terminal facilities were built in Germany[40], the Netherlands, Poland and Spain, as well as new electricity interconnections connecting the Union to Norway, North Africa, Switzerland and the United Rhine[41].

In recent years, the European Union has increased energy imports also due to the geopolitical climate that has been created on European borders, but we must nevertheless underline that it was a phenomenon with very high percentage rates even before the outbreak of the incendiary geopolitical climate in which we live today. Suffice it to say that energy imports, in 2020, stood at 58% of general needs[42]. By analysing the differential gap between domestic primary energy production and primary energy consumption, we understand why the EU is forced to import large quantities of energy. The graph[43] below analyzes the differential between energy production and consumption and we can see that the trend from 2000 to 2020 is substantially stable and for both variables two fluctuations have been recorded: one between 2008 and 2010, during the

---

[37] American Foreign Policy Council. (2023). *Europe's nuclear energy and Central Asian uranium.* Retrieved from https://www.afpc.org/publications/articles/europes-nuclear-energy-and-central-asian-uranium

[38] World Bank. (2023). *European Union imports of uranium (HS 284410) by partner country*. World Integrated Trade Solution (WITS). Retrieved from https://wits.worldbank.org/trade/comtrade/en/country/EUN/year/2023/tradeflow/Imports/partner/ALL/product/284410

[39] Brookings Institution. (2022). *Europe's messy Russian gas divorce.* Brookings. Retrieved from https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/

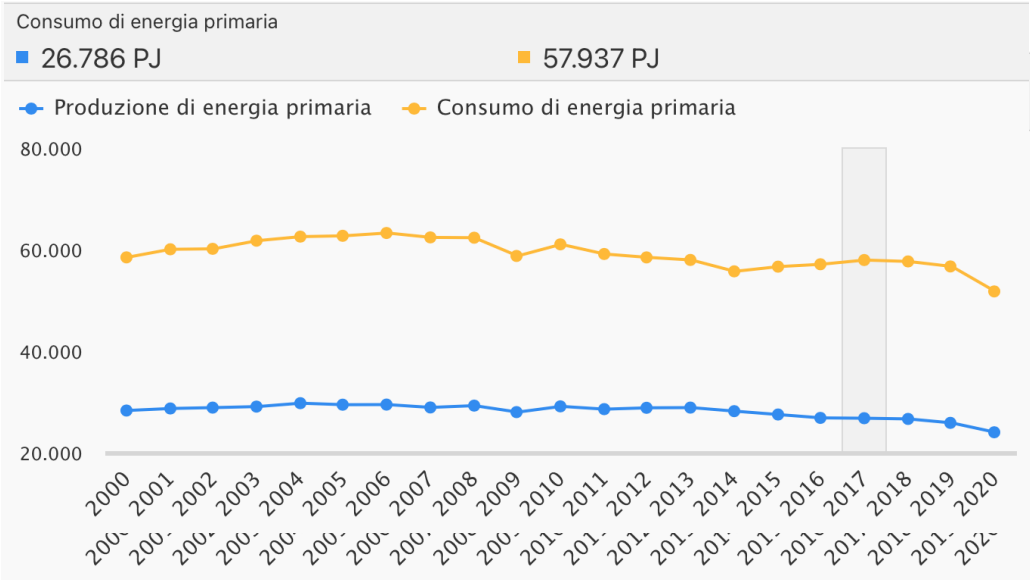
[40] Reuters. (2025, August 28). *Second German LNG terminal starts commercial operations in Wilhelmshaven.* Retrieved from https://www.reuters.com/sustainability/climate-energy/second-german-lng-terminal-starts-commercial-operations-wilhelmshaven-2025-08-28/

[41] Crippa, M., Guizzardi, D., Solazzo, E., Muntean, M., Schaaf, E., Pagani, F., & Janssens-Maenhout, G. (2025). *Fossil CO_2 and GHG emissions of all world countries – 2024 Report. Earth System Science Data, 17*(7), 3431–3464. https://doi.org/10.5194/essd-17-3431-2025

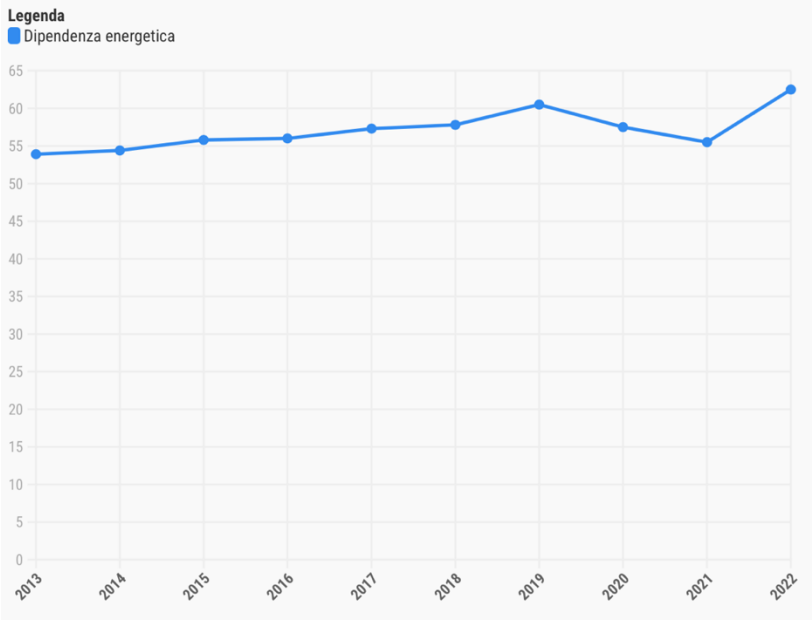
[42] Eurostat. (2022, March 28). *EU imports 58% of its energy in 2020*. Eurostat News. https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220328-2

[43] EUROSTAT, https://ec.europa.eu/eurostat/databrowser/view/NRG_BAL_C__custom_2695932/default/table?lang=en

period of the great recession and the sovereign debt crisis, and another between 2019 and 2020, in correspondence with the Covid-19 pandemic.



Between 2021 and 2022, the EU recorded a 4.5% drop in gross energy amount, specifically we had a 13.3% reduction in natural gas and this was a clear and direct consequence of the tensions that broke out between Russia and Ukraine. This conflict has also reduced primary energy production, leading to an increase in imports of energy



products. In fact, we see that in 2022, 62.5% of European energy needs were met through imports, an increase of 4.5% compared to the imports achieved in 2020. Despite this increase, from 2013 to 2020 the trend is substantially stable, marking levels of energy imports that have always stood above 55 percentage points as we can see from the graph below.

In 2023, the EU's energy demand for oil and petroleum products reached 21,092 PJ, with an import rate of 94.9%. Natural gas also experienced a high dependence on imports, covering 97.6% of a total demand of 12,324 petajoules[44]. As for solid fossil fuels, 45.8% of the needs were met through imports[45]. However, both domestic production and consumption of these resources are steadily decreasing. European countries with the greatest dependence on energy imports are Malta (99%), Cyprus (92%) and Luxembourg (91.3%)[46], although these are small nations. Following, among the states of greatest economic and territorial importance, are the Netherlands (80.3%), Greece (79.6%) and Italy (79.2%)[47]. Overall, there are 19 countries where net imports exceed 50% of energy demand. On the contrary, the nations with the lowest incidence of imports on needs are Romania (32.4%), Sweden (26.8%) and Estonia (6.2%)[48]. This scenario highlights Europe's strong dependence on energy imports, in particular for fossil fuels, which continue to account for a significant share of the Union's energy mix. To reduce this vulnerability, it is essential to adopt concrete policies aimed at enhancing domestic energy production from renewable sources, including through the commitments that individual states will make in the context of the COP[49]. In addition to

[44] Eurostat. (2025). *Energy statistics – an overview*. In Statistics Explained. Eurostat. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview
[45] Eurostat. (2024). *Energy statistics — an overview.* Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview
[46] Eurostat. (2021). *From where do we import energy?* Statistics Explained. Retrieved from https://ec.europa.eu/eurostat/statistics-explained/SEPDF/cache/104551.pdf
[47] Council of the European Union. (2022). *How dependent are EU member states on energy imports?* Retrieved from https://www.consilium.europa.eu/en/infographics/how-dependent-are-eu-member-states-on-energy-imports/
[48] Eurostat. (2024). *Shedding light on energy in the EU — 2024 interactive edition.* Retrieved from https://ec.europa.eu/eurostat/web/interactive-publications/energy-2024
[49] Openpolis, 2024. The European countries that depend most on energy imports. [online] Available on: https://www.openpolis.it/i-paesi-europei-che-dipendono-di-piu-dalle-importazioni-di-energia/

this, it is necessary to weave a diversified trade network of energy supplies and this is what the European Union has done after the outbreak of the war in Ukraine so as to decrease its energy dependence on Moscow. Brussels' strategy, to reduce its vulnerability to external geopolitical shocks, has focused on increasing imports of liquefied natural gas (LNG) from the United States, strengthening trade ties with Norway, Azerbaijan and Algeria. The latter, in particular, in 2024 became the first commercial partner with Europe in terms of gas exports. Eurostat data show that in the first quarter of 2024, Algeria supplied 19.7 % of the EU's natural gas imports (in gaseous form), exceeding Russia's 17.3 %[50]. By Q1 of 2025, these figures shifted to 19.4 % for Algeria and 11.1 % for Russia[51]. Overall, in October 2024 alone, the EU spent €6.15 billion on gas imports on its territory[52]. From 2022 onwards, the European energy trade framework has changed the stipulation of a series of agreements that has changed the European energy supply, in particular ties with four countries have been strengthened: the United States, Norway, Algeria and Qatar. The latter has emerged as the main exporter of LNG and has strongly strengthened its presence on the European market. In 2024, 10% of European liquefied natural gas imports came from Qatar as it has committed in recent years to entering into long-term agreements with European leaders guaranteeing stable LNG supplies[53].

The EU has a historic energy trading partner in Norway, with which cooperation has necessarily been strengthened since 2022 with the signing by the Executive Vice-President of the European Commission Frans Timmermans, the Commissioner for Energy Kadri Simson and the Norwegian Minister of Petroleum and Energy Terje Aasland, of a memorandum of understanding that provides, on the one hand, the increase in Norway's gas supplies to Europe so as to compensate for the losses resulting from the reduction in

[50] Eurostat. (2024). *EU imports of energy products – latest developments*. Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_imports_of_energy_products_-_latest_developments

[51] Eurostat. (2025). *EU imports of energy products – latest developments*. Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_imports_of_energy_products_-_latest_developments

[52] Eurostat. (2024, December 17). *International trade in goods, October 2024: EU energy deficit widens*. Eurostat News Release. https://ec.europa.eu/eurostat/web/products-euro-indicators/w/6-17122024-ap

[53] Institute for Energy Economics and Financial Analysis (IEEFA). (2025). *European LNG tracker*. IEEFA. https://ieefa.org/european-lng-tracker

Russian gas supplies, on the other, a strengthening of cooperation in the fields of offshore renewable energy, hydrogen and carbon capture and storage technologies[54]. This Memorandum of Understanding has seen its evolution and a continuation of the European commitment in the signing by Maroš Šefčovič, Executive Vice-President for the European Green Deal, Interinstitutional Relations and Foresight of the European Commission, and Jan Christian Vestre**,** Minister of Trade and Industry of the Kingdom of Norway, of a Memorandum of Understanding launching a strategic partnership to develop sustainable value chains of the European Union. The Memorandum provides for strong collaboration in 5 strategic areas which are as follows: integration of raw materials and battery value chains, cooperation on research and innovation, application of environmental, social and governance practice standards, mobilisation of financial and investment instruments through the InvestEU platform dedicated to projects to be carried out under the partnership, and the development of skills needed for high-quality jobs in the raw materials and battery sectors.

Algeria has proved to be a strategic partner for the EU in the natural gas sector[55]. As mentioned earlier, in 2024 the North African country accounted for 21.6% of the EU's total gas supplies, surpassing Russia[56]. These results were achieved thanks to an increase in Algerian exports, which in October 2024 achieved a gain of $1.3 billion from its gas exports, increasing revenues by $200 million compared to September 2024[57]. Italy benefited from this by increasing the additional 9 billion cubic meters of Algerian gas per year compared to the 22.6 billion cubic meters imported in 2021[58]. The exponential

---

[54] European Parliamentary Research Service. (2023). *EU energy partnerships: Norway* (EPRS Briefing, PE 753.941). European Parliament. Retrieved from https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/753941/EPRS_BRI%282023%297539 41_EN.pdf

[55] Eurostat. (2024, September 23). *Drop in imports of energy products to the EU — Q2 2024.* Eurostat News. Retrieved from https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20240923-1

[56] Algeria Invest. (2024, December 19). *Gaz: Algeria becomes the European Union's leading supplier in October.* Retrieved from https://www.algeriainvest.com/premium-news/gaz-lalgerie-premier-fournisseur-de-lunion-europeenne-en-octobre

[57] Algeria Invest. (2024, December 19). *Gaz: Algeria becomes the European Union's leading supplier in October.* Retrieved from https://www.algeriainvest.com/premium-news/gaz-lalgerie-premier-fournisseur-de-lunion-europeenne-en-octobre

[58] Institut de Relations Internationales et Stratégiques (IRIS). (2025, April 17). *Pipeline politics: Algeria, Italy and the great Mediterranean balancing* (Observatoire Maghreb-Méditerranée Note). Retrieved from https://www.iris-france.org/wp-content/uploads/2025/04/ObsMaghreb_2025_04_17_Pipeline_algerie_Note_EN.pdf

increase in its gas exports makes Algeria appear as a partner in exponential increase in its political weight in the Mediterranean area, placing itself in a strong opposition to Brussels. In addition to the decision to increase exports, a number of bilateral agreements have been signed between European countries and Algeria. For example, Italy agreed, in 2022 under the Draghi government, on an exponential increase in Algerian gas imports and ENI and Sonatrach also signed an agreement that increased gas supplies via the Transmed/Enrico Mattei pipeline[59].

LNG has established itself as an alternative solution to Russian gas and in this context the United States has taken a large slice of the European market becoming the main European trading partner. Immediately after the outbreak of tensions between Moscow and Kiev, the European Commission and the United States began trade negotiations to enter into a new strategic partnership. The final agreement provided for a copious arrival of American LNG on our continent to make up for the reduction in Russian gas imports. The intentions of the partnership should guarantee 15 billion cubic meters of LNG to EU countries by the end of 2022[60]. In the first three months of the year, thanks to high prices and the greater convenience of the European market compared to the Asian one, LNG imports from the US reached 14 billion cubic meters, a volume that saw an increase of 60% compared to the quantities recorded in 2021[61]. This influx has led the United States to be the main supplier of LNG for European countries, but despite the expected increase to 37.7 billion cubic meters in 2022, which would record an increase of 66.6% on an annual basis, American gas does not have the capacity to offset more than a third of the energy needs envisaged by the European REPowerEU plan[62]. Looking at

[59] Eni. (2022, April 11). *Eni and Sonatrach agree to increase gas supplies from Algeria through Transmed.* Retrieved from https://www.eni.com/en-IT/media/press-release/2022/04/eni-and-sonatrach-agree-to-increase-gas-supplies-from-algeria-through-transmed.html

[60] European Commission, & The White House. (2022, March 25). *Joint statement between the United States and the European Commission on European energy security.* Retrieved from https://bidenwhitehouse.archives.gov/briefing-room/statements-releases/2022/03/25/joint-statement-between-the-united-states-and-the-european-commission-on-european-energy-security/

[61] Ravikumar, A. P. (2022). *The U.S. role in securing the European Union's near-term energy supply.* PMC. Retrieved from PubMed Central

[62] Congressional Research Service. (2023). *U.S. measures to provide liquefied natural gas for the European Union* (CRS Report No. R47468). Library of Congress. Retrieved from https://www.congress.gov/crs-product/R47468

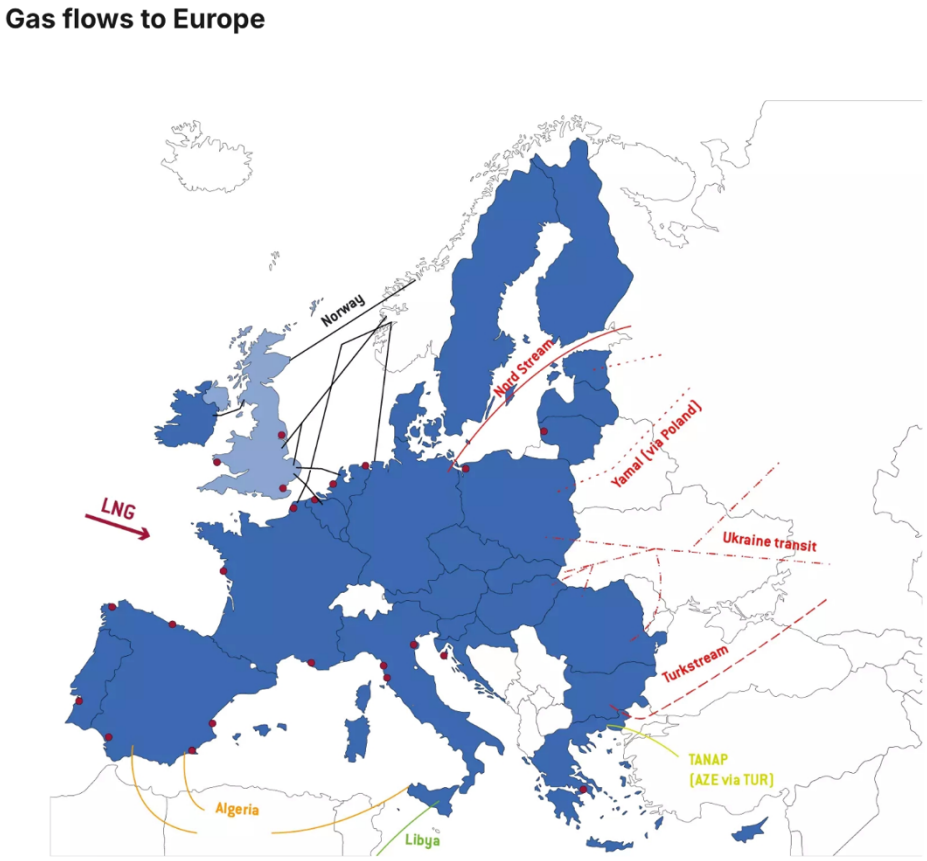
the long-term agreement, it could reach an export of 50 billion cubic meters by 2030[63]. Although the agreement may seem like a foregone conclusion for future energy relations between the US and Europe, there are numerous problems. An in-depth analysis of the agreement shows that neither the White House nor the European Commission have real direct decision-making power over LNG supplies since these dynamics depend on the commercial interests of energy companies and the logic of the market. In this context, the fragile weight of the Energy Purchasing Platform (PAE), established by the EU to ensure stable supplies and improve the use of infrastructure, given by territorial and structural limits such as the poor interconnection between Spain, where the large LNG floods arrive, and the rest of Europe. As we have pointed out, the dynamics depend on the market logic of European and American companies with the former, in particular the French, German and Italian ones, which are reluctant to sign long-term agreements because it would not guarantee the right flexibility and dynamism that is needed to adapt to the ever-changing needs of the market. In addition to this, the LNG market is extremely volatile and unstable as underlined by the experience of 2020 where Covid upset the logic of the market. The consequence of not wanting to tie themselves to long-term contracts by European companies triggers the reluctance of American investors to want to finance new LNG export infrastructures without the guarantee of having fixed buyers. Also not to be underestimated is the competition from Asian countries with local companies that even before the outbreak of the war in Ukraine had moved to occupy the main slices of the LNG market to anticipate US aims. Finally, the strategy set by the EU with the attempt to establish a price cap to protect against future surges in energy prices, in particular gas prices, clashes with the dynamics of the global market where LNG sellers could divert their exports to areas of the globe willing to offer more, situations compatible with the internal dynamics of Dina, Japan and South Korea.

[63] Center on Global Energy Policy. (2022). *REPowerEU tracker.* Columbia University – SIPA. Retrieved from https://www.energypolicy.columbia.edu/publications/repowereu-tracker/

CHAPTER 2

EUROPEAN RESPONSE BETWEEN RUSSIA-UKRAINE WAR AND ENERGY CRISIS

Figure 1[64]



The Russia-Ukraine war triggered a fundamental reordering of Europe's energy supply and security strategy. Before 2022, Russia was the EU's dominant gas supplier (providing roughly 40–45% of imports)[65], creating a strategic vulnerability. Moscow's invasion of Ukraine and subsequent weaponization of gas exports forced Europe into an urgent pivot away from Russian energy. Within months, Russian pipeline gas flows to the EU plummeted by 80%[66]. In response, the EU launched an ambitious plan

[64] The map shows the most important import routes into the EU and the location of LNG terminals. Most of the gas was supplied by Russia via four distinct corridors: Nord Stream, Yamal (via Poland), Ukraine and Turkstream (via Turkey). These different Russian gas routes are at the heart of the current geopolitical tensions.

[65] Bruegel. *European Natural Gas Imports*. Last updated June 2025. https://www.bruegel.org/dataset/european-natural-gas-imports.

[66] World Economic Forum. "Europe's Gas Shortage Will Force the Continent to Rapidly Rethink Its Energy Mix." World Economic Forum, November 2022. https://www.weforum.org/stories/2022/11/europe-gas-shortage-russia/#:~:text=Since%20Russia%20has%20cut%20its,rapidly%20rethink%20their%20energy%20mix.

(REPowerEU) to diversify energy sources and accelerate the green transition, investing hundreds of billions of euros in infrastructure, renewables, and efficiency measures. By 2024, Russia's share of EU gas imports had dropped below 20% (with pipeline gas under 12%), largely replaced by record LNG imports from allies like the United States, increased pipeline gas from Norway and Algeria, and a 20% reduction in EU gas demand[67]. New energy alliances were forged with the U.S. became Europe's largest LNG supplier, Norway its top overall gas supplier, and countries such as Algeria and Qatar stepped up long-term deliveries. These shifts have enhanced Europe's resilience and geopolitical autonomy - depriving Russia of leverage and revenue - but not without costs. Energy prices spiked to record highs in 2022, straining economies and requiring heavy government intervention. While Europe avoided a supply meltdown in 2022-23 through coordination, conservation, and luck, challenges remain. Critics note that Europe has partly traded one dependency for others, relying on global LNG markets and new partners, and risks over-investing in gas infrastructure that could conflict with climate goals[68]. Nonetheless, the war has cemented the idea that energy security is national security, catalyzing Europe's drive toward cleaner, domestically controlled energy to neutralize the use of energy as a geopolitical weapon.

[67] Council of the European Union. *Where Does the EU's Gas Come From?* Infographic. Brussels, 2023. https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/#:~:text=Norway%20was%20the%20top%20supplier,of%20all%20gas%20imports.

[68] Ember. *The Final Push for EU Russian Gas Phase-Out*. March 27 2025. https://ember-energy.org/latest-insights/the-final-push-for-eu-russian-gas-phase-out/.

2.1 War's impact on EU supply structure

Russia's invasion of Ukraine in February 2022 precipitated an immediate and dramatic upheaval in Europe's energy supply structure. Prior to the war, the European Union (EU) was heavily dependent on Russian fossil fuels, especially natural gas delivered by Gazprom through pipelines[69]. In 2021, the EU imported about 155 billion cubic meters (bcm) of Russian gas, roughly 45% of its total gas imports (almost 40% of consumption)[70]. This single-supplier dominance left Europe acutely vulnerable to supply disruptions. Indeed, Russia had a history of wielding gas as a political tool, as the cutting flows via Ukraine during disputes in 2006 and 2009, but Europe's reliance only grew in the 2010s, exemplified by projects like the Nord Stream pipelines to Germany that bypassed transit countries and deepened dependence. By early 2022, some EU states were over 50–80% reliant on Russian gas and Russia was Europe's largest overall energy[71].

When war broke out, this dependence became a strategic liability. Russia moved quickly to "weaponize" energy exports in retaliation for Western support of Ukraine. Starting in spring 2022, Gazprom slashed pipeline deliveries to Europe, first cutting off countries like Poland and Bulgaria that refused a ruble-payment scheme, then progressively throttling flows through major routes (Yamal-Europe pipeline was halted, Nord Stream 1 cut to 20% capacity by summer)[72]. By August 2022, Russian gas flows were a trickle; in late September, sabotage explosions destroyed Nord Stream entirely, removing a key supply line. The impact was stark, Russia's pipeline supply to the EU

---

[69] Gross, Samantha, e Constanze Stelzenmüller. *Europe's Messy Russian Gas Divorce*. Brookings Institution, 18 giugno 2024. https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/#:~:text=liquefied%20natural%20gas%20%28LNG%29,household%20heating%2C%20and%20industrial%20processes.

[70] International Energy Agency (IEA). *A 10-Point Plan to Reduce the European Union's Reliance on Russian Natural Gas*. Parigi, marzo 2022. https://www.iea.org/reports/a-10-point-plan-to-reduce-the-european-unions-reliance-on-russian-natural-gas.

[71] Brookings Institution. (2022, March 24). *Europe's messy Russian gas divorce*. Brookings. https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/

[72] Al Jazeera. "Russian Gas Flow to Europe via Ukraine Stopped: Who Does It Hurt?" *Al Jazeera*, 1 gennaio 2025. https://www.aljazeera.com/news/2025/1/1/russian-gas-flow-to-europe-via-ukraine-stopped-who-does-it-hurt.

plummeted by 80% between May and October 2022[73]. Gas that comprised 35–40%[74] of EU supply pre-war collapsed to barely 10–15% by end of 2022[75]. Europe suddenly faced the loss of its single largest energy source "almost overnight," creating fears of winter shortages, industry shutdowns, and uncontrolled price spikes.

Europe's immediate response was an emergency mobilization to stabilize supply and demand. EU institutions and member states activated crisis plans by the coordination of gas sharing between countries, mandating storage filling, and curbing demand. In mid-2022, the EU set a binding goal for each country to fill gas storage to 80–90% by November, a target achieved ahead of time, reaching 95% full by early Nov 2022[76]. Governments and industry also cut consumption via fuel-switching (restarting coal plants, delaying nuclear phase-outs) and efficiency measures. The result was that the EU gas demand fell by over 19% from 2021 to 2024, reflecting conservation and high prices forcing reductions[77]. Gas use for power generation was curbed, where possible, and households lowered thermostats, collectively easing the crisis.

The following chart shows the diversification of gas use within EU countries. We can see that:

- over 31% is used for electricity and heat production
- 24.8% is used by households
- 24.6% by industry

---

[73] World Economic Forum, 2022. *Europe is facing a gas shortage this winter – here's what you need to know.* 2 November. Available at: https://www.weforum.org/stories/2022/11/europe-gas-shortage-russia/

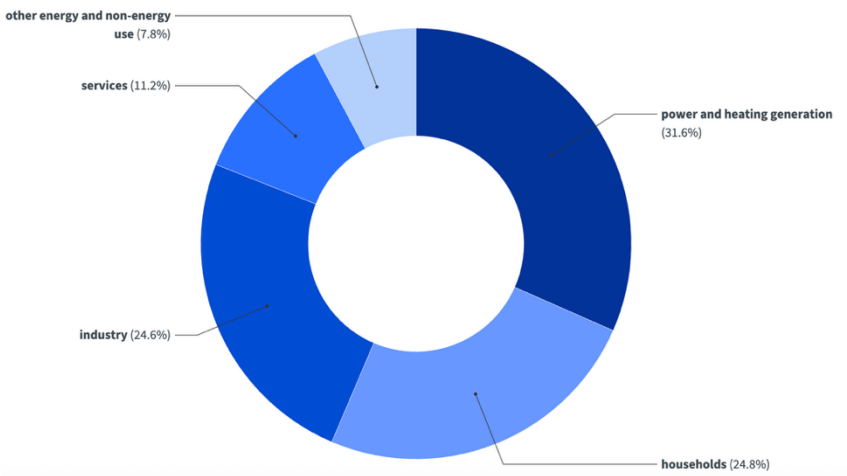
[74] Congressional Research Service. (2023). *U.S. measures to provide liquefied natural gas for the European Union* (CRS Report No. R47468). Library of Congress. Retrieved from https://www.congress.gov/crs-product/R47468

[75] Council of the European Union. (2024). *Where does the EU's gas come from?* Retrieved from https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/

[76] Thomson, Ewan. "These Charts Show Europe's Reliance on Gas Before the War in Ukraine." *World Economic Forum*, November 10, 2022. https://www.weforum.org/stories/2022/11/europe-gas-shortage-russia/#:~:text=The%20International%20Energy%20Agency%20,for%20energy%20security%20this%20winter.

[77] Institute for Energy Economics and Financial Analysis (IEEFA). (2025, February 18). *Europe's LNG imports decline 19% with gas demand at 11-year low.* Retrieved from https://ieefa.org/articles/europes-lng-imports-decline-19-gas-demand-11-year-low

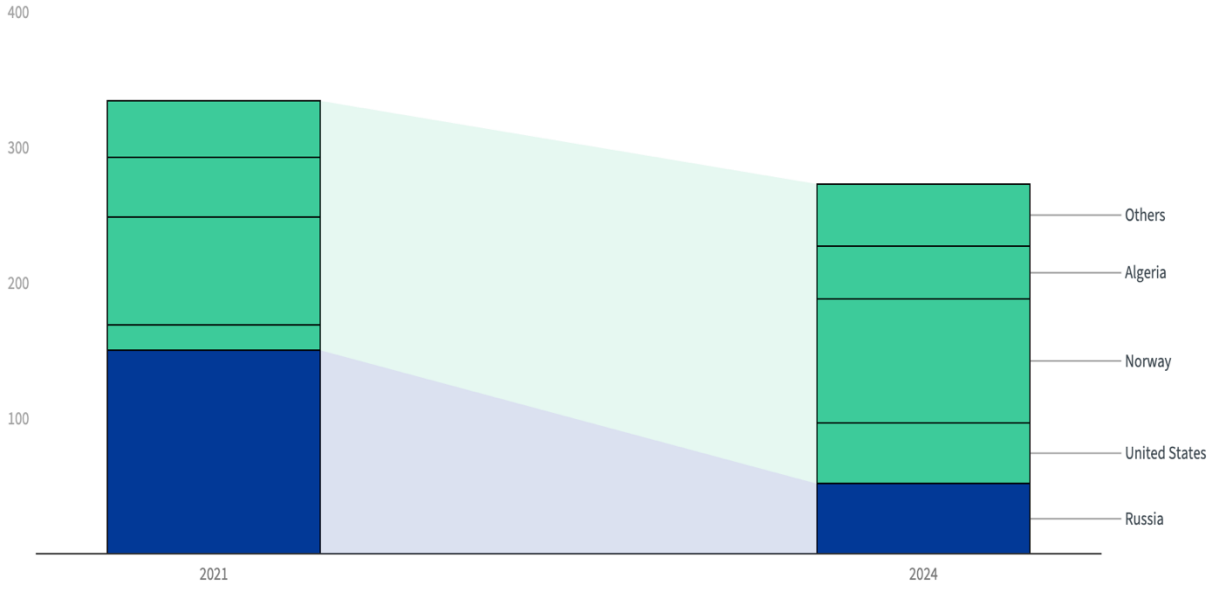
- 11.2% by the services sector.
- Other energy and non-energy uses account for almost 8%[78].



Crucially, Europe diversified supply on the fly. Pipeline imports from Norway were maximized, Norway became the EU's top gas supplier by late 2022, running its North Sea fields at full tilt. North African pipelines from Algeria and Libya ramped up flows to Italy and Spain where capacity allowed. Simultaneously, Europe went on a global LNG buying spree, outbidding Asian buyers to pull in massive liquefied natural gas cargoes from the United States, Qatar, and others. Chinese LNG demand happened to dip in 2022 which freed up additional LNG for Europe. This stroke of luck, combined with Europe's willingness to pay premium prices, helped compensate for lost Russian volumes. By the winter of 2022–23, the EU had largely replaced the shortfall: despite Russian pipeline gas dwindling, storage was high and no member state was forced into gas rationing. Gas prices, though extraordinarily high (with the TTF benchmark spiking above €300/MWh in August 2022)[79], began to ease by early 2023 as confidence in alternate supplies grew.

[78] Consiglio dell'Unione Europea. *Where does the EU's gas come from?* Bruxelles, 2025. https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/#:~:text=Gas%20is%20mainly%20used%20for,between%202021%20and%202024.
[79] Elliott, Stuart. "Germany Sees LNG Import Capacity of 37 Bcm/year in 2024: Ministry." *S&P Global Commodity Insights*, 13 gennaio 2023. https://www.spglobal.com/commodity-insights/en/news-research/latest-news/natural-gas/011323-germany-sees-lng-import-capacity-of-37-bcmyear-in-2024-ministry.

The decline in demand for and use of Russian gas has been matched by an increase in alternatives. The structural shift is evident in supply data. In 2021, Russia supplied about 150+ bcm to the EU, in 2024 that fell to under 52 bcm[80]. Meanwhile, Norway increased its annual gas deliveries to Europe from 80 bcm to over 90 bcm, becoming the largest supplier (33% of EU imports in 2024)[81]. LNG from the United States surged from under 20 bcm in 2021 to 45 bcm in 2024, a more than twofold jump, making the U.S. the EU's supplier. These trends are illustrated in the figure below, which compares EU gas import volumes by supplier in 2021 vs. 2024[82].



By early 2023, Russia's pipeline gas accounted for under 10% of EU gas imports (and 8% of consumption), down from 40% before the war. Some Russian gas still flowed via Turkey, with the TurkStream pipeline, to countries like Hungary and Serbia, and

[80] Council of the European Union. (2025). *Where does the EU's gas come from?* Retrieved from https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/

[81] Council of the European Union. (2024). *Where does the EU's gas come from?* Retrieved from https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/

[82] Consiglio dell'Unione Europea. *Where does the EU's gas come from?* Bruxelles, 2025. https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/#:~:text=Imports%20from%20Russia%20declined%20from,to%2045%20bcm%20in%202024

minor volumes via Ukraine until the transit deal ended in 2025. Additionally, Russian LNG, which was not sanctioned, continued to reach European terminals in small amounts, paradoxically rising in 2022 as some buyers opportunistically purchased Russian LNG even while pipeline imports fell[83]. This underscores a loophole with the Europe eliminated dependence on Russian pipelines, but hadn't completely banned Russian liquefied gas, leading to an increase of Russian LNG imports by 40% year-on-year in 2022, and further in 2024[84]. Nonetheless, the overall reshaping of supply was transformative, a forced leap in diversification that otherwise might have taken a decade happened essentially within one year. Europe's energy map shifted from one cantered on east-west pipelines from a single supplier to a more distributed network of global maritime gas trade and intra-European connections.

This restructuring did not come easily. The EU faced an energy price shock and inflationary spike as gas and electricity costs hit record levels in late 2021–2022. Governments intervened with consumer subsidies, price caps, and industry aid totalling hundreds of billions of euros. Economically, the EU paid a high price to secure alternative energy, buying LNG at premium rates and hastily building infrastructure, which some critics labelled the "energy war tax" for confronting Russia. Politically, however, Europe proved more unified and resilient than many expected. Rather than caving to Russian pressure, the hardship steeled European resolve to cut the cord on Russian energy. As IMF[85] and CSIS[86] noted, the response, emergency deals, conservation, solidarity, was "heroic" in scale and speed, if uneven across countries. Countries like:

- **Germany**, once Gazprom's biggest customer (55 bcm/year from Nord Stream alone[87]), undertook an abrupt U-turn, fast-tracking LNG import terminals and

[83] Ember. *The Final Push for EU Russian Gas Phase-Out*. 27 marzo 2025. https://ember-energy.org/latest-insights/the-final-push-for-eu-russian-gas-phase-out/.
[84] Congressional Research Service. *U.S. Measures to Provide Liquefied Natural Gas for the European Union*. Washington, DC: Library of Congress, 2025. https://www.congress.gov/crs-product/R47468.
[85] Zettelmeyer, J. (2022, December). *Beating the European energy crisis. Finance & Development*, International Monetary Fund. Retrieved from https://www.imf.org/en/Publications/fandd/issues/2022/12/beating-the-european-energy-crisis-Zettelmeyer
[86] Center for Strategic and International Studies (CSIS). (2023, June 15). *Power plays: Europe's energy crisis response and its implications.* Retrieved from https://www.csis.org/analysis/power-plays
[87] Gross, Samantha, e Constanze Stelzenmüller. "Europe's Messy Russian Gas Divorce." *Brookings Institution*, 18 giugno 2024. https://www.brookings.edu/articles/europes-messy-russian-gas-

scrambling to line up non-Russian gas (Germany went from 0 LNG terminals to opening 3 FSRUs in a matter of months).

- **Italy**, similarly reliant, leveraged its diversified pipeline network to tap North Africa and accelerated plans for new LNG floaters.

- **Poland**, which had long warned of Russian dependence, was vindicated in its strategy: having built an LNG terminal and a new Baltic Pipe from Norway (opened Oct 2022), Poland was able to completely terminate Russian gas imports by mid-2022 with less disruption. In contrast, a few outliers (Hungary) maintained contracts with Gazprom and remained dependent on TurkStream, illustrating that not all EU members diversified at the same pace. Overall, however, the war's immediate impact was to significantly reconfigure Europe's energy supply structure away from a single dominant supplier toward a broader mix, setting the stage for more permanent strategic changes discussed next.

divorce/#:~:text=became%20the%20largest%20source%20of,finally%20went%20through%20in%202015.

2.2 REPowerEU and the EU's diversification strategy

Confronted with an energy crisis and the stark reality of its strategic vulnerability, the European Union launched REPowerEU, a comprehensive plan to rapidly reduce dependence on Russian fossil fuels and accelerate the clean energy transition. Unveiled by the European Commission in May 2022, REPowerEU serves as the roadmap for Europe's energy reset. It rests on three key pillars:

1) energy savings,
2) supply diversification,
3) accelerated deployment of renewables and low-carbon energy.

Through a mix of emergency measures and long-term structural changes, the EU aims to simultaneously bolster energy security and advance climate goals, encapsulating the notion that green energy and strategic autonomy now go together.

A core REPowerEU objective was to find alternative gas supplies for the 155 bcm/year that Russia had been providing. The European Commission and member states moved assertively to secure new deals with other producers. By mid-2022, the EU had reached an understanding with the United States to import an additional 15 bcm of LNG in 2022 and aim for 50 bcm annually through 2030[88]. Effectively, the U.S. became the "supplier of last resort", U.S. LNG exports to Europe more than doubled, and by 2022/23 the U.S. was sending roughly 30% of its total LNG exports to Europe compered to the under 20% pre-war period[89]. In parallel, European governments inked agreements with Qatar, Algeria, Norway, Azerbaijan, Egypt, and others:

[88] Zsiros, Sandor, e Jorge Liboreiro. "'Russia will lose the energy battle,' says IEA chief Fatih Birol." *Euronews*, 28 ottobre 2022. https://www.euronews.com/my-europe/2022/10/28/russia-will-lose-the-energy-battle-says-ieas-chief-fatih-birol#:~:text=Birol%27s%20comments%20appeared%20to%20refer,LNG

[89] Łoskot-Strachota, Agata, Ugnė Keliauskaitė e Georg Zachmann. *Future European Union Gas Imports: Balancing Different Objectives*. Bruegel, 3 luglio 2024. https://www.bruegel.org/analysis/future-european-union-gas-imports-balancing-different-objectives.

- **Norway:** Already a close partner, Norway boosted its pipeline exports to the EU by maximizing output from North Sea fields. By 2024 Norway supplied over 90 bcm/year to the EU (about one-third of EU gas imports), up from 80 bcm in 2021. Oslo worked with European operators to defer maintenance and increase flows, underscoring the importance of friendly suppliers[90].

- **Algeria and North Africa:** The EU, especially Italy and Spain, tapped into North Africa's gas reserves. Italy's government and ENI struck a major deal with Algeria's Sonatrach in April 2022 to gradually add up to 9 bcm/year more via the TransMed pipeline by 2023-24, roughly a 40% boost in Algerian supply to Italy. This helped Italy replace much of its 29 bcm Russian gas (which was 40% of Italy's imports). By 2023, Algeria became Italy's largest gas source, and Algeria's overall exports to the EU (Italy, Spain, etc.) climbed, reaching 39 bcm to the EU in 2024[91]. Additionally, deals were made with Egypt[92] (to import Egyptian LNG) and Azerbaijan, the latter agreeing to increase deliveries through the Trans-Adriatic Pipeline (TAP) from the Caspian[93] (Azerbaijan sent 11.7 bcm to the EU in 2024). These efforts fall under what EU officials termed "friend-shoring", redirecting energy trade to a wider network of trusted partner[94].

---

[90] Reuters. (2025, January 9). *Norway gas output hit record in 2024, seen slightly lower in 2025.* Retrieved from https://www.reuters.com/business/energy/norway-gas-output-hit-record-2024-seen-slightly-lower-2025-2025-01-09/

[91] Reuters. (2022, April 11). *Italy signs deal with Algeria to increase gas imports.* Retrieved from https://www.reuters.com/business/energy/italy-signs-deal-with-algeria-increase-gas-imports-2022-04-11/

[92] The Guardian. (2025, July 12). *EU risks breaking international law over Israel gas deal, say campaigners.* Retrieved from https://www.theguardian.com/world/2025/jul/12/eu-risks-breaking-international-law-over-israel-gas-deal-say-campaigners

[93] European Commission. (2025, April 4). *Press statement of European Commissioner for Energy and Housing and Minister of Energy of the Republic of Azerbaijan.* Retrieved from https://energy.ec.europa.eu/news/press-statement-european-commissioner-energy-and-housing-and-minister-energy-republic-azerbaijan-2025-04-04_en

[94] Times Central Asia. (2024, September 18). *The onset of friend-shoring in Central Asia.* Retrieved from https://timesca.com/the-onset-of-friend-shoring-in-central-asia/

- **Global LNG Suppliers:** REPowerEU placed heavy emphasis on LNG infrastructure to tap global markets. The EU imported over 100 bcm of LNG in 2024, an all-time high[95]. United States LNG led the pack, providing 45% of EU's LNG imports in 2024[96], followed by suppliers like Qatar (17 bcm, 7% share)[97], Nigeria, Egypt, Angola, Trinidad, and others[98]. The Commission coordinated a joint purchasing platform for LNG[99], aiming to use the EU's collective buying power to negotiate better terms and avoid intra-EU bidding wars. While uptake of joint purchases has been modest so far, 2023 saw the first aggregated EU tenders for gas supply. In parallel, regulatory steps were taken, for instance, an EU regulation now mandates that gas storage facilities be filled to at least 90% before winter[100], and a temporary gas price cap mechanism was introduced in 2023 to prevent extreme price spikes on the TTF hub[101].

- **Infrastructure Build-out:** Diversification required rapid expansion of import capacity. Several countries that previously lacked LNG terminals built new regasification facilities at record speed. Germany is a prime example, having had zero LNG import terminals, Germany chartered five Floating Storage and Regasification Units (FSRUs) to serve as interim LNG ports. The first FSRU in Wilhelmshaven was up and running by December 2022 (in just 8 months),

---

[95] Council of the European Union. (n.d.). *Where does the EU's gas come from?* Consilium.europa.eu. https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from

[96] Council of the European Union. (n.d.). *United States*. Consilium.europa.eu. https://www.consilium.europa.eu/en/policies/united-states/

[97] Council of the European Union. (2024). *Where does the EU's gas come from?* Brussels. https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/

[98] Institute for Energy Economics and Financial Analysis (IEEFA). (n.d.). *European LNG tracker*. IEEFA. https://ieefa.org/european-lng-tracker

[99] European Commission. (2023, May 16). *EU Energy Platform: EU attracted over 13.4 bcm of gas in first joint gas purchasing tender*. Energy. https://energy.ec.europa.eu/news/eu-energy-platform-eu-attracted-over-134-bcm-gas-first-joint-gas-purchasing-tender-2023-05-16_en

[100] European Commission. (2023, August 18). *EU reaches 90% gas storage target ahead of winter*. Energy. https://energy.ec.europa.eu/news/eu-reaches-90-gas-storage-target-ahead-winter-2023-08-18_en

[101] European Union. (2022). *Council Regulation (EU) 2022/2578 of 22 December 2022 establishing a market correction mechanism to protect Union citizens and the economy against excessively high gas prices*. Official Journal of the European Union, L 335, 1–11. https://eur-lex.europa.eu/eli/reg/2022/2578/oj/eng

followed by Brunsbüttel and Lubmin in early 2023. By the end of 2023, Germany had three FSRUs operational (13.5 bcm capacity) and planned for additional units, targeting 37 bcm/year LNG import capacity by 2024 and up to 73 bcm by 2028 with permanent onshore terminals. Across Europe, LNG import capacity expanded ~20% from 2021 to 2023, including new terminals in Greece, the Netherlands (Eemshaven FSRU), Italy, and expansions in Poland and France. This infrastructure blitz has reinforced Europe's supply flexibility - enabling the rerouting of gas flows. For example, pipeline networks within Europe were reconfigured to send gas from west-to-east whereas historically much flowed east-to-west from Russia. Officials note that Europe's gas infrastructure is now "flexible enough to provide gas of non-Russian origin to Central and Eastern Europe via alternative routes", albeit at higher transport costs[102].

The second pillar of REPowerEU recognizes that the ultimate strategy to neutralize energy coercion is to reduce fossil fuel dependence altogether. Thus, the plan significantly ups the EU's clean energy ambition. Key measures include raising the 2030 renewable energy target from 40% to 45% of EU final energy consumption, a massive scale-up those entails doubling the installed solar and wind capacity within 8 years[103]. The EU Solar Strategy under REPowerEU aims to double solar photovoltaic capacity by 2025 and reach 600 GW by 2030[104]. One concrete initiative is a proposal for mandatory solar panels on new buildings, both residential and commercial, leveraging rooftops across Europe. Similarly, wind power deployment is being accelerated by streamlining permitting processes, the EU is pushing countries to designate "go-to areas" for renewables with simplified approvals. In addition, renewable gases and new fuels feature prominently. REPowerEU sets a target to domestically produce 10 million tonnes of renewable hydrogen by 2030 and import an additional 10 million tonnes[105]. The goal is to replace natural gas and coal in industrial sectors with green hydrogen, improving both climate

[102] Jaller-Makarewicz, Ana Maria. *European LNG Tracker*. Institute for Energy Economics and Financial Analysis (IEEFA), febbraio 2025. https://ieefa.org/european-lng-tracker.

[103] European Commission. (n.d.). *Renewable energy targets*. Energy. https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-targets_en

[104] European Parliament. (2025, March 31). *Renewable energy*. Fact Sheets on the European Union. https://www.europarl.europa.eu/factsheets/en/sheet/70/renewable-energy

[105] European Commission. (n.d.). *Hydrogen*. Energy. https://energy.ec.europa.eu/topics/eus-energy-system/hydrogen_en

and security. Funding for hydrogen projects, at least €200 million in R&D[106], was allocated to catalyze this new market[107]. The plan also encourages biomethane, aiming for 35 bcm production by 2030, from agricultural waste, which could substitute 20%+ of current gas imports if realized[108].

The cheapest energy is what you don't use, and saving gas directly improves energy security. The EU thus upgraded its energy efficiency target for 2030, raising the binding reduction in energy consumption from 9% to 13% (versus baseline projections)[109]. Measures range from quicker building insulation retrofits to promoting heat pumps over gas boilers. Notably, the Commission urged consumers and industry in 2022 to cut gas use by 15% through the winter, a voluntary target under an EU "Save Gas for a Safe Winter" plan[110]. Many countries achieved or exceeded this statement, for example, Germany's gas consumption in late 2022 dropped over 20-30% compared to prior years due to conservation and mild weather[111]. These savings played a vital role in balancing the market. Energy efficiency improvements are expected to deliver about one-third of the gas demand reduction needed by 2030 under REPowerEU, equivalent to 10% of 2021 gas use cut just by efficiency[112]. To fund REPowerEU's initiatives, the EU mobilized approximately €300 billion, combining unspent recovery funds and new funding instruments. About €225 billion comes via loans from the Recovery and Resilience

---

[106] *R&D* stands for Research and Development. It refers to all activities aimed at discovering, innovating and improving technologies, processes or products, in this case, in the field of renewable hydrogen (electrolysers, advanced materials, more efficient production systems). These investments aim to reduce costs, increase efficiency and scale up technological solutions to make them commercially competitive.

[107] European Commission. (2022, May 18). *REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition*. European Commission – Press corner. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3131

[108] European Biogas Association. (2022). *Delivering 35 bcm of biomethane by 2030: REPowerEU with biomethane*. Brussels. https://www.europeanbiogas.eu/wp-content/uploads/2022/04/REPowerEU-with-biomethane-FINAL-1.pdf

[109] Center on Global Energy Policy. (n.d.). *REPowerEU tracker*. Columbia University | SIPA. https://www.energypolicy.columbia.edu/publications/repowereu-tracker/

[110] European Commission. (2022, July 20). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Save gas for a safe winter*(COM/2022/360 final). EUR-Lex. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A52022DC0360

[111] Center on Global Energy Policy. (2023, February 21). *Understanding Germany's gas price brake: Balancing fast relief and complex politics*. Columbia University | SIPA. https://www.energypolicy.columbia.edu/publications/understanding-germanys-gas-price-brake-balancing-fast-relief-and-complex-politics/

[112] European Commission. (2024, December 16). *In focus: Winter preparedness – energy efficiency and savings tips*. Energy. https://energy.ec.europa.eu/news/focus-winter-preparedness-energy-efficiency-and-savings-tips-2024-12-16_en

Facility and €20 billion in grants (from ETS carbon allowance sales)[113]. This financial package is being funneled into member states' national energy plans and each country could add a "REPowerEU chapter" to their post-COVID recovery plan to build infrastructure, renewables, and interconnections. The magnitude underscores the political commitment to overhaul the energy system quickly.

As of 2023–2025, how successful has the diversification strategy been? By quantitative measures, extremely successful in the short term: Russian gas imports have been slashed by over two-thirds since 2021, and the EU made it through the 2022-23 winter without major disruptions, a scenario that seemed doubtful in early 2022. Norway (33%), the U.S. (17%), and Algeria (14%) have overtaken Russia in the EU gas import mix[114]. Increased LNG availability and demand reduction meant Europe had a gas surplus by summer 2023, with storage reaching record highs (95% full before winter). These achievements led EU officials to declare that Russia's ability to use gas as a weapon had been largely defanged[115]. The IEA's Executive Director Fatih Birol remarked in late 2022 that Russia "lost Europe as its largest energy client, and lost it forever"[116], suggesting that even if the war ended, EU policy, and politics, will not allow a return to prior levels of Russian imports.

However, structural challenges and risks remain. One concern is that Europe has simply replaced one dependency with another set of dependencies. The EU is now the world's largest LNG importer, making it reliant on a volatile global gas market. Unlike pipeline contracts, LNG supply can be diverted to higher bidders, meaning Europe competes with Asia for cargoes. If, for instance, Asian demand, especially China's rebounds strongly, LNG could become scarce or prohibitively expensive for Europe, a

---

[113] European Commission. (n.d.). *REPowerEU*. Topics – Energy. https://commission.europa.eu/topics/energy/repowereu_en

[114] Consiglio dell'Unione Europea. *Where does the EU's gas come from?* Bruxelles, 2025. https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/.

[115] Commissione Europea. *REPowerEU*. Bruxelles, 2025. https://commission.europa.eu/topics/energy/repowereu_en.

[116] Zsiros, Sandor, e Jorge Liboreiro. "'Russia will lose the energy battle,' says IEA chief Fatih Birol." *Euronews*, 28 ottobre 2022. https://www.euronews.com/my-europe/2022/10/28/russia-will-lose-the-energy-battle-says-ieas-chief-fatih-birol#:~:text=exports%20went%20to%20Europe%20and,told%20Euronews%20on%20Friday%20afternoon.

vulnerability outside EU control[117]. Additionally, new suppliers come with their own geopolitical or market risks: U.S. LNG, while from a friendly country, is sold by private companies at market prices, leading some European leaders in 2022 to complain about "friendly fire" price-gouging by US exporters as EU gas prices spiked. Algeria has limits on how much it can export, due to rising domestic consumption and prior under-investment, and political instability there or in other transit states could pose future problems. Qatar, though a stable supplier, required long-term 15-20 year contracts that lock in gas use beyond 2030, potentially clashing with EU climate goals. Indeed, Germany only reluctantly agreed to a 15-year LNG deal with Qatar in late 2022 for 2 million tons annually starting 2026. The centrale point of the debate is how reconcile near-term security with long-term decarbonization.

Another challenge is infrastructure overshoot. In the rush to build LNG terminals and gas connectivity, Europe might be creating excess capacity that could become stranded. Analyses by energy think tanks suggest that by 2030, if the EU meets its climate targets, it could have a gas import capacity oversupply of 100+ bcm, meaning many new LNG terminals would sit underutilized. For example, Germany's plan for 70 bcm/year LNG import capacity far exceeds its future needs if usage keeps falling[118]. Critics argue these investments could divert funds from renewables and risk extending reliance on gas, due to infrastructure "lock-in", contrary to climate commitments. EU officials counter that some redundancy is a worthwhile insurance for energy security, and that new terminals can eventually import renewable gases like hydrogen or ammonia.

Finally, political unity on energy can be tested. While REPowerEU was broadly supported, disagreements emerged over measures like gas price caps, joint purchasing, and how quickly to ban remaining Russian energy imports. Countries with lingering dependence (Hungary, Slovakia) have lobbied for exceptions or slower phase-outs. The European Commission proposed in 2023–24 to prohibit Russian LNG imports via

[117] Thomson, Ewan. "*These Charts Show Europe's Reliance on Gas Before the War in Ukraine*." *World Economic Forum*, 10 Novembre 2022.
[118] Institute for Energy Economics and Financial Analysis. (2025, May 16). *EU gas imports fall 25% by 2030 as demand reduction target exceeded once again*. IEEFA. https://ieefa.org/resources/eu-gas-imports-fall-25-2030-demand-reduction-target-exceeded-once-again

member state ports, or empower governments to block them, but unanimous approval was needed. Thus, some fragmentation remains beneath the united front[119].

To conclude, REPowerEU's diversification strategy has dramatically improved Europe's short-term energy security and started the EU on a path of fundamental energy transition. The EU proved it could act swiftly - lining up new supply, building infrastructure, and even adjusting consumer behavior - when faced with an acute threat. The longer-term success will depend on maintaining momentum: scaling up renewables and efficiency enough to reduce fossil gas consumption significantly by 2030, so that Europe can meet climate goals and ensure that today's new dependencies do not become tomorrow's vulnerabilities. The next section examines in more detail the key new energy partnerships Europe has cultivated as part of this strategy, and their geopolitical implications.

[119] European Commission. (2025, June 17). *Commission proposes plan to phase out Russian gas and oil imports*. News. https://commission.europa.eu/news-and-media/news/commission-proposes-plan-phase-out-russian-gas-and-oil-imports-2025-06-17_en

2.3 Europe in search of new energy alliance

The pivot away from Russia has led Europe to forge or deepen energy alliances with several key supplier countries. Notably, the United States, Algeria, and Qatar have emerged as pivotal partners in the EU's new energy landscape, alongside traditional suppliers like Norway. Each of these alliances carries strategic significance, strengthening Europe's security but also introducing new dynamics.

- *United States* (Transatlantic Energy Alliance): The U.S.-EU energy relationship has been fundamentally transformed by the Ukraine war. Before, the U.S. played a minor role in Europe's gas supply and by 2022 - 2023, it became a top supplier. In March 2022, President Biden and EU Commission President von der Leyen announced a joint task force to boost LNG trade, signaling a *de facto* alliance to help Europe replace Russian gas[120]. The U.S. responded by redirecting LNG cargoes to Europe, U.S. exporters sent two-thirds of their LNG to Europe in 2022 during the crisis months. As a result, the U.S. provided about 45 bcm of LNG to Europe in 2022, up from 22 bcm in 2021[121], and maintained high volumes into 2023–24. By 2024 the U.S. comprised 16.5% of EU gas imports (second only to Norway)[122]. This new alliance has geopolitical and economic dimensions. Geopolitically, it reinforced transatlantic ties, Europe now relies on its NATO ally for energy, arguably a more secure dependency given the shared strategic interests. As EU foreign policy chief Josep Borrell quipped, "We replaced Russia with the U.S. - well, the U.S. is a friend. I prefer to depend on friends". Economically, however, tensions arose over pricing. European leaders at times complained that U.S. LNG was arriving at prices 3 - 4 times higher than domestic U.S. gas prices, accusing American companies of profiteering during Europe's

[120] White House. (2022, March 25). *Remarks by President Biden and European Commission President Ursula von der Leyen in joint press statement*. The White House. https://bidenwhitehouse.archives.gov/briefing-room/speeches-remarks/2022/03/25/remarks-by-president-biden-and-european-commission-president-ursula-von-der-leyen-in-joint-press-statement/

[121] Congressional Research Service. (2023, March 29). *U.S. liquefied natural gas and Europe*. CRS Report R47468. Library of Congress. https://www.congress.gov/crs-product/R47468

[122] Council of the European Union. (n.d.). *United States*. https://www.consilium.europa.eu/en/policies/united-states

hardship. U.S. officials pointed out that LNG is sold by private firms and that many cargoes were re-sold by European middlemen at even higher spot prices. To address this, some European utilities signed more long-term contracts with U.S. suppliers in 2023, securing volumes at somewhat lower fixed prices. There's also collaboration on energy security mechanisms as the sharing data on LNG shipments and coordinating emergency supply via the IEA. The transatlantic alliance in energy is thus a cornerstone of Europe's post-Russia strategy, albeit one that requires managing market frictions. As of 2025, it is likely to deepen further: the U.S. has several new LNG export terminals due online by 2025 - 26, and European firms have booked substantial capacity in them, effectively locking in U.S. LNG through the late 2020s[123].

- *Algeria and the Mediterranean Partnership*: Algeria has long supplied gas to Europe (Italy, Spain) but the war elevated its importance. Italy, under former PM Mario Draghi, moved aggressively in 2022 to court Algeria as a replacement for Russian gas. The April 2022 Italy-Algeria agreement increased TransMed pipeline volumes by up to 9 bcm/year, bringing total Algerian supply to Italy to 30 bcm by 2023–24 (up from 21 bcm in 2021)[124]. Indeed, by late 2022 Algeria temporarily surpassed Russia as Italy's gas source. Eni (Italy's oil/gas major) and Sonatrach deepened ties through upstream investments to boost Algerian output. Beyond Italy, Algeria also maintained strong deliveries to Spain, via the Medgaz subsea pipeline, though a second pipeline via Morocco was shut due to Algeria-Morocco disputes. By 2024, Algeria provided about 14% of EU gas imports (39 bcm), making it the EU's third-largest supplier. This growing alliance is mutually beneficial: Europe gains supply diversity, while Algeria gains revenue and

[123] U.S. Energy Information Administration. (2024, March 18). *Three new LNG export projects expected to come online in the United States by 2025*. U.S. Department of Energy. https://www.eia.gov/todayinenergy/detail.php?id=64884
[124] Eni. (2022, April 11). *Eni e Sonatrach concordano aumento forniture gas Algeria attraverso TransMed*. Eni S.p.A. https://www.eni.com/it-IT/media/comunicati-stampa/2022/04/eni-e-sonatrach-concordano-aumento-forniture-gas-algeria-transmed.html

geopolitical clout[125]. Algeria has positioned itself as a reliable partner, with President Tebboune pledging to support Europe's energy stability. However, there are caveats. Algeria's production capacity is not unlimited and it faces rising domestic energy demand and has historically underinvested in new gas fields. Some analysts question whether Algeria can sustain significantly higher exports over the long term without new developments. Politically, Algeria's relations with Europe can be complicated, for instance, Algeria in 2022 was displeased with Spain's stance on the Western Sahara issue and briefly threatened gas contracts. Yet, Algeria also values its reputation as a dependable supplier, it has never unilaterally cut gas to Europe even during political spats. Italy, aiming to become a Mediterranean gas hub, has not only tapped Algeria but also Libya, Egypt, and the Eastern Mediterranean for additional gas. ENI signed deals in Libya to develop offshore gas[126], and Europe is exploring importing gas from Israel/Cyprus[127]. In a strategic sense, Europe's outreach to Algeria and neighbors is part of a broader push to strengthen ties with North Africa, not just for fossil gas but also for renewables (solar, wind) and green hydrogen projects that could supply Europe in the future. Italy has spoken of a "Mattei Plan", named after ENI's founder, to partner with Africa on energy for mutual benefit, framing it as shifting away from a neo-colonial dynamic to a modern partnership[128]. The success of the Algerian alliance thus far indicates that with the right incentives, North African suppliers can be key contributors to Europe's energy security[129].

[125] Council of the European Union. (2024). *Where does the EU's gas come from?* Council of the EU. https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from

[126] Eni. (2023, January 28). *Eni launches a major gas development project in Libya*. Eni S.p.A. https://www.eni.com/en-IT/media/press-release/2023/01/eni-launches-a-major-gas-development-project-in-libya.html

[127] European Council on Foreign Relations. (n.d.). *Gas fields in the Eastern Mediterranean*. ECFR. https://ecfr.eu/special/eastern_med/gas_fields

[128] Presidenza del Consiglio dei Ministri. (n.d.). *Piano Mattei*. Governo Italiano. https://www.governo.it/it/piano-mattei

[129] Reuters. "Italy clinches gas deal with Algeria to temper Russian reliance." *Reuters*, 11 April 2022. https://www.reuters.com/business/energy/italy-signs-deal-with-algeria-increase-gas-imports-2022-04-11/.

- *Qatar and LNG Relationships*: Qatar, one of the world's largest LNG exporters, has become an increasingly vital partner for Europe. Historically, Qatar's LNG was mostly tied up in long-term contracts with Asian buyers like Japan, Korea and China. Only a small share went to Europe on spot or short-term deals. The war-induced LNG demand surge in Europe put Qatar in the spotlight as a source of additional gas. Throughout 2022, German and EU delegations engaged Qatar in negotiations. By November 2022, QatarEnergy and ConocoPhillips inked a landmark 15-year agreement to send LNG to Germany starting 2026, about 2 million tonnes per year (roughly 2.7 bcm)[130]. While relatively modest in volume, it was significant as Germany's first ever long-term LNG supply deal, signalling a shift in German policy[131]. Other European companies, as France's TotalEnergies and Italy's ENI, have also secured stakes in Qatar's massive LNG expansion projects (North Field East), which will start producing around 2025–2027[132]. These stakes will effectively allocate some of the future Qatari LNG output to Europe. The Qatar-Europe energy relationship is mutually pragmatic. Europe needs reliable LNG, and Qatar values market diversification. Yet, negotiations were tense at times with Qatar initially demanded 20+ year contracts and restrictions on reselling gas, conditions conflicting with EU climate goals and internal market rules. The eventual compromises, 15-year terms, deliveries to specific German terminals, illustrate Europe's willingness to accept some long contracts in exchange for security. Strategically, Qatar's LNG gives Europe another non-Russian pillar for winter supply, especially for countries like France, Italy, Belgium, and the UK that have been regular importers of Qatari LNG[133]. By 2024 Qatar accounted for 4% of EU gas imports (12 bcm), and this could grow

[130] Al Jazeera. "QatarEnergy, ConocoPhillips sign LNG deal for Germany." *Al Jazeera*, 29 November 2022. https://www.aljazeera.com/news/2022/11/29/qatarenergy-conocophillips-sign-lng-deal-for-germany.
[131] The Guardian. (2022, November 29). *Germany agrees 15-year liquid gas supply deal with Qatar*. The Guardian. https://www.theguardian.com/world/2022/nov/29/germany-agrees-15-year-liquid-gas-supply-deal-with-qatar
[132] TotalEnergies. (2022, June 12). *Qatar: TotalEnergies first company selected by QatarEnergy for giant North Field East LNG project*. TotalEnergies. https://totalenergies.com/media/news/qatar-totalenergies-first-company-selected-partner-qatarenergy-giant-north-field-east
[133] S&P Global Commodity Insights. (2025, July 29). *Qatar threatens to cut off EU LNG supply amid sustainability policy concerns: Spokespersons*. S&P Global. https://www.spglobal.com/commodity-insights/en/news-research/latest-news/natural-gas/072925-qatar-threatens-to-cut-off-eu-lng-supply-amid-sustainability-policy-concerns-spokespersons

toward the late 2020s[134]. One complication has been diplomatic exploded after the so-called "Qatargate"[135] scandal in the European Parliament briefly threatened to sour relations. However, energy ties continued unaffected and both sides separated that issue from LNG trade. Qatar also played a role in global energy diplomacy, it did not join any Western sanctions on Russia because Qatar maintains relations with Moscow, but it did express commitment to help Europe weather the crisis by redirecting some spot LNG. Europe, for its part, has had to balance human rights concerns in Qatar, around migrant labor, with the pragmatic need for Qatari gas. The relationship is thus transactional but growing stronger, anchored by the new long-term contracts.

- *Norway, UK, and Others*: Although not named in the section title, it's important to note other alliances. Norway deserves to be highlighted as a long-standing ally and, now as Europe's leading gas supplier, has been a mainstay of supply stability. The Norway-EU relationship includes close coordination on security indeed, after the Nord Stream sabotage, NATO and Norway heightened protection of North Sea pipelines[136]. Norway's state company Equinor re-routed some gas to meet German needs and has signed new contracts with Eastern European companies to replace Russian gas. The UK, no longer in the EU but still connected via pipelines, increased its exports of North Sea gas to the continent and acts as a landing point for LNG that then flows to the EU(through the UK-Belgium interconnector). Azerbaijan is a smaller but symbolically important partner: the EU signed a

[134] Council of the European Union. (2024). *Where does the EU's gas come from?* Council of the EU. https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/

[135] *Qatargate* is the corruption scandal that erupted in Brussels in December 2022, with the arrest of Greek MEP Eva Kaili (then Vice-President of the European Parliament), former Italian MEP Pier Antonio Panzeri and other associates. According to the Belgian judiciary, Qatar and, to a lesser extent, Morocco paid large sums of money and offered gifts to influence the decisions of the European Parliament, to tone down criticism of human rights, promote negotiations for the liberalization of visas for Qatari citizens and support more favorable positions in energy and trade agreements. The investigations led to searches, the seizure of over €1.5 million in cash, resignations and the suspension of parliamentary functions for those under investigation, constituting one of the most serious corruption scandals in the European institutions.

[136] Le Monde. (2024, April 16). *Contre la menace russe, six pays nouent un pacte pour protéger les infrastructures de la mer du Nord*. Le Monde. https://www.lemonde.fr/international/article/2024/04/16/contre-la-menace-russe-six-pays-nouent-un-pacte-pour-proteger-les-infrastructures-de-la-mer-du-nord_6228180_3210.html

memorandum in 2022 to double Azerbaijani gas imports by 2027 via the Southern Gas Corridor (TANAP/TAP pipelines), though volumes are relatively small, around 10 bcm in 2021 to 20 bcm in future[137]. There are also emerging partnerships for LNG with countries like Nigeria, Angola, Egypt, Israel, Mozambique, and even Canada and Australia have been in talks to send more LNG to Europe. While these are diverse, often one-off transactions, collectively they contribute to a broad portfolio approach: Europe no longer wants to be beholden to any single supplier to the extent it was to Russia.

The new alliances have geopolitical implications beyond energy. Europe's stronger energy ties with the U.S. reinforce the transatlantic alliance at a time when defense cooperation, through NATO support for Ukraine, is also paramount. This synergy, U.S. military aid and U.S. LNG keeping Europe warm, has strengthened Western unity against Russian aggression. With Algeria and Qatar, Europe is increasing its influence, and investment, in regions like North Africa and the Middle East, which could translate into greater diplomatic leverage. For instance, the EU is now engaging Algeria not just on gas, but on renewable energy and interconnections. As concrete example of this, Italy and Algeria are working on a project involving a submarine cable for green electricity. This project was discussed during the 2025 summit in Rome, where an Eni–Sonatrach protocol was signed for a feasibility study on the "Medlink" project, aimed at assessing the construction of a high-voltage submarine electricity cable capable of transporting energy from renewable sources between Algeria and Italy[138]. Likewise, Europe's deals with Qatar come as Qatar is keen to diversify its economy and political alliances post-Gulf blockade; Europe has become an important partner alongside Qatar's traditional Asia customers. At the same time, sceptics caution that diversification is not invulnerability. Some of these new partners have their own complexities: for example, Turkey's role has grown since TurkStream delivers Russian gas to Europe's south, meaning Europe now relies on Turkey's goodwill for some supply to reach Hungary. And Turkey itself is

[137] European Commission. (2022, July 18). *EU and Azerbaijan enhance bilateral relations, including energy cooperation*. European Commission. https://enlargement.ec.europa.eu/news/eu-and-azerbaijan-enhance-bilateral-relations-including-energy-cooperation-2022-07-18_en

[138] Ecomondo. (2023, May 25). *Energy and agriculture: Italy and Algeria are gradually expanding cooperation*. Ecomondo. https://www.ecomondo.com/en/news-detail/energy-and-agriculture-italy-and-algeria-are-gradually-expanding-cooperation%20?newsId=3121715

importing more Russian gas while re-exporting some to Europe, a potential backdoor. Also, global competition for energy resources could strain these alliances and if a future crisis caused the U.S. to prioritize domestic supply or Qatar to prioritize Asian markets, Europe might still face shortages. This underscores why REPowerEU also emphasizes domestic energy development so that external alliances are a supplement rather than a crutch.

The EU's outreach has effectively built a patchwork of energy allies to fill the Russian gap. The U.S., Algeria, and Qatar are prominent among them, each reducing the EU's strategic risk. By diversifying across many suppliers, Europe has reduced the leverage of any single producer. This boosts Europe's geopolitical autonomy as it is easier to stand up to a supplier, be it Russia or others, when that supplier is one of many rather than the dominant source. The final section will examine the broader concept of "energy as a geopolitical weapon", how the Russia-Ukraine war has demonstrated this concept and how Europe's changes aim to disarm that weapon going forward.

2.4 Energy as a geopolitical weapon

The events of 2022–2024 have starkly illustrated how energy can be wielded as a geopolitical weapon and how reshaping energy dependencies is crucial for national and regional security. Russia's strategy in the Ukraine conflict explicitly treated Europe's energy reliance as a pressure point: by curtailing gas supplies, Moscow hoped to sow division in the EU, weaken European economies, and coerce a reduction in support for Ukraine. This weaponization of energy, however, met with a robust response that has in many ways turned the tables. In this section, we analyse the concept of energy as leverage in warfare and foreign policy, and how the EU's new energy posture impacts its strategic and defensive autonomy.

For decades, Russia cultivated dominance in Europe's energy markets not just for profit, but for influence. As noted, pipelines like Yamal, Nord Stream, and TurkStream were as much geopolitical projects as commercial ones[139]. The Kremlin routinely linked gas deals with political aims, offering discounts to friendly governments or cutting off dissenters. This came to a head after Ukraine oriented West by Gazprom's 2022 cut-offs to countries refusing its ruble scheme, and the throttling of Nord Stream under flimsy pretexts, like a missing turbine, were clearly moves to "punish" Europe and deter it from aiding Ukraine[140]. President Putin and other officials openly suggested that Europe's support for Kyiv would mean Russia could not guarantee energy supply. In Putin's playbook, gas was a trump card. Historically, Europe had backed down or sought quick compromises when faced with gas supply threats, as in earlier Ukraine transit disputes. However, the 2022 war showed the limits of energy blackmail when the target can unite and adapt. Europe refused to split or capitulate; instead, it paid a high economic cost to replace Russian gas and impose sanctions. By late 2022, it became evident that Russia's

[139] Gross, Samantha, e Constanze Stelzenmüller. "Europe's Messy Russian Gas Divorce." *Brookings Institution*, 18 giugno 2024. https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/#:~:text=Russia%E2%80%99s%20involvement%20in%20the%20German,the%20new%20pipeline%20consortium%E2%80%99s%20board.

[140] The Washington Post. (2025, February 23). *Russia's Gazprom used gas cutoffs to punish Europe and deter Ukraine support*. The Washington Post. https://www.washingtonpost.com/world/2025/02/23/russia-gazprom-war-ukraine-economy/

"sharpest energy weapon" had misfired. Gazprom lost its largest customers and revenue plummeted, the weapon backfired by damaging Russia's own economic engine (oil and gas revenues fund a large share of its budget). The IEA estimated Russia's pipeline gas revenues from Europe fell by roughly 85% in 2022–2023. Moreover, Russia's leverage diminished permanently: "Russia has lost Europe as its energy client forever" declared IEA's Fatih Birol[141]. Indeed, by 2023-24, Russia's share in Europe's gas had dwindled to under 15%, and could approach zero by 2027 if the EU stays on course[142]. This means Moscow can no longer easily use gas supply cuts as a bargaining chip and Europe has proven it can survive without Russian gas, at least after an initial adjustment.

That said, Russia's energy weapon is not entirely neutralized yet. In the winter of 2022-23, Europe benefited from mild weather as evidenced by the fact that a harsher winter or a big rebound in Asian gas demand could have tested the system. Furthermore, Russia continues to earn billions from oil sales[143], which is a separate but related issue to energy weapons, as Russia has shifted its oil exports to Asia[144] following the EU oil embargo, albeit at discounted prices due to the price cap set by the G7/EU[145]. In gas, while pipeline exports to Europe are largely gone, Russia still exports LNG that finds its way into European markets unsanctioned. There is concern Russia could try to flood the market or undercut prices via covert channels to make some European LNG infrastructure redundant or to hurt U.S. LNG competitiveness. Alternatively, Russia might hope Europe's unity wanes and some countries resume bilateral energy deals, like Hungary that extended its gas contract with Gazprom in 2023. Therefore, the weaponization threat

---

[141] Zsiros, Sandor, e Jorge Liboreiro. "'Russia will lose the energy battle,' says IEA chief Fatih Birol." *Euronews*, 28 ottobre 2022. https://www.euronews.com/my-europe/2022/10/28/russia-will-lose-the-energy-battle-says-ieas-chief-fatih-birol#:~:text=exports%20went%20to%20Europe%20and,told%20Euronews%20on%20Friday%20afternoon.

[142] Ember. *The Final Push for EU Russian Gas Phase-Out*. 27 marzo 2025. https://ember-energy.org/latest-insights/the-final-push-for-eu-russian-gas-phase-out/.

[143] Economics Observatory. (2023, March 20). *What effects have energy sanctions had on Russia's ability to wage war?* Economics Observatory. https://www.economicsobservatory.com/what-effects-have-energy-sanctions-had-on-russias-ability-to-wage-war

[144] Reuters. (2025, August 15). *Russian energy export disruptions since start of Ukraine war.* Reuters. https://www.reuters.com/business/energy/russian-energy-export-disruptions-since-start-ukraine-war-2025-08-15/

[145] Kilian, L., & Zhou, X. (2024). *The price of oil and Russia's war on Ukraine* (Federal Reserve Bank of Dallas, Working Paper No. 2401). Federal Reserve Bank of Dallas. https://www.dallasfed.org/-/media/documents/research/papers/2024/wp2401r1.pdf

recedes but isn't dead until Europe fully weans off Russian fuels and/or Russia loses ability to manipulate markets.

The flip side of reducing vulnerability is gaining freedom of action. The EU's moves to sever energy ties with Russia have enhanced its strategic and defensive autonomy. No longer does the Kremlin hold a "gas gun" to Europe's head, meaning Europe can make policy with far less fear of energy retaliation. This was demonstrated in 2022 when, despite Gazprom's cuts, EU countries maintained and even increased their support for Ukraine. Europe's willingness to endure economic pain undermined Putin's assumption that cutting gas would force European governments to break with Kyiv. In essence, Europe absorbed the blow of the energy weapon and disarmed it by diversifying. This experience has cemented a doctrine within EU policy circles transforming energy security in an integral part of national security. Recently, speaking at the Munich Security Conference, European Commission President Ursula von der Leyen reaffirmed this concept with this statement:

"We have broken one taboo after another and smashed our reliance on Russian gas, making us more resilient - permanently."[146]

The EU's 2022 Strategic Compass, a defence strategy paper, and subsequent documents explicitly mention dependence on hostile powers for energy or critical materials as strategic risks that must be minimized[147]. The concept of "open strategic autonomy" has entered EU jargon, meaning Europe aims to control its destiny in critical sectors like energy, while still engaging globally on its own terms. In practical terms, this has led to policies like securing supply chains for energy transition technologies (batteries, solar panels) so that Europe's shift to renewables doesn't create a new dependency[148].

---

[146] Ursula von der Leyen, *Speech by President von der Leyen at the Munich Security Conference 2025*, European External Action Service, February 15, 2025, https://www.eeas.europa.eu/delegations/ukraine/speech-president-von-der-leyen-munich-security-conference-2025_en?s=232.

[147] European External Action Service. (2024). *Strategic Compass: Second year report*. EEAS. https://www.eeas.europa.eu/sites/default/files/documents/2024/StrategicCompass_2ndYear_Report_0.pdf

[148] Leigh Hancher e Adrien de Hauteclocque, "Strategic Autonomy, REPowerEU and the Internal Energy Market: Untying the Gordian Knot" (2024) 61 *Common Market Law Review* 3-

Europe's energy realignment also has a defence dimension in terms of resources. By eliminating payments to Russia for fossil fuels, which were about $1 billion per day at pre-war times for all fossil fuels, the EU has reduced funding flowing to the Russian war machine[149]. Conversely, investing those funds in domestic infrastructure and alternative suppliers keeps money within allied or neutral spheres. Some of that reallocation has implicitly supported defence, for example, the U.S. providing more LNG and simultaneously more military aid to Europe/Ukrainians can be seen as a broad alliance effort. Moreover, the EU's willingness to take economic hits for security, something arguably learned through this energy crisis, could translate into greater resolve in other areas, like higher defense spending or willingness to sustain sanctions long-term.

While Russia's use of energy as a weapon largely failed to break Europe's unity, it highlighted an important reality: interdependence can be wielded by either side under certain conditions. Europe also used energy against Russia by imposing an embargo on Russian coal (effective August 2022) and oil (seaborne crude embargo in December 2022, oil products in February 2023) and implementing the oil price cap[150]. These measures aimed to undercut Russia's ability to fund the war without causing oil supply shocks globally. The outcome has been mixed but significant: Russian Urals oil trades at a major discount, cutting into Moscow's revenue, an estimated 50-60% drop in oil revenue in early 2023 year-on-year[151]. This shows Europe wasn't just a passive target of energy coercion but it also weaponized trade leverage in return. There is a debate about ethics and efficacy, using economic pain to achieve political ends can be a dangerous game, and when both sides do it, it can escalate costs for everyone (Europe's own energy-driven inflation is an example). However, the EU felt morally and strategically justified given the stakes of the war.

32
https://kluwerlawonline.com/journalarticle/Common+Market+Law+Review/61.1/COLA2024003

[149] Tagliapietra, S., & Zachmann, G. (2023, February 16). *European Union–Russia energy divorce: State of play*. Bruegel. https://www.bruegel.org/analysis/european-union-russia-energy-divorce-state-play

[150] Council of the European Union. (2024). *Sanctions against Russia explained*. Council of the EU. https://www.consilium.europa.eu/en/policies/sanctions-against-russia-explained/

[151] Federal Reserve Bank of Dallas. (2024, May 14). *Russian oil sanctions: One year in*. Dallas Fed Economics. https://www.dallasfed.org/research/economics/2024/0514

The 2022/23 winter is often cited by analysts as a demonstration of energy's geopolitical role. Russia gambled that a cold winter and gas shortages would force Europe into crisis, potentially leading to blackouts, rationing, and public anger that could splinter political support for sanctions. Europe's combination of preparedness (high storage, alternate supplies) and good fortune (mild temperatures, and even a last-minute drop in Chinese LNG demand due to China's zero-Covid policy) prevented that scenario. Instead, Europe exited winter with record gas inventories and rapidly falling prices. Come spring 2023, European leaders felt vindicated. This success significantly boosted confidence in pursuing policies independent of Russian influence, reinforcing the belief that Europe could afford to stand up to autocratic energy bullies if it stayed united. The war's lesson is likely to echo for decades in European strategy. One major implication is the acceleration of the green transition for security reasons. Even beyond climate arguments, EU countries now see wind, solar, and other renewables as essentially geopolitical assets, they are local, cannot be cut off by a foreign actor once installed, and reduce reliance on imported commodities. The term "energy sovereignty" is used alongside "strategic autonomy" to describe the goal of meeting as much energy demand as possible from domestic renewable sources. The faster Europe can replace gas boilers with heat pumps, petrol cars with EVs, and fossil power with renewables, the less vulnerable it becomes. For example, a study in early 2023 showed that EU wind and solar expansion in 2022 (which hit record levels) saved significant amounts of gas, helping compensate for the shortfall and thus directly weakening Russia's energy leverage. The war essentially provided a political catalyst to enact more aggressive clean energy policies, like permitting reforms to build turbines faster, and subsidy schemes like the EU's Green Deal Industrial Plan to boost clean tech manufacturing in Europe. Another implication is a revaluation of relationships with other energy-rich autocratic regimes. Europe is mindful that it must avoid falling into new dependencies on states that might leverage energy. Russia's actions prompted comparisons to other suppliers: how dependent should Europe be on China for critical minerals, or on the Middle East for oil? While those are outside the immediate scope of this chapter, the principle of diversification and domestic production as a shield applies broadly. In essence, Europe is operationalizing what in

international relations theory is called "complex interdependence"[152], recognizing that while interdependence can foster cooperation, it also creates vulnerabilities if asymmetrical. The EU is striving to reduce asymmetry by ensure that if interdependence exists, Europe can tolerate a cutoff better than the supplier can. In gas, this has been achieved with Russia. Russia now has very limited ability to reroute its gas, pipelines to China are small in capacity, so Russia is forced to cap output, flaring gas… this meaning Europe's exit has hurt Russia more than in reverse[153]. In oil, Europe's embargo aimed to do similar, try to forcing Russia to take heavy discounts from other buyers[154]. In future scenarios, the EU will likely apply this lesson to any dominant import reliance that could threaten security, whether it's lithium for batteries or semiconductors or something else[155].

On the defence autonomy front, having secure energy means Europe is freer to pursue independent defence initiatives without external pressure. For instance, if the EU wanted to sanction a country for aggression, it could do so without fear of lights going out at home. This is in line with recent European initiatives aimed at strengthening defence cooperation, through proposals for an EU defence investment programme, in which energy independence complements military resilience. NATO also has acknowledged climate and energy security in its strategic concept and is working on measures to protect critical energy infrastructure, after the Nord Stream sabotage, NATO formed a Critical Undersea Infrastructure Coordination Cell[156]. This indicates a merging of thinking around pipelines and power grids might not traditionally be seen as defence assets, but now they are. The EU has conducted stress tests and scenario planning for a

---

[152] Keohane, R. O., & Nye, J. S. (2001). *Power and interdependence* (3rd ed.). New York: Longman. [Sample chapter]. https://www.pearsonhighered.com/assets/samplechapter/0/2/0/5/0205082912.pdf

[153] Normile, D. (2023, March 21). *Russia, China agree on pipeline plan, leaving Beijing with the upper hand*. *The Wall Street Journal*. https://www.wsj.com/world/russia/russia-china-agree-pipeline-plan-leaving-beijing-with-the-upper-hand-f61a92d6

[154] Korhonen, I., Rauhala, S., & Solanko, L. (2023). *The impact of the oil price cap on Russian crude oil exports and revenues* (BOFIT Policy Brief No. 2/2023). Bank of Finland Institute for Emerging Economies (BOFIT). https://rapson.ucdavis.edu/uploads/8/4/7/1/84716372/krs_main.pdf

[155] Gross, Samantha, e Constanze Stelzenmüller. "Europe's Messy Russian Gas Divorce." *Brookings Institution*, 18 giugno 2024. https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/#:~:text=The%20story%20of%20Europe%E2%80%99s%20adjustment,political%20response%20in%20the%20future.

[156] NATO. (2023, February 15). *NATO creates Critical Undersea Infrastructure Coordination Cell*. NATO. https://www.nato.int/cps/en/natohq/news_211919.htm

possible simultaneous energy cutoff or cyberattack on energy systems, improving preparedness.

It's worth noting that not everyone agrees on the trajectory. Some analysts argue Europe's rush to cut off Russian gas had economic downsides, contributing to a cost-of-living crisis and deindustrialization risks, with high energy prices making European industry less competitive globally[157]. They question if Europe could have phased out Russian energy more gradually to mitigate economic pain, especially for poorer households. Others counter that any continued payments to Russia would have funded further aggression, and that short-term pain was unavoidable but ultimately successful in staving off an even worse outcome, a politically subjugated Europe. There is also a debate on nuclear energy's role with France, and some others, maintained that keeping nuclear plants, which provide steady power and reduce gas burn, is crucial for energy security[158]. Germany, however, proceeded with its pre-war plan to shutter its last nuclear reactors by 2023, a decision criticized by some as undermining the energy weapon resistance. These debates feed into how Europe will shape its energy mix moving forward under the umbrella of security.

Russia has tried to frame Europe's actions as self-harming and argued that Europe cannot fully replace Russian gas without great cost. Pro-Russian commentators suggest Europe will face years of high energy prices and that this will erode public support for pro-Ukraine policies[159]. While it's true energy prices in Europe remain higher than pre-war, gas prices in 2024 are roughly double their 2010s average, the political will in Europe has so far remained firm. Support packages have softened the impact on citizens, and EU-wide inflation started easing by mid-2023 as gas prices fell from their peak. So the narrative of Europe "losing the energy war" has not materialized, if anything, Russia's leverage is permanently diminished in Europe, and Russia will have to seek alternative

---

[157] Reuters. (2024, December 31). *Russia reduces gas flow via Ukraine to Europe on last day of expiring deal*. Reuters. https://www.reuters.com/business/energy/russia-reduces-gas-flow-via-ukraine-europe-last-day-expiring-deal-2024-12-31/

[158] World Nuclear Association. (2024). *Nuclear power in France*. World Nuclear Association. https://world-nuclear.org/information-library/country-profiles/countries-a-f/france

[159] Friedrich Naumann Foundation for Freedom. (2023, February 28). *Pro-Russian disinformers blame European sanctions for high energy prices*. Friedrich Naumann Foundation. https://www.freiheit.org/central-europe-and-baltic-states/pro-russian-disinformers-blame-european-sanctions-high-energy

markets under less favourable terms. The Russia-Ukraine war has indelibly altered Europe's energy security paradigm. Energy, once viewed largely as an economic/resource issue, is now seen through a strategic lens. Europe learned that dependency on an adversary can be as dangerous as a gap in one's defense armor. Through rapid diversification and an accelerated clean energy transition, the EU has improved its resilience and freedom of action. The structural shift away from Russian energy has, in a short time, enhanced Europe's geopolitical strength and defensive autonomy and the EU can take positions and actions, like robustly supporting Ukraine, that it might have hesitated to if Russia still held the energy sway it did pre-2022. This newfound autonomy, however, will require constant vigilance and Europe must manage new dependencies smartly and continue investing in truly sustainable, secure energy sources.

CHAPTER 3

ENERGY INDEPENDENCE AND EUROPEAN SECURITY

Europe's recent geopolitical upheavals have clearly shown that energy independence and defence security are deeply interlinked. This chapter reviews the contemporary literature and policy analyses (2015-2025) on the relationship between Europe's energy autonomy and its strategic/military vulnerability. The investigation is motivated by events related to Russia's war against Ukraine (2022), which overturned decades of energy policy assumptions. Historically, European nations have built extensive energy interdependence with suppliers, particularly Russia, on the premise that economic interdependence could act as a stabilizing force. However, Russia's weaponization of gas supplies and the ensuing energy crisis have forced a reassessment: Does dependence on external energy make states more susceptible to coercion and conflict? Conversely, could the pursuit of complete energy independence lead to risks or inefficiencies that affect security?

To frame this discussion, let's define the key terms. Energy independence refers to the ability of a nation or bloc to meet its energy needs without being overly reliant on foreign suppliers, especially those who could pose a strategic threat. It is closely related to energy security:

- Availability
- Accessibility
- Expedience
- Acceptability

Traditionally, policymakers have balanced these aspects, accepting some dependency in exchange for accessibility or efficiency. Defensive and military security here includes not only military readiness and defense capabilities but also the absence of undue strategic vulnerability that adversaries could exploit, for example, through power outages or sabotage of infrastructure.

The central question is how these concepts intersect: does reducing energy dependency measurably improve national security, and under what conditions could the opposite be argued?

3.1 Energy independence and European defense security: strategic interconnection

European energy policy has long balanced interdependence and security, as evidenced by the huge imports of Russian gas and oil since the 1970s. This mutual dependence was once seen as a source of stability, with the liberal premise that economic ties reduce conflict. However, Russia's invasion of Ukraine in 2022 marked a paradigm shift: energy security was reframed from interdependence to independence, as explained in the article "Breaking the era of energy interdependence in Europe: A multidimensional reframing of energy security, sovereignty, and solidarity," written by Michael Carnegie La Belle at Central European University[160]. EU leaders explicitly stated the need to "become independent of Russian oil, coal, and gas" due to the risk of depending on a supplier willing to use energy as coercion.

Recent literature and policy analyses underline that a strong energy dependence can be a strategic vulnerability. Moscow's ability to "exploit" natural gas supplies, by limiting flows and raising prices in 2021-2022, has highlighted the problem of foreign dependence. Countries such as Germany, which before 2022 depended on Russia for more than half of their gas needs, have seen their foreign policy limited and have had to seek alternatives[161]. From a political perspective, Moldova, historically 100% dependent on Russian gas, faced acute crises when supplies were cut off, revealing how an adversary can induce internal instability through energy blackmail[162]. These cases demonstrate that

[160] LaBelle, M. C. (2024). *Breaking the era of energy interdependence in Europe: A multidimensional reframing of energy security, sovereignty, and solidarity*. *Energy Strategy Reviews, 52*, 101314. https://doi.org/10.1016/j.esr.2024.101314

[161] Zachmann, G., & Moll, B. (2023, October 26). *The European Union's gas supply shock* (BPEA Conference Draft, Fall 2023). Brookings Papers on Economic Activity. Brookings Institution. https://www.brookings.edu/wp-content/uploads/2023/10/BPEA-Zachmann-Moll-20231026.pdf

[162] Center for Strategic and International Studies. (2022, November 23). *Moldova's gas futures*. CSIS. https://www.csis.org/analysis/moldovas-gas-futures

reducing external energy dependency is generally seen as improving national and collective security through the elimination of a key pressure point. While the dominant opinion argues that greater energy autonomy strengthens security, there is a nuanced debate. To help us understand theoretically what happened at the supranational level, we can provide ourselves with the "*theory of complex interdependence*" by *Keohane and Nye (1977),* which is discussed and used by Keohane also in *After Hegemony*, where the author reflects on the role of international institutions in an anarchic but interconnected system. Keohane makes the case that international cooperation is rational even in the absence of hegemony by explicitly recalling some of the theory's key components, but he does not provide a systematic exposition of the theory in this volume.

The following excerpt from Keohane's chapter on the functional theory of regimes is especially noteworthy:

"*Multiple issues and multiple contacts among societies are two aspects of 'complex interdependence' (Keohane and Nye, 1977). Both facilitate agreements by multiplying points of interaction among governments and therefore increasing incentives to comply with commitments in a situation characterized by practices of 'tit for tat' reciprocity. The third characteristic of complex interdependence—lack of efficacy of resorts to force - has similar effects, since it helps to guarantee that the game will not be truncated by sudden violent acts."*[163]

Keohane enumerates the three theoretical pillars in this passage:

1) The variety of political issues at play
2) the various ways that actors can communicate with one another
3) The relative inefficiency of using force.

Because of the potential for reciprocal penalties, reputation, and the interdependence of the interests involved, these circumstances foster an atmosphere in which cooperation can arise from selfish rationality rather than idealism. According to this viewpoint, complex interdependence transforms rather than eradicates the anarchy of the international system: the increasing density of relationships between states and non-state actors makes isolation expensive, and breaking norms or commitments in one area can

[163] Robert O. Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton: Princeton University Press, 1984), p. 67.

have consequences in numerous other areas. Rational behaviour, therefore, adapts to a context in which actions are observed, judged and potentially sanctioned, even in the absence of a higher authority.

This theoretical framework legitimises the empirical observation that states often comply with agreements even when it would seem more advantageous to violate them.

"*Violation of one's commitments on a given issue, in pursuit of myopic self-interest, will affect others' actions on other questions. Pursuit of its farsighted self-interest may therefore lead a government to eschew its myopic self-interest*."[164]

The classical theory of "complex interdependence" argues that mutual dependence increases the cost of conflict and thus can deter war. Indeed, prior to 2022, many in Europe believed that robust gas trade with Russia would create mutual deterrence[165]. However, emerging research finds that asymmetric interdependence creates power imbalances that attackers can exploit[166]. In the war in Ukraine, Russia attempted to "keep an interested third party at bay by using economic ties," betting that Europe's fear of losing gas would limit its support for Ukraine.[167] This strategy had short-term deterrent effects, but ultimately failed to prevent a strong European response. Europe has absorbed the economic pain and has begun to diversify supplies, demonstrating that dependency-based deterrence is not indefinite. Recent studies agree that interdependence can reduce direct confrontation only until it is weaponized, at which point it becomes a liability rather than a guarantee of peace[168]. Counterarguments suggest that complete halting trade, in a regime of full autarky, may result in economic costs or instability, but there is a broad consensus that diversification and resilience, not over-reliance, are the keys to security in the energy sector.

---

[164] Robert O. Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton: Princeton University Press, 1984), p. 90.

[165] Khalitova, A. (2010). *Energy trade brinkmanship between the European Union and Russia*. *Undergraduate Economic Review, 6*(1), Article 9. Illinois Wesleyan University. https://digitalcommons.iwu.edu/cgi/viewcontent.cgi?article=1108&context=uer

[166] Goldthau, A., & Sitter, N. (2015). *A liberal actor in a realist world: The European Union regulatory state and the global political economy of energy*. Oxford University Press.

[167] Anatoliĭ, G., Kravchenko, M., & Petrova, I. (2024). The war in Ukraine: The deterrent effect of weaponized interdependence. *Nationalities Papers, 52*(1), 145–163. https://doi.org/10.1017/nps.2023.100

[168] LaBelle, M. C. (2023). Energy as a weapon of war: Lessons from 50 years of energy interdependence. *Global Policy, 14*(3), 531- 547. https://www.globalpolicyjournal.com/articles/climate-change-energy-and-sustainability/energy-weapon-war-lessons-50-years-energy

European energy policy has changed from market liberalisation to strategic realignment during the past ten years, from 2015 to 2025. Although Russia continued to be a significant supplier until the end of the 2010s, the European Union's Energy Initiative (2015)[169] and later packages sought to diversify sources and integrate markets. After the 2014 crisis in Crimea, some states-built LNG terminals and storage facilities, but dependence remained. After 2022, Europe implemented countermeasures in relation to Russian fossil fuels. The European Union reduced gas imports from Russia by 80% compared to pre-war levels (2021), when they accounted for between 40% and 45% of total supply[170]. By the end of 2022, dependence had fallen to a decimal figure, around 20% or less, and subsequently continued to decline to values between 15% (in 2023)[171] and 18-19% (in 2024)[172]. Through emergency measures, joint gas purchases, mandatory 15% demand reduction[173], rapid LNG imports and the acceleration of renewable energy, Europe has weaned itself off Russian gas in one year. By 2023, petrol prices had dropped to pre-crisis levels following a record spike. But this resilience has come at a price: governments have offered expensive subsidies, energy-intensive industries have suffered, and some new dependencies have developed, such as reliance on global LNG, which is largely sourced from the United States. Europe's continued reliance on petrol imports serves as a reminder that diversification does not equate to self-sufficiency. Recognising that Europe cannot achieve complete energy self-sufficiency, policymakers reiterate that

[169] European Parliamentary Research Service. (2015, January). *Energy security in the EU's external relations* (EPRS Briefing, PE 551.310). European Parliament. https://www.europarl.europa.eu/RegData/etudes/BRIE/2015/551310/EPRS_BRI(2015)551310_EN.pdf

[170] Astrov, V., & Hanzl-Weiss, D. (2025, March). *The European gas market: Emancipating from Russia* (Policy Notes and Reports No. 91). The Vienna Institute for International Economic Studies (wiiw). https://wiiw.ac.at/p-7261.html

[171] Centre for Research on Energy and Clean Air. (2024, February 24). *EU imports of Russian fossil fuels in third year of invasion surpass financial aid sent to Ukraine*. CREA. https://energyandcleanair.org/publication/eu-imports-of-russian-fossil-fuels-in-third-year-of-invasion-surpass-financial-aid-sent-to-ukraine/

[172] Reuters. (2025, May 6). *EU's plan to phase out Russian gas by end-2027*. Reuters. https://www.reuters.com/sustainability/climate-energy/eus-plan-phase-out-russian-gas-by-end-2027-2025-05-06/

[173] Clean Energy Wire. (2023, August 22). *Germany's dependence on imported fossil fuels*. Clean Energy Wire. https://www.cleanenergywire.org/factsheets/germanys-dependence-imported-fossil-fuels

the objective is to manage reliance on a friendly and diverse supplier base in addition to increasing domestic clean energy production[174].

The intersection between energy and military security is now explicit. Gas pipelines, LNG terminals and electricity grids are examples of critical energy infrastructure considered essential components of Europe's strategic defence environment. Some weaknesses were highlighted by the sabotage of the Nord Stream gas pipeline in 2022: in response, NATO and the EU established task forces to strengthen infrastructure resilience and safeguard gas pipelines and submarine cables. Considering sustainable energy flows fundamental to collective defence, NATO's 2022 Strategic Concept committed to "improving our energy security and investing in reliable supplies"[175]. Logistical issues also affect the European military because military preparedness depends on reliable supply routes and strengthened energy bases. Furthermore, Europe's push for energy sovereignty is in line with its strategy of strategic autonomy, minimising external dependence on Russian gas and the influence of other geopolitical actors on EU foreign policy[176]. Contemporary research and expert analyses converge on the point about energy security as a national security sphere. To strengthen defensive security, Europe is institutionalizing energy independence as a key policy objective. This involves:

a. the definition of acceptable limits of dependency, for example, the definition of thresholds for supply that can come from a single foreign source.

b. Protecting electricity grids, shared gas storage, and diversified import routes are some ways to fortify supply chains and infrastructure against interruptions.

---

[174] Council of the European Union. (n.d.). *REPowerEU*. Council of the EU. https://www.consilium.europa.eu/en/policies/repowereu/

[175] North Atlantic Treaty Organization. (2022, June 29). *NATO 2022 Strategic Concept*. NATO. https://www.nato.int/nato_static_fl2014/assets/pdf/2022/6/pdf/290622-strategic-concept.pdf

[176] EUNATO Task Force on the Resilience of Critical Infrastructure. (2023, June). *Final Assessment Report: Strengthening the resilience and protection of critical infrastructure*. Publication of the European Commission and NATO.

c. Increasing European energy solidarity by coordinating emergency responses and sharing resources to prevent any member state from being isolated and compelled to.

d. Quicken the shift to clean energy, both to meet climate targets and to attain long-term energy sector independence, as efficiency gains and renewables lessen reliance on imported fuels.

Crucially, the EU and NATO are now collaborating on these problems and incorporating energy resilience into a more comprehensive security plan. Interdependence will be pursued more selectively, but it won't vanish, Europe will still trade energy with partners around the world. The emerging paradigm is that of managed interdependence: engaging in energy trading under conditions that do not create singular strategic vulnerabilities and maintaining strong fallback options, like domestic production or alternative suppliers, if an adversary attempts coercion.

3.2 The evolution of energy security in Europe (2015-2025)

During the late twentieth century, the European strategy embraced energy trade as a means of promoting peace. Since the oil crises of the 1970s, Western countries have pursued "global interdependence" in oil markets to dilute OPEC's. A similar approach was extended to natural gas, in fact starting with the Cold War and accelerating after 1990, Europe expanded gas imports from the Soviet Union and Russia based on the logic that mutual dependence would bind the two sides. For decades, this seemed to work: Russia got reliable revenues, Europe got affordable energy, and open conflict was avoided[177]. In the 2010s, Russia supplied more than a third of Europe's gas and even higher shares in countries such as Germany, Hungary and Bulgaria. Policymakers have taken this interdependence as a measurable source of energy security per se, if neither side wants to jeopardize such beneficial ties. A break of this pattern appeared after Russia's annexation of Crimea in 2014. Eastern EU members and security analysts have warned that dependence on Russian energy could become a strategic liability. In 2015, the EU launched an Energy Union strategy, with the aim of diversifying suppliers, integrating pipelines and networks, and improving external energy security. Projects such as new LNG terminals in Poland and Lithuania, pipeline connectors between Central European states, and rules to avoid monopolistic supply agreements were part of this effort[178]. However, major economies such as Germany have doubled their use of Russian gas through projects such as the Nord Stream 2 pipeline (completed in 2021 but never activated). State-controlled Gazprom exploited these dependencies and at the end of 2021, Gazprom deliberately underfilled European gas storage and cut spot sales, driving up prices[179]. These actions were an early use of energy pressure, foreshadowing the

[177] Çelikpala, M., & Tok, E. (2019). *Energy interdependence between Russia and the European Union: Geopolitical stability or vulnerability?* Uluslararası İlişkiler / International Relations, 16(62), 3–20. https://dergipark.org.tr/tr/download/article-file/815787

[178] European Parliamentary Research Service. (2015, January). *Energy security in the EU's external relations* (EPRS Briefing, PE 551.310). European Parliament. https://www.europarl.europa.eu/RegData/etudes/BRIE/2015/551310/EPRS_BRI(2015)551310_EN.pdf

[179] Gross, S., & Stelzenmüller, C. (2023, February 15). *Europe's messy Russian gas divorce*. Brookings Institution. https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/

"militarization" to come. On the eve of the invasion of Ukraine, Europe was highly exposed, with low gas inventories and many countries dependent on Russian gas for heating and electricity.

Russia's full-scale invasion of Ukraine in February 2022 triggered an immediate redefinition of energy policy. Fears that Moscow would cut off fuel in retaliation for Western sanctions quickly came to fruition. In mid-2022, Russia halted gas flows through Nord Stream and other routes to Europe, except for a trickle through Turkey and Ukraine[180]. In response, European Commission President Ursula von der Leyen said:

"We need to become independent of Russian oil, coal and gas. We cannot rely on a supplier who explicitly threatens us"[181].

The discourse on energy security has shifted overnight from managing interdependence to achieving independence from an aggressive supplier. The EU quickly implemented its REPowerEU plan, an emergency strategy to phase out Russian fossil fuels well before 2030 by diversifying imports and accelerating the researchgate.net of clean energy. Member states also invoked an ethos of energy solidarity that had previously been largely theoretical: within a few weeks, plans were drawn up for a coordinated 15% gas demand reduction, gas sharing in an emergency, and joint supply to avoid bidding wars within the EU. In effect, Europe "pooled its energy sovereignty and pooled it in energy solidarity", a move that improved overall security by presenting a united front. A paradigm shift and strategy not only energy but also geopolitical with EU countries becoming aware of the extent of their delay in establishing an energy strategy that could secure not only energy sources but also national and supranational borders. On March 8, 2022, we have the publication of the European Commission's document entitled "*REPowerEU: Joint European Action for more affordable, secure and sustainable energy*", a strategic communication in direct response to the Russian invasion of

[180] Fontan, C. (2025, February 10). *Between the Baltic and the Balkans: The new geopolitics of gas* (European issues No. 775). Fondation Robert Schuman. https://server.www.robert-schuman.eu/storage/en/doc/questions-d-europe/qe-775-en.pdf

[181] European Commission. (2022, March 8). *REPowerEU: Joint European action for more affordable, secure and sustainable energy* (Press release IP/22/1511). https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1511

Ukraine[182]. This text represents a watershed in European energy policy, placing as a top priority the end of the EU's dependence on Russian fossil fuels and proposing a new action plan structured on three main axes: security, sustainability and accessibility. Following Russia's military aggression in Ukraine, the European Commission is clearly stating that energy interdependence with Russia has become an intolerable strategic risk. The Commission defines this dependence not only as an economic vulnerability, but as a factor that calls into question the freedom of political action and the internal stability of the Union, due to the power of blackmail that can be exercised by Moscow. To address the immediate emergency of energy prices and the potential collapse of gas flows, the document proposes a mix of short-term emergency measures, like subsidies, gas storage, retail price regulation and flexibility in state aid, and medium-to-long-term structural actions, formalised in the REPowerEU plan. The plan aims to eliminate dependence on Russian fossil fuels well before 2030, articulated around two pillars:

1. Diversification of supply sources, through the increase in LNG and gas imports via pipelines from countries other than Russia (USA, Qatar, Algeria, Norway), the development of biomethane and the enhancement of green hydrogen.

2. Acceleration of the energy transition, thanks to a massive investment in energy efficiency, renewables (solar, wind), heat pumps, electrification of end uses and decarbonization of industry.

The document quantifies these objectives in concrete terms: savings of at least 155 billion cubic meters (bcm) of Russian gas, to be offset with measures such as the installation of 10 million heat pumps, the construction of 480 GW of wind and 420 GW of photovoltaic by 2030, and the production/import of 20 million tons of renewable hydrogen[183]. All this will be supported by regulatory and financial instruments (InvestEU,

[182] European Commission. (2022, March 8). *REPowerEU: Joint European action for more affordable, secure and sustainable energy* (Press release IP/22/1511). https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1511

[183] European Commission. (n.d.). *REPowerEU*. European Commission. https://commission.europa.eu/topics/energy/repowereu_en

Innovation Fund, Recovery Fund), with a strong emphasis on cross-border projects and the integration of electricity and gas networks. Particular attention is also paid to the protection of critical infrastructure, the security of gas storage, and the creation of a common European platform for the purchase of gas, to avoid internal competition between Member States and ensure fair conditions of access to energy. In parallel, a strategy is envisaged to address the social implications of the energy crisis, such as energy poverty and the impact on energy-intensive companies. This document marks a paradigm shift: the energy transition is no longer just a climate priority, but a necessity for geopolitical security. Energy is recognised as a strategic lever of power, and its management becomes a key element for the EU's strategic autonomy. With REPowerEU, the Union recognises that energy independence is a condition for political sovereignty, and that fair and secure access to energy is essential for internal stability, economic competitiveness, and the ability to react in the event of external conflict or coercion[184].

Europe's short-term adaptations in 2022-2023 have been dramatic. Governments have secured alternative gas supplies from Norway, North Africa and especially global LNG, with the US to supply more than half of Europe's LNG by 2023. Floating LNG import terminals were installed at record speeds, with Germany that built its first LNG terminals within a few months[185]. Emergency measures and high prices have caused gas demand in Europe to drop by 20% thanks to fuel storage and switching. In the last quarter of 2022, Russian pipeline gas accounted for less than 10% of EU gas imports, down from 35% a year earlier[186]. Europe has effectively weaned itself off Russian gas in a single warming season, a development once thought unthinkable. This resilience surprised many: *"Gas dependency has not proven to be the weapon Putin had envisioned... Europe's resilience has been a geopolitical disaster for Russia,"* notes Cambridge economist Helen

[184] European Commission. (2022, March 8). *REPowerEU: Joint European Action for more affordable, secure and sustainable energy* (COM(2022) 108 final). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022DC0108

[185] Storbeck, O., & Smith, N. (2022, December 17). *Germany opens its first liquefied natural gas terminal in push to secure energy supplies*. *Financial Times*. https://www.ft.com/content/16031b21-cb2f-40c7-a77d-1ac061196264

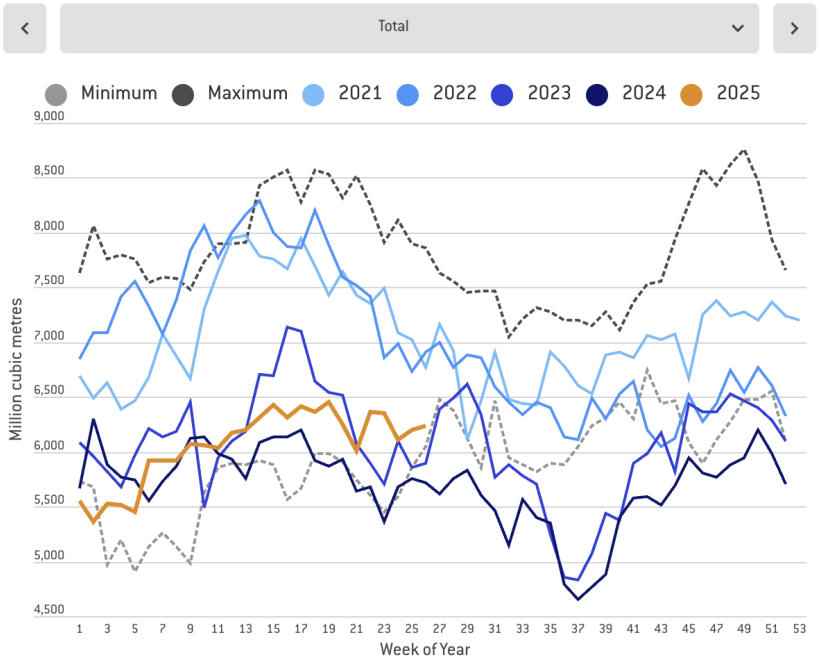
[186] European Commission. (2025, March 11). *Three years of REPowerEU: European action to end dependence on Russian fossil fuels*. European Commission. https://energy.ec.europa.eu/topics/markets-and-consumers/actions-and-measures-energy-prices/repowereu-3-years_en

Thompson[187]. Indeed, Europe has managed to avoid mass disruptions or a collapse of its industrial base, while Russia's gas revenues have plummeted without easy market replacements. Natural gas prices in Europe, which had peaked at 10 times their normal level in 2022, returned to pre-war levels in mid-2023.

At the same time, the costs and trade-offs of this rapid decoupling have become apparent. European governments have spent hundreds of billions of euros on energy subsidies and crisis measures. Some energy-intensive industries (fertilizers, aluminium, chemicals) have reduced operations or shifted production overseas due to rising gas costs. Within the EU, solidarity has been tested. Germany's large subsidy package has raised concerns of unfair advantage and disagreements have arisen over gas price caps and sharing mechanisms. The diversification achieved was not pure energy independence but rather a transition to new suppliers. Europe has become more reliant on LNG from allies such as the United States and Qatar, which, while geopolitically more favourable, have introduced market volatility and price risk. Europe for now remains largely dependent on imported gas; it has only diversified its suppliers and increased its relative dependence on the more expensive LNG. The graph below, which gives us a clear and complete snapshot of EU27 natural gas imports, represents the weekly trend of total natural gas imports expressed in millions of cubic meters, broken down by year from 2021 to 2025[188].

[187] Gritz, A., & Wolff, G. B. (2023, February 15). *Europe's messy Russian gas divorce*. Brookings Institution. https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/

[188] European Network of Transmission System Operators for Gas. (n.d.). *ENTSOG Transparency Platform*. ENTSOG. https://transparency.entsog.eu/#/map



The 52 weeks of the year are shown on the horizontal axis, and the volumes imported are shown on the vertical axis. With two dotted lines signifying the weekly historical minimum and maximum values, the various coloured lines differentiate the data by year, ranging from light blue in 2021 to orange in 2025. The volume of petrol imports shows a distinct downward trend, with a notable decline between 2021 and 2024, according to comparative observation. Imports regularly topped 7,000 million cubic meters per week in 2021 and 2022, reaching seasonal highs of over 8,000 during the coldest months. These figures reflect the EU's heavy dependence on natural gas - particularly Russian - before the invasion of Ukraine. Starting from 2023, however, the annual curves show a drastic downsizing in volumes, accompanied by increasing irregularity and instability, a sign of the turbulence in the supply system caused by the war, the logistical reconfiguration, and reduced industrial demand. In 2025, the orange curve signals a qualitative change with the imports are lower than in all previous years, on average between 5,500 and 6,200 million cubic meters per week, but are more stable, without significant seasonal peaks. This relatively flat trend suggests a more resilient and balanced European energy system. Imports' reduced seasonality suggests improved planning, strategic storage, demand management effectiveness, and most likely a rise in domestic supply from renewable

sources. Additionally, the 2025 line's proximity to troughs and distance from previous highs indicate that the EU has systematically reduced its dependency on imported gas, illustrating the long-term results of decarbonization and diversification efforts. In terms of strategy, this graph shows how the EU has moved from a state of energy vulnerability linked to reliance on concentrated, external sources to a model of relative autonomy based on market integration and supply diversification. The Union is now less vulnerable to outside shocks and energy blackmail because of the volume reduction and seasonality attenuation, which enhances both energy security and Europe's strategic freedom. The stability observed in 2025, therefore, is not just a technical fact but a clear manifestation of the restructuring of the European energy system as a response to a direct geopolitical threat.

On oil, the EU has imposed an embargo on Russian crude oil and petroleum products, with some exemptions, and has joined a G7 price cap mechanism[189]. Russia, in turn, has diverted much of its oil to Asia. As a result, Europe has become a significant buyer of oil from the Middle East, the US, and Africa, even as its reliance on Russian oil has diminished[190]. Europe simply does not have enough domestic fossil fuel resources to achieve complete energy autarky, but the strategic focus has shifted to make sure that no hostile power can take Europe's energy hostage once more. To lessen long-term vulnerability, the 2022-2024 experience is interpreted as a directive to strengthen security of supply, secure cross-border flows, and invest in renewable energy. In summary, the post-2015 trend has culminated in a clear realignment: energy policy is now made with explicit regard to geopolitical security. Europe is entering what scholars call a "*new energy era*" characterized by concerns about security[191], sovereignty and solidarity, in contrast to the now "era of interdependence" in which cheap supply was the priority. The following sections examine in detail how energy dependence has translated into military

[189] The Hague Research Institute. (2023, January 12). *The EU oil embargo and G7 price cap on Russian oil: Sanctions against Russia*. The Hague Research Institute. https://hagueresearch.org/the-eu-oil-embargo-and-g-7-price-cap-on-russian-oil-sanctions-against-russia/

[190] Eurostat. (2025, May). *EU imports of energy products – latest developments*. Eurostat. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_imports_of_energy_products_-_latest_developments

[191] LaBelle, M. C. (2024). Breaking the era of energy interdependence in Europe: A multidimensional reframing of energy security, sovereignty and solidarity. *Energy Strategy Reviews, 52,* 101268. https://doi.org/10.1016/j.esr.2024.101268

and security vulnerability in case studies, and how theory and evidence have evolved on the issue of interdependence.

3.3 Theoretical perspective on the debate between Interdependence vs. Strategic autonomy

A central analytical question is whether energy promotes peace and stability or, alternatively, calls for coercion and conflict. This debate pits liberal theories of "complex interdependence" against more realistic or critical views.

Liberal theories tend to see the element of interdependence as a conveying factor of peace. Drawing on the work of Keohane, Nye, and others, this perspective argues that when two sides depend on each other for vital resources, the cost of breaking ties becomes prohibitive. In theory, Russia's heavy economic dependence on European energy markets, for revenue, and Europe's dependence on Russian supplies have created a form of mutual hostage situation that would discourage extreme actions by both. In fact, before 2022, it could be argued that it did: despite tensions, Russia and the EU maintained energy trade for decades without it turning into an armed conflict. Proponents also note that interdependence fosters dialogue and creates constituencies for stable relationships. In the 2000s, many European leaders believed that integrating Russia into a network of global economic ties would moderate its behaviour over time, a view consistent with the theory of "commercial peace" (a variant of liberal peace theory) that suggests that trade and investment ties reduce incentives for conflict[192].

Interdependence as vulnerability, on the other hand, pertains to the variant reality of the theorists of international politics. Critics counter that interdependence is only as benign as the character of the actors involved and the symmetry of dependence. If one party is much more dependent than the other, leverage and coercion are possible[193]. This asymmetry was evident in the energy relations between Europe and Russia: while Russia needed Europe's money, it had some alternative markets, especially for oil, and, most

[192] Oneal, J. R., & Russett, B. (1999). The Kantian Peace: The Pacific Benefits of Democracy, Interdependence, and International Organizations, 1885-1992. *World Politics*, *52*(1), 1–37. http://www.jstor.org/stable/25054099

[193] Baldwin, D. A. (1980). Interdependence and Power: A Conceptual Analysis. *International Organization*, *34*(4), 471–506. http://www.jstor.org/stable/2706510

importantly, could tolerate economic suffering under authoritarian leadership, while European democracies could be destabilized by energy shortages and soaring prices. This created a classic imbalance of power with Europe's sensitivity and vulnerability to energy disruption were greater, giving Moscow potential influence. Farrell and Newman's concept of "armed interdependence" captures this concern that the global economic networks can be turned into tools of coercion by those who control key nodes[194]. In a 2024 study, Anatoliĭ et al. (Nationalities Papers) applied the theory of extended deterrence to the war in Ukraine and concluded that Russia used energy interdependence to deter Western intervention, essentially "neutralizing" Europe by threatening its energy security[195]. Putin calculated that Germany and others would be reluctant to actively support Ukraine or confront Russia militarily if it meant risking gas outages in the winter. In other words, economic dependence has given Russia confidence that it can attack Ukraine without NATO interference. This turns the liberal argument on its head: rather than preventing conflict, interdependence in this case allowed for localized war by freeing the aggressor to attack a third party (Ukraine), anticipating that dependent third parties (Europe) would avoid direct involvement.

However, as events have evolved, this deterrent effect has had limitations. Europe refrained from direct military intervention, but nevertheless imposed sanctions and armed Ukraine, steps that Russia perhaps thought Europe would avoid. Why has the "deterrence of interdependence" worked only partially? Scholars note that the deterrent effect is not indefinite. Hirschman's classical theory held that heavily dependent nations will eventually try to escape the constraint[196]. Indeed, once the war dragged on and the moral and security stakes for Europe increased, EU countries absorbed the initial economic shock and took steps to reduce the asymmetry by finding new sources of energy. As one analysis said, the aggressor (Russia) could gain a "short window" of advantage from interdependence, but if the conflict is not resolved quickly, the third party will activate

[194] Farrell, H., & Newman, A. L. (2019). Weaponized interdependence: How global economic networks shape state coercion. *International Security, 44*(1), 42–79. https://doi.org/10.1162/isec_a_00351

[195] Kulakevich, T. (2024). The war in Ukraine: The deterrent effect of weaponized interdependence. *Nationalities Papers*, 1–13. Cambridge University Press. https://doi.org/10.1017/nps.2024.75

[196] Hirschman, A. O. (1945). *National power and the structure of foreign trade*. Berkeley: University of California Press. https://dspace.gipe.ac.in/xmlui/bitstream/handle/10973/29303/GIPE-026809.pdf

countermeasures, reduce dependency and increase its willingness to intervene[197]. This describes Europe's trajectory in 2022, underlining how an initial trepidation gave way to resolution as alternative energy supplies kicked in and the costs of remaining tied to Russia became politically unacceptable.

The Ukraine crisis has provided a real-world test of these theories. Previous studies, such as Weede (2004)[198] and Gartzke (2007)[199] have statistically linked trade interdependence with lower odds of interstate warfare, but critics have pointed out that such findings often reflected eras or dyads in which addictions were symmetrical or involved benign partners. Erich Weed, from the University of Bonn, used China as an example to prove his point. He argues that China's commercial and economic rise, despite ideological differences, could be a positive factor for international security because economic interdependence creates strong disincentives to war. International trade leads to the sharing of the same interests and objectives and coincides with an opening of the economic market that leads to making war extremely expensive. Weed fundamentally argues that the Theory of "Capitalist Peace" is an extension of "democratic peace" by arguing that capitalist and economically advanced countries share a set of interests that lead to disincentivizing War[200]. The capitalist theory of peace is implemented by Eric Gartzke, a professor at Columbia University, who through a regressive analysis demonstrates the negative correlation between trade and economic freedom and the risk of war. He suggests that it is not so much the democratic form of a state that discourages armed conflict, but economic integration, the opening of financial markets and the defense of private property[201].

---

[197] Hirschman, A. O. (1945). *National power and the structure of foreign trade* (p. 26). Berkeley: University of California Press. Retrieved from https://dspace.gipe.ac.in/xmlui/bitstream/handle/10973/29303/GIPE-026809.pdf

[198] Weede, E. (2004). The Diffusion of Prosperity and Peace by Globalization. *The Independent Review*, *9*(2), 165–186. http://www.jstor.org/stable/24562700

[199] Gartzke, E. (2007). The Capitalist Peace. *American Journal of Political Science*, *51*(1). http://www.jstor.org/stable/4122913

[200] Weede, E. (2010). The Capitalist Peace and the Rise of China: Establishing Global Harmony by Economic Interdependence. *International Interactions*, *36*(2), 206–213. https://doi.org/10.1080/03050621003785181

[201] Gartzke, E. (2007). The capitalist peace. *American Journal of Political Science, 51*(1), 166–191. https://pages.ucsd.edu/~egartzke/publications/gartzke_ajps_07-1.pdf

In the case of Europe, dependence was unidirectional on critical raw materials. Recent analyses have thus "debunked" the simple idea that trade always brings peace, emphasizing conditions such as asymmetry and the type of regime. The war in Ukraine supports the idea that asymmetrical and interdependent relationships can encourage the stronger party. In the period 2006-2021, Russia felt increasingly able to act aggressively by cyberattacks, annexation of Crimea and military build-up, while European responses were restrained. A Cambridge study finds that for two decades prior to 2022, Russia violated international law (Georgia 2008, Crimea 2014, Syrian intervention, internal oppression) without being burdened by heavy sanctions from the West, in part because European governments were economically intertwined with Russia and hesitated to jeopardize those ties[202]. According to Putin's calculations, Europe's dependence was so entrenched that it could invade Ukraine and face minimal harsh retaliation. This miscalculation illustrates the dangers of interdependence: it can delay conflict at best, but if an aggressor is willing to bear the costs, dependence becomes a strategic straitjacket for the victim. Europe eventually broke free from that straitjacket by 2023, but only after suffering what can be described as a "peace deficit", years of soft-pedaling on Russia[203].

On the other hand, proponents of complex interdependence might argue that if the energy ties between Russia and Europe had really been reciprocal and balanced, perhaps conflict would have been avoided. For example, if the Russian economy had been so dependent on Europe that it guaranteed the suicide of the regime, deterrence might have held. In practice, Russia, a petro-state with authoritarian isolation, was willing to absorb economic suffering, while Europe, being democratic, had to respond to public outcry over Russian atrocities despite the costs. Interdependence did not guarantee moderation but simply shaped the timing and nature of conflict.

Could interdependence ever stabilize? A minority of analysts, such as Robert Keohane and Joseph Nye (1977), David Baldwin (1980), Albert O. Hirschman (1945)

---

[202] Kulakevich, T. (2024). The war in Ukraine: The deterrent effect of weaponized interdependence. *Nationalities Papers*, 1–13. Cambridge University Press. https://doi.org/10.1017/nps.2024.75

[203] Anatoliĭ, G., Kravchenko, M., & Petrova, I. (2024). The war in Ukraine: *The deterrent effect of weaponized interdependence*. Nationalities Papers, 52(1), 145-163. https://doi.org/10.1017/nps.2023.100

and, more recently, Henry Farrell and Abraham Newman (2019), suggest that not all interdependencies are equal. Baldwin, for example, points out that interdependence should be analysed on a case-by-case basis without resorting to generalisations. Hirschman focuses on how dependence on a single trading partner can become a tool of political coercion or, conversely, stimulate decoupling processes. Finally, Farrell and Newman base their theory on the concept of "weaponised interdependence", showing how some global networks offer a powerful tool of control to those who possess them. Energy interdependence with an authoritarian revisionist power (Russia) has proved dangerous. But interdependence between allies or democracies is not seen as problematic. Indeed, the EU itself is a model of positive interdependence because member states depend on each other for energy, through cross-border networks and gas sharing mechanisms, in ways that build trust and reduce incentives for conflict. This points to a nuanced view: interdependence in a strong institutional framework and between trusted partners can improve collective security (as within the EU), while interdependence without such trust (EU-Russia) can be harmful. Moreover, completely isolating a hostile state, extreme independence, could pose risks: for example, if Russia had been cut off from Europe earlier, would it have become even more aggressive sooner? Some realist theorists, such as Kenneth Waltz (1979), Stephen Walt (1987), John Mearsheimer (2001, 2014) and Randall Schweller (1998), argue that completely isolating a hostile state can backfire, as a cornered adversary with nothing to lose may resort to force. Waltz, with his theory of international politics, emphasises that survival is always the priority in an autarchic power regime[204]. Stephen Walt, in his theory of balance of threat, analyses the proportional relationship between the sense of threat and state aggression[205]. The theory of offensive realism is supported by Mearsheimer, who analyses how great powers, if they perceive themselves to be surrounded, will use force as a means of asserting their power[206]. Finally, Schweller, with his concept of revisionist states dissatisfied with the

[204] Kenneth N. Waltz (1979) Waltz, K. N. (1979). *Theory of International Politics*. Addison-Wesley. https://dl1.cuni.cz/pluginfile.php/486328/mod_resource/content/0/Kenneth%20N.%20Waltz%20Theory%20of%20International%20Politics%20Addison-Wesley%20series%20in%20political%20science%20%20%201979.pdf

[205] Stephen Walt (1987) Walt, S. (1987). *The Origins of Alliances*. Cornell University Press. https://web.stanford.edu/class/ips198/docs/Walt.pdf

[206] John Mearsheimer (2001) Mearsheimer, J. (2001). *The Tragedy of Great Power Politics*. Norton & Company. https://samuelbhfaure.com/wp-content/uploads/2015/10/s2-mearsheimer-2001.pdf

status quo, points out that exclusion from the international system can increase the propensity for conflict[207]. There are those who argue that Europe's purchase of Russian gas for so long has perhaps delayed the conflict, giving Moscow stakes to consider. This is a counterfactual that is difficult to prove. What is clear is that in 2022 those economic incentives were insufficient to stop the war[208].

The state and interstate difficulty is to find a compromise between efficiency and safety. Another academic debate is grafted here: How much does it cost to pursue energy independence for security reasons? Critics of the race for independence point out that diversifying away from the cheapest supplier comes at higher costs, potentially undermining economic competitiveness, which in turn can affect security by weakening economies. The Brookings analysis found that Europe's decoupling has resulted in "serious blows to energy-intensive industries" and "an increase in political tensions" at home[209].If high energy costs persist, Europe could face social discontent or lose global economic influence. Therefore, some advocate a balanced approach that not dependence on adversaries, but not autarky either, but rather a portfolio of imported sources and sound crisis management tools. Europe's policy now reflects this, the energy security through diversity and resilience, not necessarily full self-sufficiency. The concept of "strategic autonomy" adopted by the EU seeks to ensure that Europe is not tied to any single external power, whether for energy, technology or defence, while continuing to engage in global trade. This middle ground seeks to reap the benefits of interdependence (economic efficiency, cooperation) without the acute vulnerabilities of overdependence. The events of recent years have shifted the academic and political consensus towards the realist view with energy dependence on potential adversaries is a strategic responsibility. The focus has shifted to building structures where interdependence exists only in managed and

[207] Randall L. Schweller (1998) Schweller, R. L. (1998). *Deadly Imbalances: Tripolarity and Hitler's Strategy of World Conquest*. Columbia University Press. PDF version

[208]LaBelle, M. C. (2023). Energy as a weapon of war: Lessons from 50 years of energy interdependence. *Global Policy, 14*(3), 531–547. https://www.globalpolicyjournal.com/articles/climate-change-energy-and-sustainability/energy-weapon-war-lessons-50-years-energy

[209] Gross, S., & Stelzenmüller, C. (2023, February 15). *Europe's messy Russian gas divorce*. Brookings Institution. https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/

symmetrical forms and where energy trading is underpinned by back-up plans and shared norms to prevent the use of weapons.

3.4 Energy dependence and security vulnerability

Following the theoretical and literary review of strategic interdependence and its link with current and past international tensions, we will now shift our focus to the empirical collection of data that will allow us to identify a pattern. The analysis will focus on two countries with very different starting points and situations, Moldova and Germany, seeking to empirically verify the interconnection between energy dependence and strategic resilience. To understand how energy dependence on a hostile supplier affects strategic resilience, I have chosen to focus on two particularly significant cases: Germany and Moldova. These are two countries that are profoundly different in terms of economic size, geopolitical position and available resources, and for this reason they can be considered "different but comparable cases". Germany is an example of a major European economic power, fully integrated into the European alliance system, one of the six founding members of the European Union, and part of the Western alliance, being a member of NATO. Moldova, on the other hand, is a small state that is not part of NATO or the EU, although it has been a candidate country since 2022 and negotiations began in 2024. Let us analyse the period between 2021 and 2025 to understand the situation involving the two countries before and after the outbreak of hostilities in Ukraine. The period analysed covers the years 2021-2025, i.e. from the immediate eve of the Russian invasion of Ukraine to the structural responses that both countries implemented in the first few years after the crisis. This makes it possible to understand the stages that led from the two states' very high, and in some cases total, dependence on Russian gas to de-escalation and diversification, analysing how these moves impacted the political-strategic and defensive infrastructure of the two states. The differences between the two countries are not limited to their initial status but also to the tools and choices they have implemented to deconstruct their dependence on Russian gas. The former was able to rely on internal industrial and financial resources, while the latter had to make extensive use of external support and European integration mechanisms. This contrast highlights how the same condition of vulnerability can generate different responses depending on the structural and political context.

The two cases therefore illustrate the extremes of the phenomenon, providing us with a clear educational framework for analysing and understanding the correlations between energy dependence and strategic resilience. Starting with Germany, we see how it began with an initial dependence of around 50-55%, while Moldova started with a total dependence of 100%, which has since been reduced and alleviated over the years. The two countries have taken different paths to achieve a higher level of autonomy. Berlin equipped itself with rapid alternative capacities and through the integration of new sources of supply. Chișinău based its policy on new interconnections, financial and technical assistance from the EU and support from neighbouring countries. In this way, the two cases demonstrate that reducing dependence and diversifying sources are not simply economic objectives, but crucial tools for regaining strategic autonomy.

3.4.1 Germany: From 'change through trade' to harsh reality

Germany offers a paradigmatic example of the security risks arising from energy dependency and the rapid turnaround when these risks materialized. *Wandel durch Handel* ("change through trade")[210], the idea that trade and interdependence would temper Russia's actions, was the cornerstone of German policy towards Russia for many years. Along with large imports of coal and oil, Germany has emerged as Russia's biggest gas consumer, importing over 50% of its natural gas from Russia by 2021[211]. Infrastructure like the Nord Stream gas pipelines, which run directly beneath the Baltic Sea in Germany, made this profound reliance possible. Prior administrations maintained that mutual reliance was strategically advantageous for Germany, and German industry profited from inexpensive Russian gas. Due in part to these economic connections, Germany

[210] Østby, A. H. (2023). *Weaponized interdependence: Energy as a Russian foreign policy tool during the war in Ukraine*[Master's thesis, Norwegian University of Science and Technology]. NTNU Open. https://ntnuopen.ntnu.no/ntnu-xmlui/bitstream/handle/11250/3073734/no.ntnu%3Ainspera%3A145530834%3A68678479.pdf?sequence=1&isAllowed=y

[211] World Economic Forum. (2022, August 15). *Germany's energy crisis explained – and why it affects us all*. World Economic Forum. https://www.weforum.org/stories/2022/08/energy-crisis-germany-europe/

maintained low military spending and a defence posture that assumed a low likelihood of direct conflict with Russia.

However, critics have warned that this dependence has given Moscow dangerous leverage. These cautions turned out to be accurate. Russia's manipulation of the gas supply in the lead-up to the conflict in Ukraine has had a significant impact on Germany and contributed to a price crisis. Russia's gas cut-off through Nord Stream 1 (and the suspension of the new Nord Stream 2) after the invasion left Germany vulnerable. The situation has often been described as Germany's "zero energy stunning" (zero hour), which has required unprecedented action. In 2022, the German government took drastic steps, including renting floating LNG terminals to import non-Russian gas, reopening coal-fired power plants, and temporarily extending the operation of the last nuclear reactors. By the middle of 2023, Germany had filled its gas deposits to healthy levels before winter and had constructed enough LNG import capacity to replace a large portion of the lost Russian supply by purchasing LNG from the US and other nations.

Politically, the energy shock has spurred Germany's broader *Zeitenwende* ("watershed") in security policy. Chancellor Scholz's famous 2022 speech to the Zeitenwende linked the need for more military investment with the recognition that economic interdependence has failed to prevent war. Recognizing that dependence on enemies for energy or other resources can jeopardize national security[212]. German defence policy has focused on rebuilding the armed forces and meeting NATO spending commitments. Strategic caution and fear of retaliation by Russia, including potential energy retaliation, were key factors in Germany's initial hesitation to supply heavy weapons to Ukraine in early 2022. Germany adopted a more assertive stance after it became clear that Russia would cut off gas supplies anyway. According to analysts, Germany's policy options were limited at the start of the crisis due to its energy dependence, demonstrating how vulnerability in one sector (energy) translated into

[212] Scholz, O. (2022, February 27). *Policy statement by Olaf Scholz, Chancellor of the Federal Republic of Germany and Member of the German Bundestag, 27 February 2022, in Berlin*. The Federal Government of Germany. https://www.bundesregierung.de/breg-en/service/archive/policy-statement-by-olaf-scholz-chancellor-of-the-federal-republic-of-germany-and-member-of-the-german-bundestag-27-february-2022-in-berlin-2008378

caution in the security sector. Only after diversifying its energy sources could Germany more confidently support strong sanctions against Russia and military aid to Ukraine.

The case of Germany also highlights the infrastructure vulnerabilities involved. The sabotage of the Nord Stream gas pipeline in September 2022, which is still under investigation but generally believed to be an act of state-sponsored sabotage, served as a metaphor for the emerging dangers to competing energy infrastructure. A key piece of German energy architecture was knocked out overnight. While Germany has done without Nord Stream, the incident has made it clear that critical pipelines can be targets of hybrid warfare, requiring the attention of NATO and the EU. Germany has gone from treating energy largely as a trade issue to treating it as a cornerstone of national security strategy. The assumption that "interdependence produced security" gave way to the determination that "never again" would a country (Russia) be able to exert such an influence on Germany's economy and decision-making. The lesson is that diversification and internal resilience are worth the cost of regaining freedom of action. Germany's rapid policy changes, from the race to LNG to increased defence spending, demonstrate the close link between energy autonomy and the ability to pursue independent foreign and defense policies.

3.4.2 Moldova: energy vulnerability at the forefront of geopolitics

If Germany exemplifies the dilemma of the dependence of a rich state, Moldova represents the extreme vulnerability of a small state that depends on a single hostile supplier. Moldova, an EU Eastern Partnership country with aspirations to join the EU, has historically been 100% dependent on Russian gas for its energy, an infrastructure legacy of the Soviet era[213]. Unlike EU members, Moldova had limited means to diversify. It has not inherited any domestic gas production and, until recently, no connection to non-

[213] International Energy Agency (IEA). (2022, June 27). *Accelerating energy diversification in Central and Eastern Europe*. IEA. https://www.iea.org/commentaries/accelerating-energy-diversification-in-central-and-eastern-europe

Russian supply networks. Gazprom, the Russian gas giant, was the sole supplier, sending gas through a pipeline through Ukraine to Moldova, and to the breakaway region of Transnistria. In fact, until the end of 2022, every molecule of gas consumed by Moldova came from Gazprom[214]. This gave Moscow powerful leverage over Moldova's economy and politics, which it did not hesitate to use. Throughout the 1990s and 2000s, Russia periodically threatened or cut off gas supplies to pressure the Moldovan government, often in connection with disputes over Transnistria or Moldova's orientation toward Europe[215]. Each winter's gas price negotiations have had geopolitical overtones. Moldovan leaders were keenly aware that energy blackmail could be used to foment unrest or concessions. However, alternatives were scarce due to infrastructure constraints. In 2021, an EU-funded pipeline connection with Romania, the Iași-Ungheni-Chișinău pipeline, was completed, offering a route for importing European gas, but initial volumes were modest and contractual arrangements with Gazprom still dominated Moldova's supply in 2021-22[216].

Russia's war against Ukraine in 2022 has placed Moldova in an energy siege. Gazprom has dramatically increased gas prices and intermittently reduced flow volumes to Moldova, citing technical reasons or disputes over payments. Then, when Ukraine began to resist the invasion, Russia targeted Ukraine's power grid with missile strikes, which had side effects on Moldova (whose grid was still synchronized with Ukraine's). By the fall of 2022, Moldova faced continuous blackouts due to faltering gas and electricity supplies. The situation worsened in October 2022, when Gazprom cut gas supplies by 50%, and again in November[217]. The crisis has forced Moldova to declare a state of emergency and seek emergency energy supplies from the EU's neighbours and international donors. Western partners responded, and Romania began supplying electricity, the EU put together a €200 million emergency energy aid package, and

[214] Kieff, L. (2025, January 24). *An energy crisis provides opportunity in Moldova*. Center for Strategic and International Studies (CSIS). https://www.csis.org/analysis/energy-crisis-provides-opportunity-moldova
[215] Center for Strategic and International Studies (CSIS). (2022, November 23). *Moldova's gas futures*. CSIS. https://www.csis.org/analysis/moldovas-gas-futures

[216] International Energy Agency. (2022). *Executive summary – Moldova 2022 – Analysis*. IEA.
[217] Parlicov, V. (2022, October 26). *Russia's Ukraine invasion is fueling an energy crisis in neighboring Moldova*. Atlantic Council. https://www.atlanticcouncil.org/blogs/ukrainealert/russias-ukraine-invasion-is-fueling-an-energy-crisis-in-neighboring-moldova/

Moldova purchased non-Russian gas for the first time, financed by European grants and loans, to supply its population.[218].

At the end of 2022, a critical twist came with Ukraine's route for Russian gas was cut short as Ukraine itself halted the transit of Gazprom's gas bound for Moldova, in part to stop a suspected diversion of supplies to Transnistria. As of January 2023, Moldova was no longer receiving Russian gas but relied on gas stored and shipped from EU countries largely using Romania's pipeline. Transnistria, however, continued to receive some Russian gas directly, until a year later. In January 2025, Gazprom finally cut off gas supplies to Transnistria as well, apparently due to unpaid debts[219]. This move had obvious strategic implications with the goal to jeopardize Moldova's largest power plant, located in Transnistria, which supplied electricity to the entire country[220]. The cut, therefore, risked plunging Moldova into darkness in the dead of winter. Analysts assessed that Moscow's intent was to "create instability throughout Moldova" as part of a hybrid warfare strategy effectively punishing Moldova for its pro-EU stance and its application for EU membership by leveraging its energy dependence[221].

Moldova was quick to keep the lights on. The EU and Romania intervened with emergency electricity, and Moldova used the gas previously purchased in storage to power backup power plants. Sensing Moscow's bluff, the pro-Western Moldovan government refused to capitulate. By early 2025, the European Commission and Moldova agreed on a comprehensive strategy for energy independence and resilience, including more than €250 million in support, aimed at fully decoupling Moldova from Russian energy and integrating it into the EU energy market[222]. This plan includes upgrading

---

[218] The Hague Research Institute. (2023, November 10). *Between hybrid warfare and European aspirations: Moldova's energy challenge*. https://hagueresearch.org/between-hybrid-warfare-and-european-aspirations-moldovas-energy-challenge/

[219] Wilson Center. (2025, January 6). *Russia's energy cutoff: Moldova crisis or opportunity?* Wilson Center. https://www.wilsoncenter.org/blog-post/russias-energy-cutoff-moldova-crisis-or-opportunity

[220] Kieff, L. (2025, January 24). *An energy crisis provides opportunity in Moldova*. Center for Strategic and International Studies (CSIS). https://www.csis.org/analysis/energy-crisis-provides-opportunity-moldova

[221] Center for Strategic and International Studies (CSIS). (2022, December 15). *Energy crisis provides opportunity for Moldova*. CSIS. https://www.csis.org/analysis/energy-crisis-provides-opportunity-moldova

[222] European Commission. (2025, February 4). European Commission and Moldova agree on 2-year comprehensive strategy for energy independence and resilience. https://enlargement.ec.europa.eu/news/european-commission-and-moldova-agree-2-year-comprehensive-strategy-energy-independence-and-2025-02-04_en

infrastructure, building interconnections and supporting vulnerable citizens during the transition. Funds have also been allocated for the people of Transnistria, provided that human rights improve human rights, to mitigate the impact of Russia's enlargement. So Europe has considered stabilizing Moldova's energy situation as a strategic priority, recognizing that a collapse of Moldova's energy supply could lead to political chaos or a security crisis on the NATO-EU border.

The case of Moldova clearly demonstrates how energy dependence can be used as a weapon to undermine national security. The country's military vulnerability, it is constitutionally neutral and not under NATO's protection, has been compounded by its energy vulnerability, making it a ripe target for coercion. Only through emergency support and now a concerted plan for diversification is Moldova starting to escape this trap. It underscores the broader lesson, so small states in Russia's vicinity are extremely exposed if they depend on Russian energy and helping them achieve energy independence is not just economic assistance but an investment in regional security. The Moldovan scenario also offers a counterpoint: with Moldova's diversification, Russia has effectively lost leverage and the prospects for a stable and Western-oriented Moldova are improving. Some analysts even argue that the energy crisis could pave the way for the resolution of the conflict in Transnistria, since Moscow's influence in the region has been largely through subsidized energy, a tool that is disappearing[223]. In conclusion, from Moldova we learn that complete dependence on a single foreign supplier, especially if it is an adversary, represents an existential security risk. Conversely, even partial steps towards energy independence can improve a state's resilience against external pressures. The implications go beyond Moldova, they validate EU policies aimed at extending energy interconnections and diversification of supply to Eastern partners as a means of preventing Russian geopolitical blackmail.

[223] The Hague Research Institute. (2023, November 10). Between Hybrid Warfare and European Aspirations: Moldova's Energy Challenge. https://hagueresearch.org/between-hybrid-warfare-and-european-aspirations-moldovas-energy-challenge/

3.4.3 Strategic Resilience Index

What conclusions do these two cases lead us to? What are the empirical and strategic elements that we can grasp from these two situations? Let's try to represent it by means of a graph that relates the dependence on a single hostile supplier and the capacity for resilience in such a way that it is possible to understand the original position of the two countries and their future shift.

The two countries differ structurally and are perfect for empirical comparison. Germany is a leading economic power for the EU and for the European system of intercultural relations. On the contrary, Moldova is a state with extremely modest dimensions and constitutionally neutral, placed outside the supranational structures, EU and NATO, which characterize the Western European landscape. What accuses them is, or rather was, the assiduous dependence on the import of Russian gas as the main source of energy display. This allows us to empirically understand the relationship between energy dependence on a hostile third-party supplier, representable in Russia, and the strategic resilience of a country. For the construction of this small theoretical model, a four-year historical period is analyzed, ranging from the period preceding the start of the Russian special operation on Ukrainian territory, the year 2021, until 2025 when both countries have been able to adopt different diversification strategies. What lies at the basis of this choice is that of the "most different yet buyable cases": very different contexts, but united by a key phenomenon, to show how dependence and diversification condition foreign and defense policy options. Starting from the analysis of official sources, the share of Russian gas imported from the EU has risen from 45% in 2021 to less than 20% in 2024[224] with a projection for 2025 of around 13%[225]. As far as Moldova is concerned, on the other hand, Russian dependence weighed 100% on the country's energy fortunes, something that has

[224] European Parliament. (2025). *State of the Energy Union 2024* (EPRS At a Glance, 769515). Brussels: European Parliamentary Research Service. Retrieved September 2025, from https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/769515/EPRS_ATA(2025)769515_EN.pdf

[225] European Commission. (2025, May 16). *REPowerEU, 3 years on: Commission takes stock of progress to phase out Russian fossil fuels*. Brussels: European Commission. Retrieved September 2025, from https://energy.ec.europa.eu/news/repowereu-3-years-commission-takes-stock-progress-phase-out-russian-fossil-fuels-2025-05-16_en

changed since 2023 thanks to the interconnection with Romania. Here the table that show the EU-Level data for the *Strategic Resilience Index:*

EU-LEVEL DATA FOR RESILIENCE INDEX INPUTS

Metric	2021 Value	2024/2025 Value
Dependence on Russin Gas	45% (pipeline + LNG share of imports	19% in 2024; projected 13%% in 2025
Storage adequacy (EU)		90% full by August 2024; 34% by April 2025
Diversification – LNG share		LNG share rose from 20% to 37% in 2024
Moldova gas dependence	100% (total dependence)	0% Russian gas consumption since December 2022

**Data from official European Union sources: the share of Russian gas in EU imports decreased from 45% in 2021 to 19% in 2024[226], with a projection of around 13% in 2025[227]; EU gas storage reached 90% in August 2024[228] and stood at 34% on 1 April 2025[229]; Moldova was 100% dependent on Russian gas until 2022, but since December 2022 has not consumed Russian gas thanks to the interconnection with Romania[230]. For Diversification - LNG share (EU) data from the European Commission, liquefied natural gas topic (20% in 2021; 37% in 2024), indicate the increase in the share of EU LNG*

[226] European Commission. (2025). *Security of gas supply.* Brussels: European Commission. https://energy.ec

[227] European Commission. (2025). *Roadmap towards ending Russian energy imports (COM(2025) 440 final)*. Brussels: European Commission. https://vleva.eu/storage/1459/COM%282025%29-440-final_Roadmap-towards-ending-Russian-energy-imports.pdf

[228] Council of the European Union. (2025). *Gas storage capacity* [Infographic]. Brussels: Council of the EU. https://www.consilium.europa.eu/en/infographics/gas-storage-capacity/

[229] European Commission. (2025). *Gas storage.* Brussels: European Commission. https://energy.ec.europa.eu/topics/energy-security/gas-storage_en

[230] European Commission. (2025). *Neighbourhood-East – Energy.* Brussels: European Commission. https://energy.ec.europa.eu/topics/international-cooperation/key-partner-countries-and-regions/neighbourhood-east_en

imports[231]*. These official values can be used as a proxy for supply diversification. For certain indicators, such as diversification through LNG imports at the level of individual Member States (Germany), disaggregated data are not systematically published in EU official sources. In these cases, EU-level data and Commission reports have been used as proxies, allowing for a consistent comparison while acknowledging the absence of fully disaggregated national statistics.*

To arrive at the constitution of the graph, a *Strategic Resilience Index* (SRI) was built that had the ability to synthesize the real capabilities of a state to absorb a first-level energy shock without losing degrees and margins of action at the strategic political level. This index is the result of the arithmetic average of four sub-indices, each weighted at 25%. The following four indexes:

- Diversification of supply: it measures how much a country depends on one or more pieces of furniture
- Storage adequacy: this demonstrates the country's ability to sustain winter energy demand with stored gas stocks. The indicator used is fill levels.
- Emergency import capacity: the ability of a country to respond to maximum demand using interconnections with other countries and liquefied natural gas. To calculate this, the shares of liquefied natural gas on total imports were used as an indicator.
- Political leverage and alliances: the ability of a country to be resilient and self-determined in the choices relating to its foreign and defense policy despite energy dependence. A qualitative indicator was used reflecting a country's ability to impose actions or provide military aid also to countries providing energy services and supplies.

To make variables heterogeneous from each other, it was necessary to simply normalize data on a common scale of 1-100. This will allow us to aggregate indicators of

[231] European Commission. (2025). *REPowerEU: 3 years on*. Brussels: European Commission. https://energy.ec.europa.eu/topics/markets-and-consumers/actions-and-measures-energy-prices/repowereu-3-years_en

different nature such as percentages, storage level and qualitative evaluations, within a single synthetic index. Substantially the percentage indicators have been traced directly back to the chosen scale. For example, if the share of liquefied natural gas in each country is 20%, it corresponds to a score of 20, and so on. Taking into consideration other abstract indicators that do not have a direct empirical relevance, such as political leverage, a transparent qualitative scale has been provided with values ranging from a minimum of 0, which corresponds to a total conditioning by energy dependence, to 100 which constitutes full decision-making autonomy. The intermediate values (such as 30, 50, 65, 75...) are assigned according to the historical and political context and the reference reading. All this is useful to make variables integrable and able to communicate with each other by providing an output that allows us to empirically measure reality.

Let's now represent the mathematical formula of the Strategic Resilience Index (RSI):

$$SRI_{country,t} = \frac{1}{4}\sum_{i=1}^{4} Subindex_{i,country,t}$$

It helps us to mathematically understand what we are trying to describe and represent by giving it an empirical connotation. We now report in a table all the values that have been found and that will be used to build our Strategi Resilience Index:

OFFICIAL EU DATA AND NORMALISED SUB-INDICES FOR THE CONSTRUCTION OF THE STRATEGIC RESILIENCE INDEX (GERMANY AND MOLDOVA, 2021–2025)

Country (year)	Dependence on Russian gas (%)	Diversification (0-100)	Storage (0-100)	Emergency Capacity (0-100)	Political leverage (0-100)	SRI (0-100)
Germany (2001)	~55%	20	30	20	30	25
Germany (2025)	~15% (estimate based on EU data)	37	90	37	80	61
Moldova (2021)	~100%	0	20	0	10	8
Moldova (2025)	0% (from 2023)	50	50	50	50	50

**Data from official sources of the European Union: European Commission, "REPowerEU – Progress Report" (2025)[232], which indicates that the share of Russian gas has increased from 45% of imports in 2021 to 19% in 2024, with a projection of around 13% in 2025; Council of the European Union, infographic "Gas storage capacity", showing a storage fill level of 90% in August 2024[233]; European Commission, "Gas storage" section, which reports a level of 34% as of 1 April 2025; Eurostat and the*

[232] European Commission. (2025). *Gas storage*. https://energy.ec.europa.eu/topics/energy-security/gas-storage_en

[233] Council of the European Union. (2025). *Gas storage capacity* [Infographic]. https://www.consilium.europa.eu/en/infographics/gas-storage-capacity/

EU Council, infographic "Where does the EU's gas come from?", for detailed data on energy flows[234].

Based on the available data, we can apply the SRI achievement formula to both countries to understand how this indicator has been calculated. As for the German result, it is as follows:

$$SRI_{Germany,2021} = \frac{(20 + 30 + 20 + 30)}{4} = \frac{100}{4} = 25$$

$$SRI_{Germany,2025} = \frac{(37 + 90 + 37 + 80)}{4} = \frac{244}{4} = 61$$

Analyzing the Moldovan case instead:

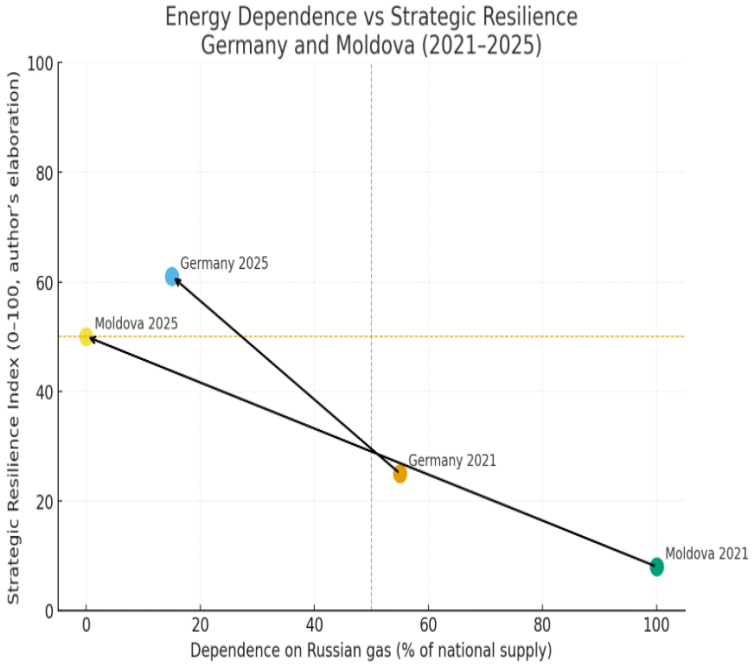
$$SRI_{Moldova,2021} = \frac{(0 + 20 + 0 + 10)}{4} = \frac{30}{4} \approx 7.5 \cong 8$$

$$SRI_{Moldova,2025} = \frac{(50 + 50 + 50 + 50)}{4} = \frac{200}{4} = 50$$

We now graphically represent the results of the theoretical model to show the trajectories assumed by the two countries during the four-year period analyzed:

[234] Council of the European Union. (2025). *Where does the EU's gas come from?* [Infographic]. https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/

ENERGY DEPENDENCE vs STRATEGIC RESILIENCE: GERMANY AND MOLDOVA CASES (2021-2025)



Note: X-axis values from Eurostat / European Commission data on Russian gas share. Y-axis is a simplified author-constructed index averaging diversification, storage adequacy, emergency import capacity, and political/alliance leverage (0–100).

The graph shows the relationship between Russian gas dependency (X-axis) and the Strategic Resilience Index (y-axis) for Germany and Moldova over the four-year period analyzed. The points represent the initial positions, taken in 2021, and the one reached in 2025 with the arrows indicating the trajectory of change. As we have been able to observe, both countries started from a position of extreme fragility but an external shock, the outbreak of the Russian-Ukrainian conflict, led both countries to see their energy policies leading them to a substantial condition of greater independence. Considering the SRI of both countries, we can see that Germany has increased its SRI by 36 points in 4 years, while Moldova has managed to do even better by increasing its value by 42 points. The starting conditions of the two countries were similar but for different reasons. Germany had a high, but not total, dependence, which was combined with a

series of internal problems such as low storage capacity, non-diversification of structures and low energy autonomy compared to the main supplier, Russia. Moldova, much more simply, had total dependence on Russian gas with a total absence of infrastructural alternatives and zero political leverage. The improvement of both, as previously analyzed, has passed through different strategies but which have produced significant results. A very important conclusion is that the index used (RSI) for the constitution of this theoretical model shows that resistance is not pro-proportional to one's own economic or military strength, but to the degree of personal independence of each country. The reduction of dependence coincides with an increase in political freedom which, consequently, affects a greater degree of internal and external security. Or higher values of the SRI in 2025, 61 for Germany and 50 for Moldova, coincide with historical moments in which both were able to make more autonomous choices than in the past. Germany has been able to fully align itself with Ukraine's sanctions plan and military support, and Moldova has had the opportunity to recognize its European trajectories.

The graph represented is not a quantitative-formal model, although it is a schematic model built with official data. Its function is to show a tendency and underline the relationship between two variables, energy dependence and strategic resilience, stressing the trajectories of Germany and Moldova in the considered years. It Is not scientifically true but a conceptual representation with the aim to sensitize in a comparative way the analysis' results.

The most important lesson, and the most important result to which this in-depth study aspired, was to demonstrate that energy diversification is not only an economic and opportunistic factor but of the singular security of the country and more generally of Europe. Within economic and energy cooperation, even the most fragile countries can contribute to making the EU more secure and independent by protecting us from the geopolitical situations that surround us.

3.5 Infrastructure resilience and military security

The protection of vital energy infrastructure is one of the most obvious areas where energy and defence intersect. Oil pipelines, electricity grids, fuel depots and related facilities are potential strategic targets because modern armed forces and societies cannot function without energy. Energy networks can serve as battlefields in hybrid warfare, as highlighted by the conflict in Ukraine and related events. As a result, Europe has begun to consider infrastructure security as part of collective defence.

The sabotage of the Nord Stream gas pipelines in the Baltic Sea in September 2022 was a dramatic wake-up call. In what NATO later called a deliberate act of sabotage, explosions destroyed the Nord Stream 1 and 2 pipelines, which were built to transport Russian gas to Germany[235]. Although the author has not been officially confirmed, the effect has been to highlight how vulnerable underwater infrastructure is, whether it is gas pipelines or data cables. Subsequently, NATO established a Critical Subsea Infrastructure Coordination Cell (February 2023) to improve the monitoring and protection of seabed pipelines and cables[236]. Western navies have increased patrols in the North Sea and the Baltic Sea, and NATO has conducted exercises simulating the defence of offshore energy resources[237]. European nations such as Norway, now Europe's largest gas supplier, have also tightened security around North Sea platforms and pipelines, sometimes with direct assistance from NATO. Due to the Nord Stream explosions, there is no longer any distinction between “energy policy” and “security policy” in Europe, as the protection of energy infrastructure has been elevated to the status of a top security priority.

---

[235] BORN. (n.d.). *Resilience, civil preparedness and Article 3*. North Atlantic Treaty Organization. https://www.nato.int/cps/en/natohq/topics_132722.htm

[236] BORN. (2024, February 15). *Critical Undersea Infrastructure Coordination Cell at NATO Headquarters*. North Atlantic Treaty Organization. https://www.nato.int/cps/en/natohq/news_211919.htm

[237] Conley, H. A., & Tertytchnyi, M. (2024, May). *NATO, Baltic Sea Security, and the Lessons from Nord Stream and Balticconnector*. Carnegie Endowment for International Peace. https://carnegieendowment.org/research/2024/05/nato-baltic-sea-security-nord-stream-balticconnector?lang=en

In addition to pipelines, there have also been direct attacks on energy facilities during the conflict in Ukraine. For example, Russian missile strikes on the Ukrainian power grid have had an impact on neighbouring countries such as Moldova. This has raised fears that an adversary could launch physical or cyber-attacks against European gas or electricity networks in the event of a wider European conflict. NATO's Article 5 collective defence could, in theory, be invoked by a member state if a major cyberattacks on its network, attributed to a foreign power, caused serious damage[238]. This blurs the line between the military and civilian realms: an attack on a nation's energy system can cripple its military capability without a single shot being fired. Recognizing this, NATO and the EU have conducted joint critical infrastructure risk assessments. In March 2023, the EU and NATO established a Task Force on Critical Infrastructure Resilience which, in its final report, identified energy infrastructure as a key area requiring joint attention and recommended better intelligence sharing and cooperation to protect these assets[239]. In 2022, the EU also approved the Resilience of Critical Entities (CER) Directive, which expands the requirements for Member States to assess risks and protect infrastructure in 11 sectors[240]. Such measures reflect the understanding that a power outage can directly translate into security vulnerabilities, for example in grounding Air Force jets in the event of a fuel supply disruption or in civil unrest that puts a strain on internal security forces[241].

The military logistical side is another consideration. Europe's modern armed forces depend on global supply chains for fuel. A significant portion of the diesel and jet fuel of European NATO members historically came from imports, some from Russia

---

[238] NATO. (1999). *The Alliance's Strategic Concept.* Washington, DC: North Atlantic Treaty Organization. https://www.nato.int/cps/en/natohq/official_texts_27433.htm

[239] EUNATO Task Force on the Resilience of Critical Infrastructure. (2023, June). *Final Assessment Report: Strengthening the resilience and protection of critical infrastructure*. Publication of the European Commission and NATO. https://commission.europa.eu/system/files/2023-06/EUNATO_Final%20Assessment%20Report%20Digital.pdf

[240] European Union. (2022). *Directive (EU) 2022/2557 of the European Parliament and of the Council of 14 December 2022 on the resilience of critical entities. Official Journal of the European Union,* L 333, 164–196. https://eur-lex.europa.eu/eli/dir/2022/2557/oj

[241] Bendiek, A., & Kerttunen, M. (2023). *Enhancing EU–NATO cooperation on critical infrastructure protection* (SWP Working Paper). Stiftung Wissenschaft und Politik (SWP). https://www.swp-berlin.org/publications/products/arbeitspapiere/SWP_WP_Enhancing_EU-NATO_Cooperation_Critical_Infrastructure_Protection_Bendiek_Kerttunen.pdf

before 2022, now more from the Middle East[242]. Securing the supply of fuel in wartime has led NATO to place an emphasis on fuel diversification and stockpiling as part of defence readiness. There is also a push towards a more resilient use of energy by the armed forces, NATO is exploring advanced fuel storage, battlefield energy innovations and even renewables in bases to reduce frontline dependence on long supply lines, which can be attacked[243]. While these efforts are nascent, they indicate a growing interplay between energy strategy and military planning.

The idea of "energy resilience as a deterrent" is another link. The value of attacking a country or alliance that is known to be able to quickly repair infrastructure or withstand a power outage has diminished. For example, Europe has shown its enemies that attacks on pipelines will not be an easy way to blackmail Europe, continuing to keep the lights on despite the loss of Nord Stream. NATO's emphasis on civilian preparedness, ensuring that basic needs can be met during crises, includes energy preparedness, securing backup generators, fuel reserves, to keep society and military mobilization running under duress. Article 3 of the NATO treaty effectively obliges members to maintain resilience in critical sectors, including energy by implication[244]. Finally, the energy and policies of alliances. European alliances have also been affected by the quest for energy independence. Within NATO, dependence on Russian energy has been a source of conflict. For example, the United States has long criticized Nord Stream 2 as a security risk that would tie Germany to Russia. After 2022, that rift closed when Europe aligned itself with the position of the United States. The increase in Europe's LNG imports from America has, in turn, strengthened transatlantic ties although some in Europe are concerned about dependence on U.S. LNG and have called for not simply swapping one dependency for another. In addition, energy security considerations are taking enlargement debates into account because countries such as Ukraine and Moldova advancing towards EU membership, and potentially NATO, are receiving help to

[242] S&P Global Commodity Insights. (2025, February 9). *European diesel trade map redrawn following Russia-Ukraine conflict.* S&P Global. https://www.spglobal.com/commodity-insights/en/news-research/latest-news/refined-products/090225-european-diesel-trade-map-redrawn-following-russia-ukraine-conflict

[243] NATO. (2024, December 12). *Advanced batteries, hydrogen fuel cells and other innovations are enablers of key military capabilities.* NATO. https://www.nato.int/cps/en/natohq/news_231363.htm?selectedLocale=en

[244] NATO. (1949). *The North Atlantic Treaty.* Washington, DC: North Atlantic Treaty Organization. https://www.nato.int/cps/en/natohq/official_texts_17120.htm

integrate their energy systems with Europe, effectively extending the EU/NATO security umbrella to their energy sectors even before full membership[245]. This is exemplified by the fact that the power grids of Ukraine and Moldova were synchronized with the European grid in 2022 to ensure stability after years of preparation.

Ensuring infrastructure resilience and security of supply is now seen as an integral part of Europe's defence strategy. The mindset is shifting from reactive, recovering from shocks, to proactive, deterring attacks while reducing profit. Energy infrastructure is recognized as the "soft underbelly" that needs to be hardened to avoid giving opponents an easy strategic victory. Measures taken after 2022 point to a permanent increase in energy security on NATO and EU agendas, a trend that is likely to continue as Europe also navigates the energy transition.

[245] European Commission. (2025, February 24). *Commission steps up support for Ukraine's energy security and paves the way for full market integration.* Brussels: European Commission. https://enlargement.ec.europa.eu/news/commission-steps-support-ukraines-energy-security-and-paves-way-full-market-integration-2025-02-24_en

3.6 The seven cornerstones of the European energy and security

Let us now try to summarize in 7 points the key results of the analyses conducted in this chapter. The arguments and information collected are numerous and can trigger further reasoning and in-depth analysis. The link between energy and safety, being closely linked to technological know-how, is constantly evolving and will force me to periodically update this research. New results and new possibilities will arrive that will overturn the theses held so far and change the fate of conflicts and global energy balances. Despite this, it is fair to outline what has been collected to have a clear and complete picture of the situation described so far:

1. *Energy dependency = strategic vulnerability (if exploited by adversaries):* European case studies confirm that heavy dependence on a single foreign supplier for critical energy is a strategic responsibility. Such dependence gives the supplier undue influence, as seen with Russia's influence on Moldova and parts of the EU. When the supplier is willing to "weaponize" such dependency, it can undermine the dependent nation's freedom of action and even its internal stability. Thus, reducing monocausal dependencies, especially in adversary states, clearly improves security by removing a key vector of coercion. This achievement is in line with realistic security perspectives and has become a cornerstone of EU policy after 2022.

2. *Energy independence improves security, but full autarky is not required*: there is strong evidence that diversification and partial independence, what might be called strategic autonomy, can provide most of the security benefits without the costs of full autarky. Europe did not produce all its energy after cutting off Russia, but turned to a diverse set of domestic imports and substitutes. This diversification has severely limited Russia's coercive power and stabilized the situation. The implication is that policy should not aim for a single point of failure in energy supply. An acceptable level of dependency might be one where every single vendor, or infrastructure pathway, can be lost without collapse, in other words,

built-in redundancy. The new mix of EU suppliers, LNG from many countries, pipeline gas from Norway/Algeria and other sources, provides such redundancy. Absolute self-sufficiency, although conceptually secure, is economically impracticable for Europe and is not necessary if smart diversification is achieved. The limits of interdependence must be defined in such a way that dependence never becomes a one-sided lever. For example, an EU policymaker might establish a guideline that no more than X% of a critical fuel can come from a single country.

3. *Interdependence does not guarantee peace*: the liberal idea that interdependence inherently reduces conflict proves to be conditional. It worked within the EU framework where the rule of law and dispute settlement mechanisms exist, but failed spectacularly with Russia, which was outside that framework. The crucial difference is in governance and values. Therefore, Europe is likely to continue to maintain deep energy interdependence with trusted partners, such as within the EU, Norway, the United States and the Gulf States to some extent, but will exercise caution with interdependence involving rivals. One policy implication is to incorporate energy trading into sound legal and institutional arrangements. For example, the EU seeks long-term contracts and legal dispute mechanisms for LNG suppliers, and potentially multilateral agreements that commit suppliers not to abuse their position. In the absence of reliable governance, Europe has learned to be wary.

4. *Rapid changes are possible, but preparation is essential:* an exceptionally mild winter and coordinated efforts by governments and citizens to reduce consumption helped Europe overcome the loss of Russian energy. He emphasized that unity and action on the demand side can significantly reduce an energy crisis. This should not lead to excessive optimism, as in some cases it was a costly and somewhat fortunate undertaking. To ensure that Europe is never so unprepared again, strategic planning and investment for the future are needed. This involves maintaining large strategic fuel reserves, institutionalizing the solidarity mechanisms established during the crisis, and investing in infrastructure during

calm periods. The EU has created a permanent common platform for gas purchases and new rules on minimum storage, which are direct policy responses to ensure preparedness.

5. *Infrastructure protection is now a security priority*: the importance of protecting energy infrastructure from attacks has political implications both at national level and at EU/NATO level. Nations need to strengthen their critical energy sites through better surveillance, redundancy and defence, NATO has expanded its mandate to coordinate on this front. One implication is increased investment in unmanned systems to patrol pipelines, cyber defenses for grid control systems, and the ability to quickly repair damaged infrastructure. The private sector, which often owns these assets, will need incentives and mandates to improve security. The new EU law on the resilience of critical entities is one such measure, requiring companies in key sectors to carry out risk assessments and strengthen protections. Similarly, NATO's recognition of energy as part of Article 3 duties could prompt members to include energy scenarios in defence planning.

6. *Integrated Energy and Defence Strategy*: An important achievement is that energy policy can no longer be seen in isolation from defence and foreign policy. Based on European experience, foreign enemies will exploit any energy vulnerability to achieve their broader geopolitical goals. As a result, policies such as National Energy Plans and the EU Green Deal have taken on a dual nature, addressing both industrial and climate issues as well as security concerns. Europe's push towards the development of renewable energy and batteries is specifically linked to reducing dependence on imported fuels, many of which come from unstable regions, as well as environmental concerns. Over the next decade, European defence analyses can be expected to regularly include energy scenarios. For example, how would a conflict in the Middle East affecting the supply of LNG affect Europe's security? This interdisciplinary approach extends to economic

security and even development policy as support for energy projects in neighbouring countries, such as North Africa and Eastern Europe, is seen as strengthening a more secure neighbourhood for Europe.

7. *Opposing views and remaining debates:* It is worth noting that there are still some who warn against an overly cauterized view of energy. They fear that framing energy primarily as a security issue could lead to excessive state intervention or neglect of market solutions. The total exclusion of some countries' energy resources for political reasons could restrict markets and increase prices for consumers. There is also a climate dimension where, in the rush to secure gas from anyone but Russia, Europe has done business with other authoritarian regimes such as Qatar or Algeria for increasing LNG reserve and some critics point out that this could support other problematic players, swapping one dependency for another. These are valid concerns that suggest a balanced approach by pursuing independence from enemies but also investing in long-term sustainable self-sufficiency like renewable energy and efficiency that reduces the need to make such trade-offs. The war has also sparked a debate about nuclear energy in Europe with someone argue that if Germany had not phased out nuclear power, it would have been less vulnerable to gas extortion. To ensure energy security, countries such as Poland are currently planning new nuclear power plants. In general, it is believed that a variety of low-carbon energy sources is the key to long-term energy independence that meets security and climate goals.

Summing up the chapter, the interplay between energy independence and European security is now at the forefront of academic and political discourse. The hypothesis that greater energy independence improves security is largely supported by recent European experience, the nations that entered the Ukrainian

crisis with a more diversified energy supply, like Spain[246] or Sweden[247], less dependent on Russian gas, were less strategically constrained than those heavily dependent. However, the research also reveals some nuances worth considering, such as the fact that it is not absolute independence but the quality of dependencies that matters. Dependence on a hostile or unstable power carries serious security risks. Dependencies spread across allies or global markets within rules-based systems are safer. The events of 2022-2024 have led Europe to internalize a fundamental lesson: energy security is collective security. Through EU solidarity and transatlantic cooperation, Europe has turned a moment of extreme vulnerability into a story of resilience. But this resilience must be institutionalized. Moving forward, the European Defence Strategy will incorporate energy autonomy as a key pillar, ensuring that never again can an aggressor 'turn off the lights' to achieve its military or political objectives.

[246] Banco de España. (2023). *Spain and Portugal's response to the European energy crisis. Boletín Económico, 3/2023.* Madrid: Banco de España. https://www.bde.es/f/webbe/SES/Secciones/Publicaciones/InformesBoletinesRevistas/BoletinEconomico/23/T3/Files/be2303-art02e.pdf

[247] Government Offices of Sweden. (2022). *Minister for Energy and Digital Development Khashayar Farmanbar: Articles 2021–2022.* Stockholm: Government of Sweden. https://www.government.se/contentassets/b8c8d3469ecf4f03bae7a5b1670b4df0/minister-for-energy-and-digital-development-khashayar-farmanbar-articles-2021-2022.pdf

CHAPTER 4

ENERGY UNION: THE ROAD TO FULFILLING THE EUROPEAN DREAM

4.1 Summary of findings and theoretical implications

We come towards the end of this research. The analysis conducted highlighted how energy is intrinsically linked to international and European security, confirming and enriching the theoretical perspectives examined. Historically, Europe's energy dependence, from the first oil shocks of the 1970s to the cuts in gas supplies from Russia (2006, 2009), has repeatedly highlighted the Union's strategic vulnerability[248]. These historical lessons were fully confirmed following the outbreak of the Russia-Ukraine war in 2022, which represented a watershed for European energy security and for the fragile strategies implemented by Brussels so far, lacking an organic and coordinated movement between the main European countries. In response to Moscow's geopolitical use of energy, the EU has taken unprecedented steps to rapidly reduce its exposure through the share of natural gas imported from Russia, which has plummeted from over 40% in 2021 to around 11% in 2024, falling overall to less than 19% of total gas imports when LNG and pipeline are included[249]. In volumetric terms, Russian gas imports decreased from more than 150 billion m³ (bcm) in 2021 to less than 52 bcm in 2024, being largely replaced by alternative supplies[250]. In parallel, purchases of liquefied natural gas (LNG) from the United States, a partner considered "reliable", have more than doubled, from 18.9 bcm in 2021 to 45.1 bcm in 2024[251], making the US the EU's top LNG supplier with almost 45% of the market in 2024. Other suppliers have also contributed to diversification: for example, Norway, historically a European energy pillar, covered around 33% of EU gas imports in 2024 (91 bcm), followed by suppliers such as Algeria

[248] Gross, S., & Stelzenmüller, C. (2023). *Europe's messy Russian gas divorce.* Brookings Institution. https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/
[249] Consilium. (2025). *Where does the EU's gas come from?* Council of the European Union. Retrieved from https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/
[250] Consilium. (2025). *Where does the EU's gas come from?* Council of the European Union. Retrieved from https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/#:~:text=Bar%20chart%20comparing%20gas%20supply,EU%20in%202021%20with%202024
[251] Consilium. (2025). *Where does the EU's gas come from?* Council of the European Union. Retrieved from https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/#:~:text=Bar%20chart%20comparing%20gas%20supply,EU%20in%202021%20with%202024

(14.4%, 39 bcm), Qatar, the United Kingdom and Azerbaijan[252]. At the same time, gas consumption in the EU decreased by more than 19% between 2021 and 2024, the result of both energy-saving policies and market dynamics induced by high prices[253]. This set of empirical data confirms the close link between energy and common European security and translates into the EU's increased ability to withstand external pressures thanks to the reduction of unilateral dependence and the containment of domestic demand.

These empirical results allow us to link the facts to the theoretical frameworks covered in the thesis. First, the theory of complex interdependence (Keohane and Nye) argues that high levels of economic interdependence between states reduce the incentive to use force. The Euro-Russian energy relationship was often cited as an example of potentially stabilizing mutual interdependence. However, the war in Ukraine has shown the flip side, an unbalanced interdependence can become "interdependence weapon" in the hands of a revisionist actor. Russia, aware of Europe's dependence on its supplies, has deliberately instrumentalized energy for geopolitical purposes, disrupting flows and causing price shocks to weaken European unity. This concrete case resizes classical liberal optimism, suggesting that interdependence does not automatically guarantee peace, especially when it is asymmetrical and lacks safeguards. The most recent literature on "fragile interdependence" or malevolent interdependence supports this interpretation: exchange networks, like pipelines and global supply chains, can be transformed into levers of coercion, tragically confirming what happened in 2022[254].

The results underline the relevance of the concept of European strategic autonomy. Even before the current crisis, the EU was discussing "strategic autonomy" to reduce critical dependencies in areas such as defence, digital and energy[255]. The drastic

---

[252] Consilium. (2025). *Where does the EU's gas come from?* Council of the European Union. Retrieved from https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/#:~:text=Bar%20chart%20comparing%20gas%20supply,EU%20in%202021%20with%202024

[253] Institute for Energy Economics and Financial Analysis (IEEFA). (2024). *European LNG Tracker.* IEEFA. https://ieefa.org/european-lng-tracker

[254] Drezner, D. W. (2023). *The dangers of misunderstanding economic interdependence.* Cato Institute. Retrieved from https://www.cato.org/publications/dangers-misunderstanding-economic-interdependence#:~:text=policies%20had%20enriched%20China%20and,the%20risk%20of%20weaponized%20interdependence

[255] European Parliament, European Parliamentary Research Service (EPRS). (2022). *EU Strategic Autonomy Monitor: From concept to capacity, 2013–2023.* Brussels: European Parliament. https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733589/EPRS_BRI%282022%29733589_EN.pdf

reduction in dependence on Russian gas and initiatives to diversify energy supplies and technologies demonstrate a practical translation of this strategy. The EU imported almost 60% of its energy needs before the war, a level incompatible with real strategic autonomy[256]. Today, thanks to REPowerEU and other measures, the Union is building the foundations to ensure energy security by its own means or through reliable partners. We can conclude that the war has resulted as an acceleration of the European process, but the question that arises is whether this acceleration towards the search for strategic interdependence would ever have occurred in the absence of an external shock such as the outbreak of the Russian-Ukrainian conflict. Strategic autonomy does not mean autarky, but the ability to choose and resilience and being able to obtain energy from different sources and suppliers, or domestic, so as not to be blackmailed. In theory, this aligns with neo-institutionalist and overall security approaches, and in fact energy is now treated as an integral part of the Union's security, on a par with military and technological security[257]. In the briefing of the European Parliamentary Research Service (EPRS) in 2023, it was emphasized that:

"The fact that the EU imports 60% of its energy shows that strategic autonomy in the energy field is far from being achieved".[258]

This certifies the progress made by the EU at the programming level, aware of the need to close this gap.

Finally, the evidence collected reinforces the idea that underpins the structure of this research about energy as a geopolitical weapon and at the same time shows its limits

[256] European Parliamentary Research Service (EPRS). (2023). *Four challenges of the energy crisis for the EU's strategic autonomy* (Briefing EPRS_BRI(2023)747099). European Parliament. Retrieved from https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2023)747099#:~:text=That%20the%20EU%20imports%20almost,incentives%20for%20the%20green%20transition

[257] European Economic and Social Committee (EESC). (2023). *Strategic autonomy for Europe.* Brussels: European Union. https://www.eesc.europa.eu/sites/default/files/files/qe-02-23-358-en-n_0.pdf

[258] European Parliamentary Research Service (EPRS). (2023). *Four challenges of the energy crisis for the EU's strategic autonomy* (EPRS Briefing EPRS_BRI(2023)747099). European Parliament. Retrieved from https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747099/EPRS_BRI(2023)747099_EN.pdf

when the other party manages to react in a united way. Russia's political use of energy resources, by threatening or implementing cuts in supplies to member states to obtain political concessions, is part of the realistic logic of resource geopolitics. Episodes such as the blackmail on gas to Ukraine and Eastern Europe, and more recently the reduction of flows in 2021-2022, confirm that large suppliers can try to use the "energy tap" as a lever of power[259]. This mirrors the theory that natural resources can serve as tools of power politics. On the other hand, the coordinated European response to the crisis, based on common storage, aggregated purchases and intra-EU solidarity, has partially defused this weapon, signalling that cooperation can compensate for individual vulnerability. In theoretical terms, it is therefore possible to reconcile the realist lesson, energy used as a weapon by state actors, with the institutional liberal one. In conclusion, the research on the empirical nature of the thesis tries to demonstrate that energy and European security are intertwined and the recent events have highlighted both the dangers of excessive dependence and the ability of the EU, when acting as a unit, to protect its energy security. This final assessment lays the groundwork for moving from analysis to solutions on the methods to consolidate progress and build a more secure and autonomous European energy system.

[259] European Parliament. (2015). *European Energy Security Strategy* (A8-0164/2015). Retrieved from https://www.europarl.europa.eu/doceo/document/A-8-2015-0164_EN.html#:~:text=With%20regard%20to%20the%20current,that%20routes%20are%20directed%20towards

4.2 Four pillars for an energy-resilient Europe

The implications of recent events suggest several concrete policy recommendations to strengthen the resilience of the European energy system, an indispensable pillar of the Union's overall security. In light of the vulnerabilities that have emerged, the following lines of action aim to transform energy from a risk factor to a source of strategic strength for Europe, with coordinated actions at EU level based on shared data and objectives.

We could suggest that Brussels, with the collaboration of all third parties from the public and private sectors, should target four key areas of intervention:

a) Expanding and Securing External Supply Sources

The EU needs to continue and intensify the diversification of energy import sources, reducing dependence on any single supplier or region. Efforts since 2022 have already brought tangible results, for example by offsetting Russian gas with additional supplies from Norway, the United States, Algeria and Qatar, but these partnerships need to be consolidated and expanded. In the gas sector, long-term agreements with reliable exporters will have to be finalized. United States will continue to be a key partner for LNG infrastructure permitting, in fact the EU imported over 130 bcm of LNG in 2022, +60% compared to 2021, with the US as the first supplier[260], but countries such as Qatar and other Middle Eastern producers must also be involved with stable agreements to ensure adequate volumes. At the same time, it is essential to exploit the potential of the

[260] International Energy Agency (IEA). (2023). *How to avoid gas shortages in the European Union in 2023: Baseline European Union gas demand and supply in 2023*. Paris: IEA. Retrieved from https://www.iea.org/reports/how-to-avoid-gas-shortages-in-the-european-union-in-2023/baseline-european-union-gas-demand-and-supply-in-2023

European neighbourhood like North Africa, first and foremost Algeria, already a supplier of 14% of EU gas[261], with prospects for increase through new fields and the upgrading of the Transmed pipeline to Italy, the Caspian region (Azerbaijan, through the Southern Gas Corridor which could be expanded beyond the current 10 bcm/year[262]) and gas-rich countries in sub-Saharan Africa such as Nigeria, Senegal, Mozambique which must be part of a global diversification strategy[263]. This requires investment in new import infrastructure such as LNG terminals and pipeline connections along with bilateral agreements that balance energy security and climate goals. For instance, the feasibility of a southern European corridor for hydrogen and gas from the Mediterranean should be explored, also taking advantage of the "H2Med" project or similar in perspective[264]. In the oil sector, where the EU has banned Russian crude by sea, it will be important to monitor the so-called "shadow fleet"[265] and secure supplies from reliable OPEC partners and Norway, increasing strategic oil reserves as an additional guarantee. Overall, the EU should establish permanent supply risk monitoring mechanisms to anticipate crises in key regions and promptly activate alternative suppliers. A well-calibrated geographical diversification reduces geopolitical exposure, actually, as the Commission notes, while the abandonment of Russian gas eliminates a dominant supplier, on the other hand, *"relying on several third countries implies new supply risks",* which can be managed,

---

[261] Eurostat. (2025). *EU imports of energy products – latest developments.* European Commission. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_imports_of_energy_products_-_latest_developments

[262] Henderson, J., & Mitrova, T. (2024). *Expansion of the Southern Gas Corridor.* OIES Paper NG 180. Oxford Institute for Energy Studies. https://www.oxfordenergy.org/wpcms/wp-content/uploads/2024/01/Expansion-of-the-Southern-Gas-Corridor-NG180.pdf

[263] Consilium. (2025). *Where does the EU's gas come from?* Council of the European Union. Retrieved from https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/#:~:text=%2A%20Norway%3A%2033.4,bcm

[264] The H2Med project is a project presented in December 2022 and aims to build a large European hydrogen corridor, developed by Spain, Portugal, France and Germany with the active support of the European Commission. This project involves the construction of an underwater gas pipeline between Barcelona and Marseille and internal Iberian connections with the aim of transporting up to two million tons of green hydrogen per year by 2030, contributing to 10% of the REPoverEU target and strengthening the EU's energy resilience.

[265] The term "shadow fleet" is used to indicate a group of oil tankers and merchant ships that operate outside the official commercial and regulatory circuits to transport oil or gas from countries subject to international sanctions such as, for example, Russia, Iran or Venezuela. In this situation, we can attribute this to the European-Russian situation with Moscow trying to circumvent Western sanctions and the cap soon imposed by the EU and this allows Russia to continue exporting crude oil to Asia, Africa and the Middle East while circumventing restrictions.

however, by distributing the import portfolio and negotiating robust security[266] clauses. The pursuit of strategic energy partnerships such as a renewed Euro-Atlantic Energy Dialogue with the US, as well as targeted initiatives with Norway, Canada, and emerging suppliers could help institutionalize this diversification in a context of mutual trust.

b) Building a Collective Strategic Reserve for Crisis Resilience

The experience of 2022-23 has shown the crucial role of storage in overcoming emergencies: the EU's underground gas reserves, if properly filled, can cover up to a third of winter demand[267], acting as a buffer against external shocks. The key recommendation is therefore to strengthen and coordinate the management of storage at European level. In particular, the EU could set up a "strategic storage capacity" on the model of strategic oil reserves with a minimum volume of gas, or hydrogen in the future, to be kept in reserve and released on the market in the event of a crisis. As early as June 2022, the EU adopted a regulation requiring member states to fill national storage to at least 90% by 1 November each year[268]. This goal was achieved well in advance in 2023 thanks in part to emergency measures and lower demand. It is proposed to make this mechanism structural, also evaluating the increase of physical storage capacity where possible. According to international data, at the end of 2022, gas storage capacity in Europe amounted to approximately 103 billion cubic metres (just over 1,100 TWh). and even a modest increase (+5-10%) through the creation of new sites or the expansion of existing ones,

---

[266] European Parliamentary Research Service (EPRS). (2023). *Four challenges of the energy crisis for the EU's strategic autonomy* (EPRS Briefing EPRS_BRI(2023)747099, p. 2). European Parliament. Retrieved from https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747099/EPRS_BRI(2023)747099_EN.pdf

[267] European Commission, Directorate-General for Energy. (2023, August 18). *EU reaches 90% gas storage target ahead of winter*. Retrieved from https://energy.ec.europa.eu/news/eu-reaches-90-gas-storage-target-ahead-winter-2023-08-18_en#:~:text=The%20EU%20has%20reached%20its,of%20storage%20capacity%20%28equivalent

[268] European Commission, Directorate-General for Energy. (2023, August 18). *EU reaches 90% gas storage target ahead of winter*. Retrieved from https://energy.ec.europa.eu/news/eu-reaches-90-gas-storage-target-ahead-winter-2023-08-18_en#:~:text=The%20EU%20has%20reached%20its,of%20storage%20capacity%20%28equivalent

particularly in countries that currently lack storage facilities, would improve resilience. Coordination is also key, and in this regard ENTSOG, the European Network of Transmission System Operators for Gas, recommends improving the efficient use of storage through cross-border cooperation[269]. This implies developing gas interconnection infrastructure between Member States, including bidirectional flows to get stored gas where it is needed in an emergency. During the crisis, some pipelines have been adapted to reverse flows and these solutions need to be consolidated with investments and binding solidarity agreements[270]. In addition, a common management mechanism could optimize filling and a joint purchase of gas for storage during the summer, when prices tend to be lower, avoiding internal competitions that raise prices. The EU has already taken steps in this direction with the AggregateEU joint purchasing platform and with mandatory solidarity rules whereby a state must help its neighbour in a supply crisis. Such practices should be institutionalised through the long-term extension of the common purchasing platform not only to natural gas but also to hydrogen and other strategic fuels, and to provide for regular stress tests for security of supply in order to identify any shortfalls in reserves at an early stage. Overall, well-managed European strategic storage mitigates the effects of any simultaneous disruptions, providing the time needed to deploy extraordinary measures without triggering panic in the markets.

c) Institutionalizing Joint Procurement and Network Integration

The response to the crisis has shown that joint EU action can achieve significant results in securing supplies on stable terms. The recommendation is to consolidate and expand the instruments for centralizing European energy demand. The EU Energy Platform/AggregateEU, launched in 2022-2023, allowed for the first time consortium

[269] European Network of Transmission System Operators for Gas (ENTSOG). (2022). *Yearly supply outlook 2022–2023* (SO0036-22, p. 8). ENTSOG. Retrieved from https://www.entsog.eu/sites/default/files/2022-07/SO0036-22_Yearly_Supply_Outlook_2022-2023_1.pdf#:~:text=%EF%80%BE%20In%20case%20of%20supply,capacity%20utilisation%20can%20allow%20for

[270] European Commission. (2022). *REPowerEU: Joint European Action for more affordable, secure and sustainable energy (COM(2022) 108 final)*. Brussels: European Commission. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022DC0108

purchases of gas by European companies and in the first two rounds, facilitated supply-demand matches for a total of 22.9 bcm of gas[271]. This helped both to fill in the missing volumes and to avoid intra-EU competition on the spot market, stabilising prices. It is considered necessary to make this demand aggregation mechanism permanent, extending it on a voluntary basis but incentivized through public guarantees or European financial instruments that reduce the risks for those who participate. In addition to gas, as already indicated by the Commission, the formula could apply to the future European green hydrogen market and also to the supply of critical raw materials (rare earths, lithium, cobalt) essential for clean energy[272]. In parallel with these operations, the creation of a European centre for energy security under the aegis of the Agency for the Cooperation of Regulators - ACER, or a new dedicated body that monitors flows, storage and needs in real time, recommending coordinated adjustments, such as the release of reserves, extra purchases and load reductions, before a local shortage turns into a continental crisis. Another crucial aspect of internal coordination is the completion of the integration of European energy networks. In the electricity sector, PCI (Projects of Common Interest)[273] projects need to be accelerated to interconnect national grids, to achieve the minimum target of 15% electricity interconnection between countries (2030 target) and allow for smoother cross-border flows of renewable and emergency electricity. In gas, infrastructure gaps need to be filled. The recent pipeline between Greece and Bulgaria and the Poland-Lithuania interconnection have demonstrated that new connections can eliminate regional bottlenecks. Similar projects in the Iberian Peninsula, such as improving the connection between Spain, which has many LNG terminals, and the rest of Europe[274], and in South-Eastern Europe, increasing LNG flows from Greece to the

[271] European Commission, Directorate-General for Energy. (2023, August 18). *EU reaches 90% gas storage target ahead of winter* (para. 3). Retrieved from https://energy.ec.europa.eu/news/eu-reaches-90-gas-storage-target-ahead-winter-2023-08-18_en#:~:text=,supplies%20to%20the%20EU%20market

[272] European Commission. (2025). *REPowerEU.* Retrieved from https://commission.europa.eu/topics/energy/repowereu_en#:~:text=than%20119%20bcm%20of%20gas,format%20expired%20in%20March%202025

[273] European Commission. (2025). *Projects of common interest and projects of mutual interest.* Brussels: European Commission. https://energy.ec.europa.eu/topics/infrastructure/projects-common-interest-and-projects-mutual-interest_en

[274] Brookings Institution. (2023). *After the energy crisis: Policy responses in the Iberian Peninsula.* Washington, DC: Brookings Institution. https://www.brookings.edu/articles/after-the-energy-crisis-policy-responses-in-the-iberian-peninsula/

Balkans, would increase overall resilience[275]. In addition, the EU should promote interconnections with neighbouring countries, in this way the electricity connection with Ukraine and Moldova, implemented in an emergency in 2022 by synchronising their systems with the ENTSO-E, is a virtuous example of how integrating neighbours into European networks increases mutual security. Continuing this path, for istance by supporting a possible future Mediterranean electricity connection (Europe-North Africa) or green corridors with the Middle East, gives the EU more flexibility in supply and at the same time projects stability towards the outside world. A fully integrated Energy Union requires both 'software' tools, such as purchasing platforms and solidarity rules, and 'hardware' (networks and physical infrastructure) to ensure that, in the face of any shock, energy can flow where it is needed and at sustainable prices.

d) Accelerating the Energy Transition as a Security Imperative

The long-term strategy for European energy security lies in the transition to a low-carbon system, based on domestic renewables and clean technologies. To permanently reduce vulnerability to fossil fuel imports, the EU must vigorously pursue the objectives of REPowerEU and the Green Deal, accelerating investments in renewable capacity and related infrastructure. In particular, the EU has raised the binding renewable energy target to 42.5% of final consumption by 2030 with the ambition of reaching 45%[276], almost doubling the current share. To achieve these goals, the EU could consider fully adopting the principle of "energy efficiency first" and the new rules streamlining permits for renewable plants, measures already launched at the end of 2022, ensuring their rapid national implementation[277]. At the same time, a mobilization of public and private

[275] Energy Community. (2025). *Unlocking Trans-Balkan gas flows: WECOM Study Report (final 16.6.2025)*. Energy Community Secretariat. https://www.energy-community.org/dam/jcr%3A7e011a2c-26cd-450e-aad3-52611cb7b2a3/Unlocking%20Trans-Balkan%20-%20WECOM%20Study%20Report%20%28final%2016.6.2025%29.pdf

[276] European Commission. (2023, November). *REPowerEU*. Retrieved from https://commission.europa.eu/topics/energy/repowereu_en#:~:text=In%20November%202023%2C%20the%20revised,renewable%20energy%20in%20the%20EU

[277] European Commission. (2024, July). *REPowerEU*. Retrieved from https://commission.europa.eu/topics/energy/repowereu_en#:~:text=In%20July%202024%2C%20the%20reform,enhance%20protection%20against%20market%20manipulation

investments is needed by the management of REPowerEU Plan funds, that makes available about 300 billion euros, including RRF and various funds, but it will also be essential to channel private capital through tenders, PPAs and innovative tools such as, the newly created European Hydrogen Bank to support hydrogen production[278]. Green hydrogen deserves emphasis. A target of 20 million tonnes of renewable H_2 by 2030 (10 Mt domestically produced, 10 Mt imported) is envisaged[279], which could replace a significant part of fossil gas in hard-to-abate sectors. To achieve this, a European hydrogen supply chain must be developed through investment in electrolysers, also benefiting from IPCEIs[280] already approved, build dedicated infrastructure (H_2 pipeline and conversion of existing pipelines), enter into import agreements with third countries (North Africa, Middle East, Norway for blue/green hydrogen). On the renewable gas front, the EU has launched the Biomethane Industrial Partnership to quintuple the annual production of domestic biomethane to 35 bcm by 2030, a significant volume, almost 10% of pre-crisis gas consumption, which can be obtained by valorising agricultural waste, wastewater and other sustainable biomass[281]. It is recommended to translate this target into legally binding commitments for Member States, sharing best practices, such as the experience of Denmark, a leader in biogas injection into the grid, and supporting the necessary investments estimated at €37 billion[282]. Another pillar is energy efficiency and demand management because the 18% reduction in gas consumption achieved between

[278] European Commission. (2024, July). *REPowerEU*. Retrieved from https://commission.europa.eu/topics/energy/repowereu_en#:~:text=In%20July%202024%2C%20the%20reform,enhance%20protection%20against%20market%20manipulation

[279] European Commission, Directorate-General for Energy. (2025). *Hydrogen*. Retrieved from https://energy.ec.europa.eu/topics/eus-energy-system/hydrogen_en#:~:text=The%20priority%20for%20the%20EU,zero%2C%20and%20sustainable%20development

[280] IPCEI (*Important Projects of Common European Interest*) are large transnational projects supported by the EU and Member States to develop key policy areas, with exceptions to state aid rules. In the energy sector, relevant examples are the IPCEI Hydrogen (2022–2023), which supports the entire green hydrogen value chain (production, transport, storage, industrial uses), and the IPCEI Batteries, which promotes battery research, development and production in Europe

[281] European Commission, Directorate-General for Energy. (2025). *Biomethane*. Retrieved from https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biomethane_en#:~:text=renewable%20and%20dispatchable%20energy%20source%2C,period%20amounts%20to%20%E2%82%AC37%20billion

[282] European Commission, Directorate-General for Energy. (2025). *Biomethane*. Retrieved from https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biomethane_en#:~:text=renewable%20and%20dispatchable%20energy%20source%2C,period%20amounts%20to%20%E2%82%AC37%20billion

2022 and 2023 shows that savings measures can have a strong impact[283]. In future, the EU will need to structurally incentivize efficiency in three sectors:

- *Infrastructure*: by rigorously enforcing the directives on buildings and renovation, as 40% of the EU's energy is used in buildings[284].

- *Industry:* by promoting heat recovery, process electrification and the circular economy.

- *Electrification:* accelerating its process and modal shift[285].

Digitized and "smart" networks are an enabling factor. Investing in smart grids, storage systems and intelligent demand management will make it possible to integrate greater shares of intermittent renewables while keeping the system stable. According to an analysis by the EU Institute for Security Studies (EUISS), an energy system based on renewables and efficiency would not only be more sustainable, but also cheaper and more resilient, reducing Europe's vulnerability to external actors[286]. In other words, producing clean energy "at home" reduces the risks of supply shocks and at the same time lowers costs in the long term, improving European competitiveness. Therefore, climate policies, such as Green Deal, and energy security policies converge and achieving decarbonisation

[283] European Commission, Directorate-General for Energy. (2023, August 18). *EU reaches 90% gas storage target ahead of winter*. Retrieved from https://energy.ec.europa.eu/news/eu-reaches-90-gas-storage-target-ahead-winter-2023-08-18_en#:~:text=The%20EU%20has%20taken%20a,purchases%20of%20gas%2C%20with%20a

[284] European Parliament. (2015). *European Energy Security Strategy* (A8-0164/2015, para. 21). Retrieved from https://www.europarl.europa.eu/doceo/document/A-8-2015-0164_EN.html#:~:text=21,energy%20buildings

[285] Modal shift: It indicates the passage of people or goods from one mode of transport to another, towards more efficient or sustainable alternatives, such as from road transport to rail transport, from private cars to buses or bicycles. This change often responds to comparative advantages such as cost, time, reliability or environmental impact

[286] European Union Institute for Security Studies (EUISS). (2023). *Reimagining European energy security: towards a whole-system approach* (Brief). EUISS. Retrieved from https://www.iss.europa.eu/publications/briefs/reimagining-european-energy-security-towards-whole-system-approach#:~:text=The%20EU%20needs%20to%20look,side%20management%20into%20the%20broader

goals is not only an environmental choice but a strategic necessity for the EU's autonomy and security. It could therefore be appropriate to legislatively armor, through regulations and directives, the targets for reducing emissions and renewable penetration, ensuring continuity of investments beyond political cycles, and explore new initiatives such as a European sovereign wealth fund for clean energy that supports the growth of EU industrial champions in solar, wind, batteries and grids.

The EU's goal must be to increase its overall resilience in every geostrategic and geoeconomic aspect. Energy resilience, in fact, is not an end but represents an essential prerequisite for the political and defence resilience of the Union. Without energy security, Europe's ability to act with strategic independence and maintain internal cohesion in the face of crises would be undermined. As recognised by NATO and the EU, energy is now an integral part of common security and strengthening it means reducing the leverage of blackmail by external powers and ensuring stability for our societies[287]. For this reason, the energy policies outlined above should be implemented with the same urgency and determination as one would address a threat to national security, as ultimately there can be no European security without energy security.

[287] European Parliament. (2015). *European Energy Security Strategy* (A8-0164/2015, para. 143). Retrieved from https://www.europarl.europa.eu/doceo/document/A-8-2015-0164_EN.html#:~:text=143,dependency%20on%20external%20energy%20sources

4.3 A ten-year vision (2030-2040)

In light of current trends and geopolitical uncertainties, it is interesting to try to outline three possible alternative scenarios for the European geopolitical-energy evolution in the medium to long term, taking the decade 2030-2040 as a range. These scenarios, which for literary convenience we will deal with in descending order starting from the "*optimistic"* scenario, passing through the "*intermediate"* one and concluding with the "*pessimistic*" one, represent a foresight exercise that composes the "geopolitical-energy puzzle" in different ways, highlighting the potential economic, political and security consequences of each context. There are five key variables considered, and these are the ones on which the theoretical and imaginary construction of possible scenarios is based:

1) the pace of the green transition within the EU
2) the evolution of energy demand
3) the stability of external supplier countries
4) the evolution of global geopolitical relations, with a particular focus on geographical areas in Russia, the Middle East and China
5) the degree of unity and preparedness of the EU in addressing the challenges.

4.3.1 Optimistic Scenario - Europe as a Green Leader and Shared Security

In this utopian scenario with minimal percentages of real success, the European Union is able to fully implement the energy transition according to the most ambitious plans, while strengthening its internal cohesion and international projection. By 2030, the EU will meet, and exceed, the *Fit for 55* and REPowerEU targets with renewables accounting for at least 45% of final energy. Thanks to massive investments in wind, offshore and

onshore[288], solar and new technologies (marine, geothermal), by 2040 about 70% of European electricity will be generated from renewable sources, making the electricity sector virtually decarbonized and reducing dependence on gas for generation. Energy storage capacity, with new generation batteries, hydrogen as a carrier and pumped hydropower, largely solves the problem of intermittency, ensuring the stability of supply. On the gas front, Europe in this scenario has drastically reduced its consumption of methane: the use of fossil gas is limited to a few residual sectors and in any case offset by diversified supplies, mainly LNG from trusted partners and pipelines from Norway and the Mediterranean, and by the increase in domestic renewable gases such as biomethane and hydrogen. Fossil fuel imports collapse in absolute value, annual spending on energy imports, which in 2023 was still around €450 billion, is drastically reduced[289], freeing up resources for the domestic economy. The EU becomes a net exporter of clean energy technology and solutions with European industries leading the way in the production of electrolysers, wind turbines, innovative photovoltaic installations, smart grids and electric vehicles, fuelling economic growth and green job creation. In foreign policy, Europe aims to take the lead in fighting climate change and assisting neighbouring countries with the transition through the export of clean energy or by cooperating on renewable projects with international partners. Energy security is the highest expression because having eliminated critical dependencies on unstable suppliers, the EU is able to withstand geopolitical shocks without serious repercussions. In an idealist view, any remaining tensions with Russia would not have a direct impact on European energy, just as Middle Eastern crises would have attenuated effects given Europe's reduced hunger for oil and gas. The EU has also implemented a permanent internal energy solidarity mechanism under which, in the event of local problems, such as a country hit by a disaster damaging its infrastructure, others can immediately provide support via the integrated grid and common reserves. This optimistic scenario foreshadows a Europe that is finally

---

[288] *Onshore wind* power refers to plants installed on land, characterized by lower costs and consolidated technologies, but with energy yield limits and greater impact on the landscape. *Offshore wind*, on the other hand, is installed at sea, on shallow waters (fixed turbines) or deep (floating turbines), where the winds are more constant and intense: it offers a much higher energy potential, in the face of higher costs and infrastructure complexity.

[289] European Union Institute for Security Studies (EUISS). (2023). *Reimagining European energy security: towards a whole-system approach* (Brief, p. 3). EUISS. Retrieved from https://www.iss.europa.eu/publications/briefs/reimagining-european-energy-security-towards-whole-system-approach#:~:text=for%2062.5,premium%20of%20up%20to%20five

autonomous from a strategic energy point of view, where environmental sustainability is combined with security and, at the end, energy from vulnerability becomes a point of strength and pride for the European identity. On the economic level, stable and lower energy prices, thanks to the lower marginal cost of renewables, fuel industrial competitiveness. On the political level, the EU is able to speak with a single voice in the energy field, having completed the Energy Union. This is the vision of a Europe as a global leader in the green transition, capable of combining decarbonization and security of supply, a condition in which geopolitical risks related to energy are greatly reduced. This future fully reflects the EUISS's wish that:

"An energy system based on renewables would not only restore security of supply in the EU but would also offer cheaper and more resilient energy."[290]

4.3.2 Interim Scenario - Improved resilience but persistent dependencies

In an interim scenario, the evolution of the European energy set-up shows significant but incomplete progress, leaving the EU still exposed to certain dependencies and fragilities, albeit in a more manageable context than in the past. The EU manages to reduce its consumption of fossil fuels moderately, but not enough to eliminate the import of gas and critical raw materials from third countries. By 2030, renewables will reach the minimum targets, set at 42-45% of final energy, but beyond this threshold growth slows down due to residual obstacles such as authorization processes that have not been

[290] European Union Institute for Security Studies (EUISS). (2023). *Reimagining European energy security: towards a whole-system approach* (Brief, p. 2). EUISS. Retrieved from https://www.iss.europa.eu/publications/briefs/reimagining-european-energy-security-towards-whole-system-approach#:~:text=The%20EU%20needs%20to%20look,side%20management%20into%20the%20broader

completely resolved, local opposition to new plants, bottlenecks in supply chains. In 2040, renewables cover a substantial but not dominant share of electricity generation, 50-60%, and natural gas continues to provide integration and flexibility to the system, especially in winter and during peak demand. As a result, Europe remains a gas importer on a significant scale, albeit with widely diversified supplies with Russian gas is now zero, but the EU depends on North American LNG, Middle Eastern and African gas. This "widespread" dependence is less dangerous than the past one-way dependence, however it involves some critical issues. First of all, supply costs remain high and the EU continues to pay a premium for LNG compared to US domestic prices, according to EUISS data, *"by importing gas from the US, Europe pays up to five times the price compared to the US domestic cost"*[291] affecting the competitiveness of certain industrial sectors. Second, relying on multiple suppliers does not eliminate the risk of shocks, and assuming a political crisis in Algeria or a technical problem in Norway could still cause price tensions and the need for quick replacements. On the oil front, Europe in this scenario has not yet completely eliminated the use of oil, especially in heavy transport and in the aviation sector, so it remains sensitive to global market fluctuations and OPEC decisions, although the structural decline in demand reduces the impact compared to the past. The clean transition continues but highlights a dependence on the raw materials and technological components necessary for green energy. The EU, despite having strengthened industrial capacity in some areas, continues to import a large part of its solar panels, batteries and critical materials. China in particular remains dominant in key segments, such as the production of photovoltaic cells and magnets for wind turbines, and in 2030-2040, Europe could still be heavily dependent on Chinese supplies, for example for lithium and magnets of which 98% are now produced in China[292]. This would configure a new interdependence that would shift from Russian gas to global technological supply chains. This intermediate condition has advantages and disadvantages. On the one hand, the EU has meanwhile strengthened its resilience tools: storage is managed efficiently and is full every winter;

[291] European Union Institute for Security Studies (EUISS). (2023). *Reimagining European energy security: towards a whole-system approach* (Brief, p. 5). EUISS. Retrieved from https://www.iss.europa.eu/publications/briefs/reimagining-european-energy-security-towards-whole-system-approach#:~:text=17,huge%20cost%20to%20European%20competitiveness

[292] European Union Institute for Security Studies (EUISS). (2023). *Reimagining European energy security: towards a whole-system approach* (Brief, p. 6). EUISS. Retrieved from https://www.iss.europa.eu/publications/briefs/reimagining-european-energy-security-towards-whole-system-approach#:~:text=Even%20in%20renewable%20energies%2C%20there,6

LNG import infrastructure has been expanded, by a +20% capacity compared to 2021[293], ensuring margins of flexibility. There is a coordinated response mechanism to energy crises thanks to the security of supply regulation and regional emergency plans. In addition, the target of reducing gas demand by 15% has been renewed annually, creating a habit of saving money that mitigates any situations of scarcity. Overall, the EU's energy resilience index has improved, so a harsh winter or Asian competition for LNG could lead to price increases, but it would be unlikely to achieve the large-scale rationing seen in the past. On the other hand, however, Europe has not yet achieved autonomy and the need to import energy, fossil fuels or raw materials, for more than half of its needs, remains, maintaining basic vulnerabilities. In international politics, this intermediate scenario sees the EU in a position of relative stability but not of leadership with a moderate geopolitical, energy weight, since it still depends on agreements with external suppliers and with some of them, Gulf countries or Central Asia, it has to balance energy interests with the promotion of values and other strategic interests, which can limit their freedom of action, leading to a situation that we can define as incomplete strategic autonomy. Nevertheless, it should be emphasized that Europe in this scenario has learned the lessons of the crisis and diversified its dependencies with no single actor having the tools to hold the EU hostage as Russia did, and this in itself is a crucial advance. The EU's energy interdependence now resembles a more complex network with the EU that is both an important customer of various suppliers, which also provides it with a certain leverage to negotiate, and a technological partner in global supply chains. The main challenge remains to complete the internal transition and phase out these new dependencies as well, and if this does not happen, the EU will remain vulnerable to external dynamics, such as a sudden boom in Asian LNG demand or a lithium supply shock could still hit it hard. The mid-term scenario describes an EU that is more resilient than in the past, but still on the road to full energy security, a Europe that has "plugged the loopholes" but needs to continue its journey to secure its energy supply and long-term competitiveness. In international politics it is always good to balance aspirations with real chances of success

[293] Institute for Energy Economics and Financial Analysis (IEEFA). (2024). *European LNG Tracker*. IEEFA. Retrieved from https://ieefa.org/european-lng-tracker#:~:text=European%20LNG%20Tracker%20,terminal%20delays%20and%20indefinite

of the project you have in mind. Henry Kissinger, one of the leading exponents of the realpolitik trend in the field of international politics, stated:

"A country that demands moral perfection in its foreign policy will achieve neither perfection nor security"[294]

Although it is not the best scenario achievable by Europe, it is certainly the most plausible and which, in perspective, may have a bearing on reality and with the real European possibilities. If the interlocking game that makes up international policy, and consequently energy policy, follows a coherent trend and Europe is able to play its cards and respect the commitments made, then the achievement of this scenario is not utopian but there is room for achievement. This, like the others presented, are static scenarios that do not take into consideration variations and changes of common and frequent scenario in the field of international politics and geopolitics and therefore it should be pointed out that the achievement of these objectives does not depend exclusively on the punctuality with which Brussels will be able to keep its commitments but also on the context within which it will find itself acting.

4.3.3 Pessimistic Scenario - Concurrent Crises and New European Vulnerability

The pessimistic scenario outlines a situation in which things take a turn for the worse on the geopolitical-energy front, confronting the EU with serious and simultaneous challenges that undermine its security and cohesion. In this hypothetical future, several

[294] Kissinger, H. (1994). Reflections on containment. *Foreign Affairs, 73*(3), 113–130. Council on Foreign Relations. https://www.jstor.org/stable/20046662 (p. 130)

energy crises overlap in the decade 2030-2040, adding to other crises of a different nature. First of all, the confrontation with Russia could remain unresolved or even worsen: imagining that the war in Ukraine will continue in a frozen form and that Moscow will continue to act as a revisionist power, the risk of sabotage or hybrid attacks on European energy infrastructure remains high. Already in 2022, the sabotage of the Nord Stream gas pipelines in the Baltic signaled this threat, in a pessimistic scenario, Russia, or non-state actors supported by it, could target other critical assets, gas pipelines such as Transmed or TANAP, regasification plants, or power grids, perhaps through cyber-attacks, in order to create economic disruption and political divisions in the EU. At the same time, the picture in the Middle East and North Africa could deteriorate and a major geopolitical crisis can be hypothesized, such as a conflict involving Iran and disrupting the Persian Gulf, or internal instabilities in key producing countries, a political collapse in Algeria, or new civil wars in resource-rich regions. A crisis of this magnitude in the Middle East would interrupt the flow of oil and LNG globally, reviving oil shock dynamics, Europe, although less dependent than it used to be, would still be affected, suffering oil shortages and sharp price increases. The Asian front also presents potentially nefarious unknowns. A scenario of conflict between China and the United States, the long-awaited and expected military crisis around Taiwan, would create chaos in world trade, making it difficult for Europe to source many strategic raw materials such as rare earths and electronic components, and diverting available LNG to Asia, resulting in shortages for Europe. In addition, China, in retaliation against the West, could limit the export of energy technologies or key materials, bringing the European renewable installation program to its knees since, as mentioned, the EU depends on China for very high percentages of solar and wind components[295]. In essence, this scenario configures a perfect energy storm with the EU that would find itself cut off both from traditional fossil fuels, due to conflicts or crises in supplier countries, and from alternative energy supply chains, due to global trade or military conflicts. The economic consequences would be very heavy with skyrocketing energy prices and real physical scarcity of fuels at some times. Europe could face gas and

[295] European Union Institute for Security Studies (EUISS). (2023). *Reimagining European energy security: towards a whole-system approach* (Brief, p. 6). EUISS. Retrieved from https://www.iss.europa.eu/publications/briefs/reimagining-european-energy-security-towards-whole-system-approach#:~:text=Even%20in%20renewable%20energies%2C%20there,6

oil rationing in the most critical situations, with recessionary impacts, temporary closures of industries, controlled blackouts and a return of double-digit energy inflation. The blow to competitiveness would be serious with many companies that could relocate production outside Europe to escape unsustainable energy costs, triggering unemployment and social discontent. Politically, the stressed EU would see internal tensions grow in a scenario that would heighten the nationalist instincts of some member states that might be tempted to break European solidarity to secure bilateral supplies. This would put a strain on the unity of the Union, recalling dynamics already seen in 1973 or during the 2021 gas crisis, but in an amplified form. A lack of solidarity in a structural supply emergency would risk collapsing the single energy market and generating deep political frictions. In parallel, the rising cost of living and economic difficulties would fuel Eurosceptic movements, jeopardizing the stability of some governments and confidence in the European project. In terms of security, a vulnerable Europe on the energy front would also be a weak geopolitical player, unable to act decisively in international crises, for fear of further repercussions on supplies, and would risk playing into the hands of the great powers instead of influencing it. For example, dependence on US emergency supplies could increase to such an extent that the EU would become even more tied to the US, with little decision-making autonomy in foreign policy. In addition, an acute energy crisis would take resources away from public budgets, absorbed by subsidies to calm prices, and could reduce allocations for common defense, also weakening Europe's deterrence capacity. In summary, the pessimistic scenario describes a new vulnerability of the EU, due to a combination of adverse factors: energy would once again become a "weapon" of blackmail and a cause of division, partially nullifying the progress achieved after 2022. This prospect, however extreme, serves as a warning as it highlights the importance of continuing to work on contingency and diversification plans because, as the EP warns, *"in the event of a structural supply crisis, the risk of lack of solidarity between Member States remains an untested weakness"*[296]. Fortunately, this negative scenario is not an obligatory fate, it is rather the framework that the EU must strive to avoid through the

[296] European Parliamentary Research Service (EPRS). (2023). *Four challenges of the energy crisis for the EU's strategic autonomy* (EPRS Briefing EPRS_BRI(2023)747099, p. 2). European Parliament. Retrieved from https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747099/EPRS_BRI(2023)747099_EN.pdf

strategies discussed, keeping the focus on global risk factors and building antibodies (stocks, contingency plans, alliances) against possible concomitant shocks.

4.4 The Energy Union: the sole beacon of hope

The trajectory of energy in Europe in recent years, from historical vulnerabilities to recent strategic turning points, offers a profound lesson on the central role that energy plays in the geopolitical identity of the European Union. Since the dawn of European integration, energy has been a glue in the common project, as evidenced by the 1951 ECSC Coal and Steel Treaty and the 1957 Euratom Treaty on Nuclear Cooperation, which placed energy at the heart of the idea of a united Europe, recognising that the sharing of strategic resources would cement peace and prosperity. Today, in a radically changed context, energy is once again the test bed for European unity and a defining factor for its international projection. The joint management of the 2022-2023 energy crisis has shown that solidarity and cohesion are not abstract concepts, but concrete energy policy tools. Through this crisis, Member States have reduced gas demand in a coordinated manner by 15%, shared volumes of gas in critical situations and financially supported the countries most affected by price increases, avoiding the temptation of disorderly unilateral actions[297]. This collective effort has strengthened the sense of belonging to a community of energy destiny, helping to shape the EU's geopolitical identity as a unified and supportive actor in the face of external pressures.

Energy is now recognized as a strategic issue on a par with defense and foreign policy, an awareness accelerated by the war in Ukraine. If in the past energy security was treated mainly as an economic or technical issue, now it is clearly an integral part of the security of the Union and is discussed at the highest political levels, like European Council, NATO meetings and G7, together with defense dossiers. It is enlightening to note that energy security was already mentioned in the 2016 EU Global Strategy, but it was the Russian invasion of 2022 that definitively sanctioned that energy security is

[297] European Parliamentary Research Service (EPRS). (2023). *Four challenges of the energy crisis for the EU's strategic autonomy* (EPRS Briefing EPRS_BRI(2023)747099, p. 3). European Parliament. Retrieved from https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2023)747099#:~:text=supply%2C%20filling%20gas%20storage%20and,of%20a%20functioning%20and%20well

security tout court[298]. Proof of this are the statements of European and Atlantic leaders who for years now have been stressing the glue between European security and energy security, stressing that the protection of critical infrastructures and the guarantee of supplies are essential conditions for political stability. This evolution has an identity scope as the EU is gradually defining itself as a geopolitical community capable of defending not only its borders, but also its economic and energy "blood vessels". In this sense, we can speak of a true Energy Union that complements, and contributes, to the political Union, achieving a result that has been desired for decades and is now being achieved under the pressure of events.

The future of the European Union as an autonomous geopolitical actor will depend largely on its ability to transform past energy vulnerability into a strategic force. This means capitalizing on the lessons learned and innovations introduced: making environmental sustainability a source of independence, freeing oneself from the blackmail of fossil suppliers, energy resilience a source of international credibility by showing that Europe can withstand shocks and help others to do so, and intra-European solidarity a competitive advantage because it is theoretically evident that no country alone could obtain supply conditions or capacity comparable to those of an integrated market of 450 million consumers[299]. In practice, energy can become for the EU that supplementary pillar, and symbol of shared sovereignty, that the single currency has been in the economic sphere. If the EU succeeds, for example, in speaking with a single voice in the purchase of gas or hydrogen, in supporting key infrastructures with a common budget, and in presenting itself united in global climate and energy forums, it will have made a geopolitical leap comparable to the Monetary Union. On the contrary, any reversal towards national fragmentation in the energy field would undermine the entire edifice of European strategic autonomy. It should be emphasized that sustainability, resilience and solidarity are not slogans, but the three pillars on which to build Europe's strategic

[298] Clingendael Institute. (2022). *Transitioning towards energy security beyond EU borders* (Policy Brief, p. 1). Netherlands Institute of International Relations 'Clingendael'. Retrieved from https://www.clingendael.org/sites/default/files/2022-10/Policy_brief_Transitioning_towards_energy_security_beyond_EU_borders.pdf#:~:text=,is%20now%20fully%20the

[299] Eurostat. (2025). *Population on 1 January by age and sex (tps00001).* European Commission. https://ec.europa.eu/eurostat/databrowser/view/tps00001/default/table?lang=en

strength in the energy field. Sustainability, understood as the transition to renewables and carbon neutrality by 2050, drastically reduces exposure to geopolitical risks related to exhaustible resources concentrated in a few countries. Resilience, understood as the ability to absorb shocks without losing functionality, is achieved through diversification, storage, smart grids and contingency plans, elements that, as discussed, the EU is putting in place and will have to keep up to date in the face of changing threats. Finally, solidarity is the indispensable glue because it means mutual trust, fair compensation mechanisms and burden-sharing, so that all member states, large or small, peripheral or central, feel part of a common effort and benefit from it. Only with solidarity can the EU address trade-offs without disintegrating, and it is solidarity that ultimately transforms a group of countries into a political community with a shared destiny.

Looking ahead, the role of energy in the EU's geopolitical identity could also become a factor of external influence. A Europe that has resolved its fragilities will be freer to promote high standards and principles of energy cooperation in the neighbourhood and in the world, leading partnerships for renewable energy in sub-Saharan Africa, imposing transparency rules in global gas/hydrogen markets, or contributing to the energy security of allied countries (NATO and beyond) perhaps through the sharing of storage and technologies. In this way, energy would become an instrument of soft power and strategic projection for the EU, consistent with its ethical and social values, which include issues such as the fight against climate change and international cooperation, and with its economic and political interests, such as maintaining the stability of neighbouring regions and preventing conflicts over resources.

At the end of this research, we can therefore conclude that the crisis triggered by the war in Ukraine has accelerated history, forcing Europe to make choices that had long been considered necessary but had not yet been fully implemented. Energy has revealed the fragility of the Union, but it has also brought out its latent strength when it has been able to react united. The EU is now at a crucial stage and has the opportunity to have an impact on its events. The path must be traced and includes continuing with the consolidation of its strategic autonomy in one of the most vital sectors, laying the material foundations of its political and defense independence. On the contrary, hesitation or a return to the status quo ante could compromise not only energy security, but the entire

project of a sovereign and leading Europe. As highlighted, energy today embodies a historic challenge and opportunity for the EU like the challenge of correcting a structural vulnerability and the opportunity to redefine itself as a united and sustainable power. The stakes could not be higher, as the future of the Union as a credible global player, capable of guaranteeing the well-being of its citizens and defending its values on a global scale, and defending its geographical and territorial integrity, depends to a large extent on the success of this transformation. Choosing the path of sustainability, resilience and energy solidarity means choosing a stronger and freer Europe, otherwise there is a risk of a return to a fragmented Europe like the one that was formed between the two world wars. The energy affair teaches that the European Union can only truly be said to be strategically autonomous, and therefore secure and influential, when it has fully converted its energy vulnerability into a shared strategic force, illuminating the path with the principles of sustainability, resilience and unity that have always been the core of the idea of Europe.

BIBLIOGRAPHY:

Al Jazeera. "QatarEnergy, ConocoPhillips sign LNG deal for Germany." *Al Jazeera*, 29 November 2022. https://www.aljazeera.com/news/2022/11/29/qatarenergy-conocophillips-sign-lng-deal-for-germany

Al Jazeera. "Russian Gas Flow to Europe via Ukraine Stopped: Who Does It Hurt?" *Al Jazeera*, 1 gennaio 2025.

Al Jazeera. (2025, January 1). Russian gas flow to Europe via Ukraine stopped: Who does it hurt? *Al Jazeera*. Retrieved from https://www.aljazeera.com/news/2025/1/1/russian-gas-flow-to-europe-via-ukraine-stopped-who-does-it-hurt

Algeria Invest. (2024, December 19). *Gaz: Algeria becomes the European Union's leading supplier in October.* Retrieved from https://www.algeriainvest.com/premium-news/gaz-lalgerie-premier-fournisseur-de-lunion-europeenne-en-octobre

American Foreign Policy Council. (2023). *Europe's nuclear energy and Central Asian uranium.* Retrieved from https://www.afpc.org/publications/articles/europes-nuclear-energy-and-central-asian-uranium

ARERA – Autorità per l'energia elettrica, il gas e il sistema idrico. (2014). *Annual report on the state of services and on the activities carried out – Year 2013* (Resolution 406/2014/I/COM). ARERA. https://www.arera.it/fileadmin/allegati/docs/14/406-14.pdf

Astrov, V., & Hanzl-Weiss, D. (2025, March). *The European gas market: Emancipating from Russia* (Policy Notes and Reports No. 91). The Vienna Institute for International Economic Studies (wiiw). https://wiiw.ac.at/p-7261.html

Autorità per l'Energia, Reti e Ambiente (ARERA). (1999). *Lo stato dei servizi: il settore elettrico – Anni 1998-99* [PDF]. ARERA. Retrieved from https://www.arera.it/allegati/relaz_ann/00/cap2300.pdf

Baldwin, D. A. (1980). Interdependence and Power: A Conceptual Analysis. *International Organization*, *34*(4), 471–506. http://www.jstor.org/stable/2706510

Banco de España. (2023). *Spain and Portugal's response to the European energy crisis. Boletín Económico, 3/2023.*Madrid: Banco de España. https://www.bde.es/f/webbe/SES/Secciones/Publicaciones/InformesBoletinesRevistas/BoletinEconomico/23/T3/Files/be2303-art02e.pdf

Bendiek, A., & Kerttunen, M. (2023). *Enhancing EU–NATO cooperation on critical infrastructure protection* (SWP Working Paper). Stiftung Wissenschaft und Politik (SWP).

BORN. (2024, February 15). *Critical Undersea Infrastructure Coordination Cell at NATO Headquarters*. North Atlantic Treaty Organization.

BORN. (n.d.). *Resilience, civil preparedness and Article 3*. North Atlantic Treaty Organization. https://www.nato.int/cps/en/natohq/topics_132722.htm

Brookings Institution. (2022, March 24). *Europe's messy Russian gas divorce*. Brookings. https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/

Brookings Institution. (2023). *After the energy crisis: Policy responses in the Iberian Peninsula.* Washington, DC: Brookings Institution. https://www.brookings.edu/articles/after-the-energy-crisis-policy-responses-in-the-iberian-peninsula/

Brookings Institution. (2023). Europe's messy Russian gas divorce. *Brookings*. Retrieved from https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/

Bruegel. *European Natural Gas Imports*. Last updated June 2025. https://www.bruegel.org/dataset/european-natural-gas-imports.

Carnegie Endowment for International Peace. (2024, May). NATO, Baltic Sea security, and the lessons from Nord Stream and Balticconnector. *Carnegie Endowment for International Peace*. Retrieved from https://carnegieendowment.org/research/2024/05/nato-baltic-sea-security-nord-stream-balticconnector?lang=en

Çelikpala, M., & Tok, E. (2019). *Energy interdependence between Russia and the European Union: Geopolitical stability or vulnerability?* Uluslararası İlişkiler / International Relations, 16(62), 3–20. https://dergipark.org.tr/tr/download/article-file/815787

Center for Strategic and International Studies (CSIS). (2022, December 15). *Energy crisis provides opportunity for Moldova*. CSIS. https://www.csis.org/analysis/energy-crisis-provides-opportunity-moldova

Center for Strategic and International Studies (CSIS). (2022, November 23). *Moldova's gas futures*. CSIS. https://www.csis.org/analysis/moldovas-gas-futures

Center for Strategic and International Studies (CSIS). (2023, June 15). *Power plays: Europe's energy crisis response and its implications.* Retrieved from https://www.csis.org/analysis/power-plays

Center for Strategic and International Studies. (2022, November 23). *Moldova's gas futures*. CSIS. https://www.csis.org/analysis/moldovas-gas-futures

Center on Global Energy Policy. (2022). *REPowerEU tracker.* Columbia University – SIPA. Retrieved from https://www.energypolicy.columbia.edu/publications/repowereu-tracker/

Center on Global Energy Policy. (2023, February 21). *Understanding Germany's gas price brake: Balancing fast relief and complex politics*. Columbia University | SIPA. https://www.energypolicy.columbia.edu/publications/understanding-germanys-gas-price-brake-balancing-fast-relief-and-complex-politics/

Center on Global Energy Policy. (n.d.). *REPowerEU tracker*. Columbia University | SIPA. https://www.energypolicy.columbia.edu/publications/repowereu-tracker/

Centre for Research on Energy and Clean Air. (2024, February 24). *EU imports of Russian fossil fuels in third year of invasion surpass financial aid sent to Ukraine*. CREA. https://energyandcleanair.org/publication/eu-imports-of-russian-fossil-fuels-in-third-year-of-invasion-surpass-financial-aid-sent-to-ukraine/

Chamber of Deputies, Energy Markets Dossier, 2021, https://documenti.camera.it/leg19/dossier/pdf/AT008.pdf.

Clean Energy Wire. (2023, August 22). *Germany's dependence on imported fossil fuels*. Clean Energy Wire. https://www.cleanenergywire.org/factsheets/germanys-dependence-imported-fossil-fuels

Clingendael Institute. (2022). *Transitioning towards energy security beyond EU borders* (Policy Brief, p. 1). Netherlands Institute of International Relations 'Clingendael'. Retrieved from https://www.clingendael.org/sites/default/files/2022-10/Policy_brief_Transitioning_towards_energy_security_beyond_EU_borders.pdf#:~:text=,is%20now%20fully%20the

Congressional Research Service. (2023, March 29). *U.S. liquefied natural gas and Europe*. CRS Report R47468. Library of Congress. https://www.congress.gov/crs-product/R47468

Congressional Research Service. (2023). *U.S. measures to provide liquefied natural gas for the European Union* (CRS Report No. R47468). Library of Congress. Retrieved from https://www.congress.gov/crs-product/R47468

Congressional Research Service. (2023). *U.S. measures to provide liquefied natural gas for the European Union* (CRS Report No. R47468). Library of Congress. Retrieved from https://www.congress.gov/crs-product/R47468

Conley, H. A., & Tertytchnyi, M. (2024, May). *NATO, Baltic Sea Security, and the Lessons from Nord Stream and Balticconnector*. Carnegie Endowment for International Peace.

Consilium. (2025). *Where does the EU's gas come from?* Council of the European Union. Retrieved from https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/

Council of the European Union. (2022). *How dependent are EU member states on energy imports?* Retrieved from https://www.consilium.europa.eu/en/infographics/how-dependent-are-eu-member-states-on-energy-imports/

Council of the European Union. (2025). *Gas storage capacity* [Infographic]. Brussels: Council of the EU. https://www.consilium.europa.eu/en/infographics/gas-storage-capacity/

Council of the European Union. (2025). Where does the EU's gas come from? *Council of the European Union*. Retrieved from https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from/#:~:text=Gas%20is%20mainly%20used%20for,between%202021%20and%202024

Council of the European Union. (n.d.). *REPowerEU*. Council of the EU. https://www.consilium.europa.eu/en/policies/repowereu/

Council of the European Union. (n.d.). *United States*. Consilium.europa.eu. https://www.consilium.europa.eu/en/policies/united-states/

Council of the European Union. (n.d.). *Where does the EU's gas come from?* Consilium.europa.eu. https://www.consilium.europa.eu/en/infographics/where-does-the-eu-s-gas-come-from

Crippa, M., Guizzardi, D., Solazzo, E., Muntean, M., Schaaf, E., Pagani, F., & Janssens-Maenhout, G. (2025). *Fossil CO_2 and GHG emissions of all world countries – 2024 Report. Earth System Science Data, 17*(7), 3431–3464. https://doi.org/10.5194/essd-17-3431-2025

Dassenibus, A. (2001). *The liberalisation of the electricity market in Italy*. International Atomic Energy Agency (IAEA) – International Nuclear Information System (INIS). Retrieved from https://inis.iaea.org/records/ghq97-n4x80

Di Cosmo, V. (2013, September). *Modelling and forecasting the Italian electricity price*. Paper presented at the Annual Conference of the Italian Economic Association (SIE), Bologna, Italy. Retrieved from https://www.siecon.org/sites/default/files/oldfiles/uploads/2013/09/DiCosmo.pdf

Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast). *Official Journal of the European Union*, L 328, 82–209. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L2001

Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU. *Official Journal of the European Union*, L 158, 125–199. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0944

Drezner, D. W. (2023). *The dangers of misunderstanding economic interdependence.* Cato Institute. Retrieved from https://www.cato.org/publications/dangers-misunderstanding-economic-interdependence#:~:text=policies%20had%20enriched%20China%20and,the%20risk%20of%20weaponized%20interdependence

Ecomondo. (2023, May 25). *Energy and agriculture: Italy and Algeria are gradually expanding cooperation*. Ecomondo. https://www.ecomondo.com/en/news-detail/energy-and-agriculture-italy-and-algeria-are-gradually-expanding-cooperation%20?newsId=3121715

Economics Observatory. (2023, March 20). *What effects have energy sanctions had on Russia's ability to wage war?* Economics Observatory. https://www.economicsobservatory.com/what-effects-have-energy-sanctions-had-on-russias-ability-to-wage-war

Elliott, Stuart. "Germany Sees LNG Import Capacity of 37 Bcm/year in 2024: Ministry." *S&P Global Commodity Insights*, 13 gennaio 2023. https://www.spglobal.com/commodity-insights/en/news-research/latest-news/natural-gas/011323-germany-sees-lng-import-capacity-of-37-bcmyear-in-2024-ministry.

Ember. (2025, March 27). The final push for EU Russian gas phase-out. Ember. Retrieved from https://ember-energy.org/latest-insights/the-final-push-for-eu-russian-gas-phase-out/

Ember. *The Final Push for EU Russian Gas Phase-Out*. 27 marzo 2025. https://ember-energy.org/latest-insights/the-final-push-for-eu-russian-gas-phase-out/

Enel S.p.A. (2009). *Annual report 2008* (p. 15). Rome: Enel S.p.A. Retrieved from https://www.annualreports.com/HostedData/AnnualReportArchive/e/OTC_ESOCF_2008.pdf

Energy Community. (2025). *Unlocking Trans-Balkan gas flows: WECOM Study Report (final 16.6.2025).* Energy Community Secretariat. https://www.energy-community.org/dam/jcr%3A7e011a2c-26cd-450e-aad3-52611cb7b2a3/Unlocking%20Trans-Balkan%20-%20WECOM%20Study%20Report%20%28final%2016.6.2025%29.pdf

Eni. (2022, April 11). *Eni and Sonatrach agree to increase gas supplies from Algeria through Transmed.* Retrieved from https://www.eni.com/en-IT/media/press-release/2022/04/eni-and-sonatrach-agree-to-increase-gas-supplies-from-algeria-through-transmed.html

Eni. (2023, January 28). *Eni launches a major gas development project in Libya*. Eni S.p.A. https://www.eni.com/en-IT/media/press-release/2023/01/eni-launches-a-major-gas-development-project-in-libya.html

EUNATO Task Force on the Resilience of Critical Infrastructure. (2023, June). *Final Assessment Report: Strengthening the resilience and protection of critical infrastructure*. Publication of the European Commission and NATO.

Euronews, The boom in renewables: Europe's first source in 2023, 27 June 2024, https://it.euronews.com/green/2024/06/27/il-boom-delle-rinnovabili-prima-fonte-in-europa-nel-2023

European Biogas Association. (2022). *Delivering 35 bcm of biomethane by 2030: REPowerEU with biomethane*. Brussels. https://www.europeanbiogas.eu/wp-content/uploads/2022/04/REPowerEU-with-biomethane-FINAL-1.pdf

European Central Bank & Federal Reserve Board. (2025, April 16). *European energy import dependency.* FEDS Notes. Board of Governors of the Federal Reserve System. Retrieved from https://www.federalreserve.gov/econres/notes/feds-notes/european-energy-import-dependency-20250416.html

European Commission *REPowerEU*. Bruxelles, 2025. https://commission.europa.eu/topics/energy/repowereu_en.

European Commission, & The White House. (2022, March 25). *Joint statement between the United States and the European Commission on European energy security.* Retrieved from https://bidenwhitehouse.archives.gov/briefing-room/statements-releases/2022/03/25/joint-statement-between-the-united-states-and-the-european-commission-on-european-energy-security/

European Commission, Directorate-General for Energy. (2023, August 18). *EU reaches 90% gas storage target ahead of winter*. Retrieved from https://energy.ec.europa.eu/news/eu-reaches-90-gas-storage-target-ahead-winter-2023-08-18_en#:~:text=The%20EU%20has%20reached%20its,of%20storage%20capacity%20%28equivalent

European Commission, Directorate-General for Energy. (2025). *Biomethane*. Retrieved from https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biomethane_en#:~:text=renewable%20and%20dispatchable%20energy%20source%2C,period%20amounts%20to%20%E2%82%AC37%20billion

European Commission, Directorate-General for Energy. (2025). *Hydrogen*. Retrieved from https://energy.ec.europa.eu/topics/eus-energy-system/hydrogen_en#:~:text=The%20priority%20for%20the%20EU,zero%2C%20and%20sustainable%20development

European Commission. (2020, September 17). *Stepping up Europe's 2030 climate ambition: Investing in a climate-neutral future for the benefit of our people* (COM/2020/562 final). Brussels: European Commission. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0562

European Commission. (2021, July 14). *'Fit for 55': Delivering the EU's 2030 Climate Target on the way to climate neutrality* (COM/2021/550 final). Brussels: European

Commission. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0550

European Commission. (2022, July 18). *EU and Azerbaijan enhance bilateral relations, including energy cooperation*. European Commission. https://enlargement.ec.europa.eu/news/eu-and-azerbaijan-enhance-bilateral-relations-including-energy-cooperation-2022-07-18_en

European Commission. (2022, July 20). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Save gas for a safe winter*(COM/2022/360 final). EUR-Lex. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A52022DC0360

European Commission. (2022, March 8). *REPowerEU: Joint European action for more affordable, secure and sustainable energy* (Press release IP/22/1511). https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1511

European Commission. (2022, May 18). *REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition*. European Commission – Press corner. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3131

European Commission. (2022). *REPowerEU: Joint European Action for more affordable, secure and sustainable energy (COM(2022) 108 final)*. Brussels: European Commission. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022DC0108

European Commission. (2023, August 18). *EU reaches 90% gas storage target ahead of winter*. Energy. https://energy.ec.europa.eu/news/eu-reaches-90-gas-storage-target-ahead-winter-2023-08-18_en

European Commission. (2023, June). Final assessment report: Strengthening the resilience and protection of critical infrastructure. *European Commission and NATO*.

Retrieved from https://commission.europa.eu/system/files/2023-06/EUNATO_Final%20Assessment%20Report%20Digital.pdf

European Commission. (2023, May 16). *EU Energy Platform: EU attracted over 13.4 bcm of gas in first joint gas purchasing tender*. Energy. https://energy.ec.europa.eu/news/eu-energy-platform-eu-attracted-over-134-bcm-gas-first-joint-gas-purchasing-tender-2023-05-16_en

European Commission. (2023, November). *REPowerEU.* Retrieved from https://commission.europa.eu/topics/energy/repowereu_en#:~:text=In%20November%202023%2C%20the%20revised,renewable%20energy%20in%20the%20EU

European Commission. (2024, December 16). *In focus: Winter preparedness – energy efficiency and savings tips*. Energy. https://energy.ec.europa.eu/news/focus-winter-preparedness-energy-efficiency-and-savings-tips-2024-12-16_en

European Commission. (2025, April 4). *Press statement of European Commissioner for Energy and Housing and Minister of Energy of the Republic of Azerbaijan.* Retrieved from https://energy.ec.europa.eu/news/press-statement-european-commissioner-energy-and-housing-and-minister-energy-republic-azerbaijan-2025-04-04_en

European Commission. (2025, February 24). *Commission steps up support for Ukraine's energy security and paves the way for full market integration.* Brussels: European Commission. https://enlargement.ec.europa.eu/news/commission-steps-support-ukraines-energy-security-and-paves-way-full-market-integration-2025-02-24_en

European Commission. (2025, February 4). European Commission and Moldova agree on 2-year comprehensive strategy for energy independence and resilience. https://enlargement.ec.europa.eu/news/european-commission-and-moldova-agree-2-year-comprehensive-strategy-energy-independence-and-2025-02-04_en

European Commission. (2025, June 17). *Commission proposes plan to phase out Russian gas and oil imports*. News. https://commission.europa.eu/news-and-

media/news/commission-proposes-plan-phase-out-russian-gas-and-oil-imports-2025-06-17_en

European Commission. (2025, March 11). *Three years of REPowerEU: European action to end dependence on Russian fossil fuels*. European Commission. https://energy.ec.europa.eu/topics/markets-and-consumers/actions-and-measures-energy-prices/repowereu-3-years_en

European Commission. (2025, May 16). *REPowerEU, 3 years on: Commission takes stock of progress to phase out Russian fossil fuels*. Brussels: European Commission. Retrieved September 2025, from https://energy.ec.europa.eu/news/repowereu-3-years-commission-takes-stock-progress-phase-out-russian-fossil-fuels-2025-05-16_en

European Commission. (2025). *Gas storage*. https://energy.ec.europa.eu/topics/energy-security/gas-storage_en

European Commission. (2025). *Neighbourhood-East – Energy.* Brussels: European Commission. https://energy.ec.europa.eu/topics/international-cooperation/key-partner-countries-and-regions/neighbourhood-east_en

European Commission. (2025). *Projects of common interest and projects of mutual interest.* Brussels: European Commission. https://energy.ec.europa.eu/topics/infrastructure/projects-common-interest-and-projects-mutual-interest_en

European Commission. (2025). *REPowerEU.* Retrieved from https://commission.europa.eu/topics/energy/repowereu_en#:~:text=than%20119%20bcm%20of%20gas,format%20expired%20in%20March%202025

European Commission. (2025). *Roadmap towards ending Russian energy imports (COM(2025) 440 final)*. Brussels: European

Commission. https://vleva.eu/storage/1459/COM%282025%29-440-final_Roadmap-towards-ending-Russian-energy-imports.pdf

European Commission. (2025). *Security of gas supply.* Brussels: European Commission. https://energy.ec

European Commission. (n.d.). *Hydrogen*. Energy. https://energy.ec.europa.eu/topics/eus-energy-system/hydrogen_en

European Commission. (n.d.). *Renewable energy targets*. Energy. https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-targets_en

European Commission. (n.d.). *REPowerEU*. Topics – Energy. https://commission.europa.eu/topics/energy/repowereu_en

European Council on Foreign Relations. (n.d.). *Gas fields in the Eastern Mediterranean*. ECFR. https://ecfr.eu/special/eastern_med/gas_fields

European Economic and Social Committee (EESC). (2023). *Strategic autonomy for Europe.* Brussels: European Union. https://www.eesc.europa.eu/sites/default/files/files/qe-02-23-358-en-n_0.pdf

European Economic Community. (1957). *Treaty establishing the European Economic Community (Treaty of Rome), 25 March 1957*. Official Journal of the European Communities. Retrieved from https://eur-lex.europa.eu/legal-content/IT/TXT/PDF/?uri=CELEX:11957E/TXT

European External Action Service. (2024). *Strategic Compass: Second year report*. EEAS. https://www.eeas.europa.eu/sites/default/files/documents/2024/StrategicCompass_2ndYear_Report_0.pdf

European Network of Transmission System Operators for Gas (ENTSOG). (2022). *Yearly supply outlook 2022–2023* (SO0036-22, p. 8). ENTSOG. Retrieved from https://www.entsog.eu/sites/default/files/2022-07/SO0036-22_Yearly_Supply_Outlook_2022-2023_1.pdf#:~:text=%EF%80%BE%20In%20case%20of%20supply,capacity%20utilisation%20can%20allow%20for

European Network of Transmission System Operators for Gas. (n.d.). *ENTSOG Transparency Platform*. ENTSOG. https://transparency.entsog.eu/#/mapAnatoliĭ, G., Kravchenko, M., & Petrova, I. (2024). The war in Ukraine: The deterrent effect of weaponized interdependence. *Nationalities Papers, 52*(1), 145–163. https://doi.org/10.1017/nps.2023.100

European Parliament, & Council of the European Union. (1996, December 19). *Directive 96/92/EC concerning common rules for the internal market in electricity*. *Official Journal of the European Communities*, L27, 20–29.

European Parliament, & Council of the European Union. (2003, June 26). *Directive 2003/54/EC concerning common rules for the internal market in electricity and repealing Directive 96/92/EC*. *Official Journal of the European Union*, L176, 37–56. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003L0054

European Parliament, & Council of the European Union. (2009, July 13). *Directive 2009/72/EC concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC*. *Official Journal of the European Union*, L211, 55–93. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0072

European Parliament, & Council of the European Union. (2018, December 11). *Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action*. *Official Journal of the European Union*, L328, 1–77.

European Parliament, & Council of the European Union. (2019, June 5). *Directive (EU) 2019/944 on common rules for the internal market for electricity and amending Directive 2012/27/EU*. *Official Journal of the European Union*, L158, 125–199. Retrieved from https://eur-lex.europa.eu/eli/dir/2019/944/oj/eng

European Parliament, & Council of the European Union. (2023). *Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652*(RED III). Official Journal of the European Union, L, 2023/2413. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32023L2413

European Parliament, & Council of the European Union. (2023). *Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast)*. *Official Journal of the European Union*, L 231, 1–128. Retrieved from https://eur-lex.europa.eu/eli/dir/2023/1791/oj?locale=en

European Parliament, European Parliamentary Research Service (EPRS). (2022). *EU Strategic Autonomy Monitor: From concept to capacity, 2013–2023.* Brussels: European Parliament. https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733589/EPRS_BRI%282022%29733589_EN.pdf

European Parliament, *Internal Energy Market*, last modified , https://www.europarl.europa.eu/factsheets/it/sheet/45/mercato-interno-dell-energia.

European Parliament. (2015). *European Energy Security Strategy* (A8-0164/2015). Retrieved from https://www.europarl.europa.eu/doceo/document/A-8-2015-0164_EN.html#:~:text=With%20regard%20to%20the%20current,that%20routes%20are%20directed%20towards

European Parliament. (2025, March 31). *Renewable energy*. Fact Sheets on the European Union. Retrived from https://www.europarl.europa.eu/factsheets/en/sheet/70/renewable-energy

European Parliament. (2025). *State of the Energy Union 2024* (EPRS At a Glance, 769515). Brussels: European Parliamentary Research Service. Retrieved September 2025, from https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/769515/EPRS_ATA(2025)769515_EN.pdf

European Parliamentary Research Service (EPRS). (2023). *Four challenges of the energy crisis for the EU's strategic autonomy* (Briefing EPRS_BRI(2023)747099). European Parliament. Retrieved from https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2023)747099#:~:text=That%20the%20EU%20imports%20almost,incentives%20for%20the%20green%20transition

European Parliamentary Research Service (EPRS). (2023). *Four challenges of the energy crisis for the EU's strategic autonomy* (EPRS Briefing EPRS_BRI(2023)747099, p. 3). European Parliament. Retrieved from https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2023)747099#:~:text=supply%2C%20filling%20gas%20storage%20and,of%20a%20functioning%20and%20well

European Parliamentary Research Service. (2015, January). *Energy security in the EU's external relations* (EPRS Briefing, PE 551.310). European Parliament. https://www.europarl.europa.eu/RegData/etudes/BRIE/2015/551310/EPRS_BRI(2015)551310_EN.pdf

European Parliamentary Research Service. (2016). *Understanding electricity markets in the EU* (EPRS Briefing 593519). European Parliament. Retrieved

from https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/593519/EPRS_BRI%282016%29593519_EN.pdf

European Parliamentary Research Service. (2023). *EU energy partnerships: Norway* (EPRS Briefing, PE 753.941). European Parliament. Retrieved from https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/753941/EPRS_BRI%282023%29753941_EN.pdf

European Union Institute for Security Studies (EUISS). (2023). *Reimagining European energy security: towards a whole-system approach* (Brief, p. 3). EUISS. Retrieved from https://www.iss.europa.eu/publications/briefs/reimagining-european-energy-security-towards-whole-system-approach#:~:text=for%2062.5,premium%20of%20up%20to%20five

European Union Institute for Security Studies (EUISS). (2023). *Reimagining European energy security: towards a whole-system approach* (Brief, p. 2). EUISS. Retrieved from https://www.iss.europa.eu/publications/briefs/reimagining-european-energy-security-towards-whole-system-approach#:~:text=The%20EU%20needs%20to%20look,side%20management%20into%20the%20broader

European Union Institute for Security Studies (EUISS). (2023). *Reimagining European energy security: towards a whole-system approach*. EUISS. Retrieved from https://www.iss.europa.eu/publications/briefs/reimagining-european-energy-security-towards-whole-system-approach#:~:text=17,huge%20cost%20to%20European%20competitiveness

European Union. (2022). *Council Regulation (EU) 2022/2578 of 22 December 2022 establishing a market correction mechanism to protect Union citizens and the economy against excessively high gas prices*. Official Journal of the European Union, L 335, 1–11. https://eur-lex.europa.eu/eli/reg/2022/2578/oj/eng

European Union. (2022). *Directive (EU) 2022/2557 of the European Parliament and of the Council of 14 December 2022 on the resilience of critical entities. Official Journal of the European Union,* L 333, 164–196. https://eur-lex.europa.eu/eli/dir/2022/2557/oj

Eurostat. (2021). *From where do we import energy?* Statistics Explained. Retrieved from https://ec.europa.eu/eurostat/statistics-explained/SEPDF/cache/104551.pdf

Eurostat. (2022, March 28). *EU imports 58% of its energy in 2020*. Eurostat News. https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220328-2

Eurostat. (2023). *Energy statistics — an overview.* Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview

Eurostat. (2024, December 17). *International trade in goods, October 2024: EU energy deficit widens*. Eurostat News Release. https://ec.europa.eu/eurostat/web/products-euro-indicators/w/6-17122024-ap

Eurostat. (2024, September 23). *Drop in imports of energy products to the EU — Q2 2024.* Eurostat News. Retrieved from https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20240923-1

Eurostat. (2024). *Energy statistics — an overview.* Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview

Eurostat. (2024). *EU imports of energy products – latest developments.* Retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_imports_of_energy_products_-_latest_developments

Eurostat. (2024). *Shedding light on energy in the EU — 2024 interactive edition.* Retrieved from https://ec.europa.eu/eurostat/web/interactive-publications/energy-2024

Eurostat. (2025, July 2). *Energy mix in the EU in 2024: Renewables on the rise, fossil fuels in decline* [News release]. European Commission. Retrieved from https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20250702-1

Eurostat. (2025, May). *EU imports of energy products – latest developments*. Eurostat. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_imports_of_energy_products_-_latest_developments

Eurostat. (2025). *Population on 1 January by age and sex (tps00001)*. European Commission. https://ec.europa.eu/eurostat/databrowser/view/tps00001/default/table?lang=en

Farrell, H., & Newman, A. L. (2019). Weaponized interdependence: How global economic networks shape state coercion. *International Security, 44*(1), 42–79. https://doi.org/10.1162/isec_a_00351

Federal Reserve Bank of Dallas. (2024, May 14). *Russian oil sanctions: One year in*. Dallas Fed Economics. https://www.dallasfed.org/research/economics/2024/0514

Florence School of Regulation. (n.d.). *Electricity markets in the EU*. European University Institute. Retrieved September 3, 2025, from https://fsr.eui.eu/electricity-markets-in-the-eu/

Fontan, C. (2025, February 10). *Between the Baltic and the Balkans: The new geopolitics of gas* (European issues No. 775). Fondation Robert Schuman. https://server.www.robert-schuman.eu/storage/en/doc/questions-d-europe/qe-775-en.pdf

Friedrich Naumann Foundation for Freedom. (2023, February 28). *Pro-Russian disinformers blame European sanctions for high energy prices*. Friedrich Naumann Foundation. https://www.freiheit.org/central-europe-and-baltic-states/pro-russian-disinformers-blame-european-sanctions-high-energy

Gartzke, E. (2007). The Capitalist Peace. *American Journal of Political Science*, *51*(1). http://www.jstor.org/stable/4122913

Goldthau, A., & Sitter, N. (2015). *A liberal actor in a realist world: The European Union regulatory state and the global political economy of energy*. Oxford University Press.

Government Offices of Sweden. (2022). *Minister for Energy and Digital Development Khashayar Farmanbar: Articles 2021–2022.* Stockholm: Government of Sweden. https://www.government.se/contentassets/b8c8d3469ecf4f03bae7a5b1670b4df0/minister-for-energy-and-digital-development-khashayar-farmanbar-articles-2021-2022.pdf

Gritz, A., & Wolff, G. B. (2023, February 15). *Europe's messy Russian gas divorce*. Brookings Institution.

Gross, S., & Stelzenmüller, C. (2023). *Europe's messy Russian gas divorce.* Brookings Institution. https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/

Gross, Samantha, e Constanze Stelzenmüller. "Europe's Messy Russian Gas Divorce." *Brookings Institution*, 18 giugno 2024. https://www.brookings.edu/articles/europes-messy-russian-gas-divorce/#:~:text=became%20the%20largest%20source%20of,finally%20went%20through%20in%202015.

Henderson, J., & Mitrova, T. (2024). *Expansion of the Southern Gas Corridor.* OIES Paper NG 180. Oxford Institute for Energy Studies. https://www.oxfordenergy.org/wpcms/wp-content/uploads/2024/01/Expansion-of-the-Southern-Gas-Corridor-NG180.pdf

Hirschman, A. O. (1945). *National power and the structure of foreign trade*. Berkeley: University of California Press. https://dspace.gipe.ac.in/xmlui/bitstream/handle/10973/29303/GIPE-026809.pdf

Institut de Relations Internationales et Stratégiques (IRIS). (2025, April 17). *Pipeline politics: Algeria, Italy and the great Mediterranean balancing* (Observatoire Maghreb-Méditerranée Note). Retrieved from https://www.iris-france.org/wp-content/uploads/2025/04/ObsMaghreb_2025_04_17_Pipeline_algerie_Note_EN.pdf

Institute for Energy Economics and Financial Analysis (IEEFA). (2025, February 18). *Europe's LNG imports decline 19% with gas demand at 11-year low.* Retrieved from https://ieefa.org/articles/europes-lng-imports-decline-19-gas-demand-11-year-low

Institute for Energy Economics and Financial Analysis (IEEFA). (2025). *European LNG tracker*. IEEFA. https://ieefa.org/european-lng-tracker

Institute for Energy Economics and Financial Analysis (IEEFA). (2024). *European LNG Tracker.* IEEFA. https://ieefa.org/european-lng-tracker

Institute for Energy Economics and Financial Analysis. (2025, May 16). *EU gas imports fall 25% by 2030 as demand reduction target exceeded once again*. IEEFA. https://ieefa.org/resources/eu-gas-imports-fall-25-2030-demand-reduction-target-exceeded-once-again

International Energy Agency (IEA). (2022, June 27). *Accelerating energy diversification in Central and Eastern Europe*. IEA. https://www.iea.org/commentaries/accelerating-energy-diversification-in-central-and-eastern-europe

International Energy Agency (IEA). (2022, March). *A 10-point plan to reduce the European Union's reliance on Russian natural gas. IEA*. Retrieved from https://www.iea.org/reports/a-10-point-plan-to-reduce-the-european-unions-reliance-on-russian-natural-gas

International Energy Agency (IEA). (2023). *How to avoid gas shortages in the European Union in 2023: Baseline European Union gas demand and supply in 2023*. Paris: IEA. Retrieved from https://www.iea.org/reports/how-to-avoid-gas-shortages-in-the-european-union-in-2023/baseline-european-union-gas-demand-and-supply-in-2023

International Energy Agency. (2022). *Executive summary – Moldova 2022 – Analysis*. IEA.

Jaller-Makarewicz, Ana Maria. *European LNG Tracker*. Institute for Energy Economics and Financial Analysis (IEEFA), febbraio 2025. https://ieefa.org/european-lng-tracker.

John Mearsheimer (2001) Mearsheimer, J. (2001). *The Tragedy of Great Power Politics*. Norton & Company. https://samuelbhfaure.com/wp-content/uploads/2015/10/s2-mearsheimer-2001.pdf

Kenneth N. Waltz (1979) Waltz, K. N. (1979). *Theory of International Politics*. Addison-Wesley. https://dl1.cuni.cz/pluginfile.php/486328/mod_resource/content/0/Kenneth%20N.%20Waltz%20Theory%20of%20International%20Politics%20Addison-Wesley%20series%20in%20political%20science%20%20%201979.pdf

Keohane, R. O., & Nye, J. S. (2001). *Power and interdependence* (3rd ed.). New York: Longman. [Sample chapter]. https://www.pearsonhighered.com/assets/samplechapter/0/2/0/5/0205082912.pdf

Khalitova, A. (2010). *Energy trade brinkmanship between the European Union and Russia*. *Undergraduate Economic Review, 6*(1), Article 9. Illinois Wesleyan University. https://digitalcommons.iwu.edu/cgi/viewcontent.cgi?article=1108&context=uer

Kieff, L. (2025, January 24). *An energy crisis provides opportunity in Moldova*. Center for Strategic and International Studies (CSIS). https://www.csis.org/analysis/energy-crisis-provides-opportunity-moldova

Kilian, L., & Zhou, X. (2024). *The price of oil and Russia's war on Ukraine* (Federal Reserve Bank of Dallas, Working Paper No. 2401). Federal Reserve Bank of Dallas. https://www.dallasfed.org/-/media/documents/research/papers/2024/wp2401r1.pdf

Kissinger, H. (1994). Reflections on containment. *Foreign Affairs, 73*(3), 113–130. Council on Foreign Relations. https://www.jstor.org/stable/20046662

Kluwer Law Online. (2024). Strategic Autonomy, REPowerEU and the Internal Energy Market: Untying the Gordian Knot. *Common Market Law Review*, 61(1), 3-32. Retrieved from https://kluwerlawonline.com/journalarticle/Common+Market+Law+Review/61.1/COLA2024003

Korhonen, I., Rauhala, S., & Solanko, L. (2023). *The impact of the oil price cap on Russian crude oil exports and revenues* (BOFIT Policy Brief No. 2/2023). Bank of Finland Institute for Emerging Economies (BOFIT). https://rapson.ucdavis.edu/uploads/8/4/7/1/84716372/krs_main.pdf

Kulakevich, T. (2024). The deterrent effect of weaponized interdependence. *Nationalities Papers*, 52(1), 145–163. https://doi.org/10.1017/nps.2023.100

Kulakevich, T. (2024). The war in Ukraine: The deterrent effect of weaponized interdependence. *Nationalities Papers*, 1–13. Cambridge University Press. https://doi.org/10.1017/nps.2024.75

LaBelle, M. C. (2023). Energy as a weapon of war: Lessons from 50 years of energy interdependence. *Global Policy, 14*(3), 531- 547. https://www.globalpolicyjournal.com/articles/climate-change-energy-and-sustainability/energy-weapon-war-lessons-50-years-energy

LaBelle, M. C. (2023). Energy as a weapon of war: Lessons from 50 years of energy interdependence. *Global Policy, 14*(3), 531–547. Retrieved from https://www.globalpolicyjournal.com/articles/climate-change-energy-and-sustainability/energy-weapon-war-lessons-50-years-energy

LaBelle, M. C. (2024). *Breaking the era of energy interdependence in Europe: A multidimensional reframing of energy security, sovereignty, and solidarity*. *Energy Strategy Reviews, 52*, 101314. https://doi.org/10.1016/j.esr.2024.101314

Le Monde. (2024, April 16). *Contre la menace russe, six pays nouent un pacte pour protéger les infrastructures de la mer du Nord*. Le Monde. https://www.lemonde.fr/international/article/2024/04/16/contre-la-menace-russe-six-pays-nouent-un-pacte-pour-proteger-les-infrastructures-de-la-mer-du-nord_6228180_3210.html

Leigh Hancher e Adrien de Hauteclocque, "Strategic Autonomy, REPowerEU and the Internal Energy Market: Untying the Gordian Knot" (2024) 61 *Common Market Law Review*.

Łoskot-Strachota, Agata, Ugnė Keliauskaitė e Georg Zachmann. *Future European Union Gas Imports: Balancing Different Objectives*. Bruegel, 3 luglio 2024. https://www.bruegel.org/analysis/future-european-union-gas-imports-balancing-different-objectives

Misiorek, A., & Neuhoff, K. (2025). *Electricity market design for the energy transition: A review of recent developments*. arXiv. https://arxiv.org/pdf/2504.13919

NATO. (1949). *The North Atlantic Treaty.* Washington, DC: North Atlantic Treaty Organization. https://www.nato.int/cps/en/natohq/official_texts_17120.htm

NATO. (1999). *The Alliance's Strategic Concept.* Washington, DC: North Atlantic Treaty Organization. https://www.nato.int/cps/en/natohq/official_texts_27433.htm

NATO. (2023, February 15). *NATO creates Critical Undersea Infrastructure Coordination Cell*. NATO. https://www.nato.int/cps/en/natohq/news_211919.htm

NATO. (2024, December 12). *Advanced batteries, hydrogen fuel cells and other innovations are enablers of key military capabilities.* NATO. https://www.nato.int/cps/en/natohq/news_231363.htm?selectedLocale=en

Normile, D. (2023, March 21). *Russia, China agree on pipeline plan, leaving Beijing with the upper hand*. *The Wall Street Journal*. https://www.wsj.com/world/russia/russia-china-agree-pipeline-plan-leaving-beijing-with-the-upper-hand-f61a92d6

North Atlantic Treaty Organization. (2022, June 29). *NATO 2022 Strategic Concept*. NATO. https://www.nato.int/nato_static_fl2014/assets/pdf/2022/6/pdf/290622-strategic-concept.pdf

Oneal, J. R., & Russett, B. (1999). The Kantian Peace: The Pacific Benefits of Democracy, Interdependence, and International Organizations, 1885-1992. *World Politics*, *52*(1), 1–37. http://www.jstor.org/stable/25054099

Openpolis, 2024. The European countries that depend most on energy imports.

Østby, A. H. (2023). *Weaponized interdependence: Energy as a Russian foreign policy tool during the war in Ukraine*[Master's thesis, Norwegian University of Science and Technology]. NTNU Open. https://ntnuopen.ntnu.no/ntnu-xmlui/bitstream/handle/11250/3073734/no.ntnu%3Ainspera%3A145530834%3A68678479.pdf?sequence=1&isAllowed=y

Parlicov, V. (2022, October 26). *Russia's Ukraine invasion is fueling an energy crisis in neighboring Moldova*. Atlantic Council. https://www.atlanticcouncil.org/blogs/ukrainealert/russias-ukraine-invasion-is-fueling-an-energy-crisis-in-neighboring-moldova/
pean Union. https://www.europarl.europa.eu/factsheets/en/sheet/70/renewable-energy

Presidenza del Consiglio dei Ministri. (n.d.). *Piano Mattei*. Governo Italiano. https://www.governo.it/it/piano-mattei

Randall L. Schweller (1998) Schweller, R. L. (1998). *Deadly Imbalances: Tripolarity and Hitler's Strategy of World Conquest*. Columbia University Press. PDF version

Ravikumar, A. P. (2022). *The U.S. role in securing the European Union's near-term energy supply.* PMC. Retrieved from PubMed Central

Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU, and 2013/30/EU, and Council Directives 2009/119/EC and (EU) 2015/652, and repealing Regulation (EU) No 525/2013. *Official Journal of the European Union*, L 328, 1–77. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018R1999

Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity. *Official Journal of the European Union*, L 158, 54–124. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0943

Reuters, Solar power overtook coal in EU's electricity mix in 2024, Ember says, 22 gennaio 2025, https://www.reuters.com/business/energy/solar-power-overtook-coal-eus-electricity-mix-2024-ember-says-2025-01-22.

Reuters. "Italy clinches gas deal with Algeria to temper Russian reliance." *Reuters*, 11 April 2022. https://www.reuters.com/business/energy/italy-signs-deal-with-algeria-increase-gas-imports-2022-04-11/

Reuters. (2022, April 11). *Italy signs deal with Algeria to increase gas imports.* Retrieved from https://www.reuters.com/business/energy/italy-signs-deal-with-algeria-increase-gas-imports-2022-04-11/

Reuters. (2024, December 31). *Russia reduces gas flow via Ukraine to Europe on last day of expiring deal*. Reuters. https://www.reuters.com/business/energy/russia-reduces-gas-flow-via-ukraine-europe-last-day-expiring-deal-2024-12-31/

Reuters. (2025, August 15). *Russian energy export disruptions since start of Ukraine war.* Reuters. https://www.reuters.com/business/energy/russian-energy-export-disruptions-since-start-ukraine-war-2025-08-15/

Reuters. (2025, August 28). *Second German LNG terminal starts commercial operations in Wilhelmshaven.* Retrieved from https://www.reuters.com/sustainability/climate-energy/second-german-lng-terminal-starts-commercial-operations-wilhelmshaven-2025-08-28/

Reuters. (2025, January 9). *Norway gas output hit record in 2024, seen slightly lower in 2025.* Retrieved from https://www.reuters.com/business/energy/norway-gas-output-hit-record-2024-seen-slightly-lower-2025-2025-01-09/

Reuters. (2025, May 6). *EU's plan to phase out Russian gas by end-2027*. Reuters. https://www.reuters.com/sustainability/climate-energy/eus-plan-phase-out-russian-gas-by-end-2027-2025-05-06/

Robert O. Keohane e Joseph S. Nye, *Power and Interdependence* (Boston: Little, Brown and Company, 1977).

Robert O. Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton: Princeton University Press, 1984).

S&P Global Commodity Insights. (2025, February 9). *European diesel trade map redrawn following Russia-Ukraine conflict.* S&P Global. https://www.spglobal.com/commodity-insights/en/news-research/latest-news/refined-products/090225-european-diesel-trade-map-redrawn-following-russia-ukraine-conflict

S&P Global Commodity Insights. (2025, July 29). *Qatar threatens to cut off EU LNG supply amid sustainability policy concerns: Spokespersons*. S&P Global. https://www.spglobal.com/commodity-insights/en/news-research/latest-news/natural-gas/072925-qatar-threatens-to-cut-off-eu-lng-supply-amid-sustainability-policy-concerns-spokespersons

Scholz, O. (2022, February 27). *Policy statement by Olaf Scholz, Chancellor of the Federal Republic of Germany and Member of the German Bundestag, 27 February 2022, in Berlin*. The Federal Government of Germany. https://www.bundesregierung.de/breg-en/service/archive/policy-statement-by-olaf-scholz-chancellor-of-the-federal-republic-of-germany-and-member-of-the-german-bundestag-27-february-2022-in-berlin-2008378

Schuman, R. (1950, May 9). *Declaration of 9 May 1950*. Retrieved from European Union official website: https://europa.eu/european-union/about-eu/symbols/europe-day/schuman-declaration_en

Stephen Walt (1987) Walt, S. (1987). *The Origins of Alliances*. Cornell University Press. https://web.stanford.edu/class/ips198/docs/Walt.pdf

Stiftung Wissenschaft und Politik (SWP). (2023, June). Enhancing EU-NATO cooperation on critical infrastructure protection. *SWP Working Paper*. Retrieved from https://www.swp-berlin.org/publications/products/arbeitspapiere/SWP_WP_Enhancing_EU-NATO_Cooperation_Critical_Infrastructure_Protection_Bendiek_Kerttunen.pdf

Storbeck, O., & Smith, N. (2022, December 17). *Germany opens its first liquefied natural gas terminal in push to secure energy supplies*. *Financial Times*. https://www.ft.com/content/16031b21-cb2f-40c7-a77d-1ac061196264

Tagliapietra, S., & Zachmann, G. (2023, February 16). *European Union–Russia energy divorce: State of play*. Bruegel. https://www.bruegel.org/analysis/european-union-russia-energy-divorce-state-play

The Guardian. (2022, November 29). *Germany agrees 15-year liquid gas supply deal with Qatar*. The Guardian. https://www.theguardian.com/world/2022/nov/29/germany-agrees-15-year-liquid-gas-supply-deal-with-qatar

The Guardian. (2025, July 12). *EU risks breaking international law over Israel gas deal, say campaigners*. Retrieved from https://www.theguardian.com/world/2025/jul/12/eu-risks-breaking-international-law-over-israel-gas-deal-say-campaigners

The Hague Research Institute. (2023, January 12). *The EU oil embargo and G7 price cap on Russian oil: Sanctions against Russia*. The Hague Research Institute. https://hagueresearch.org/the-eu-oil-embargo-and-g-7-price-cap-on-russian-oil-sanctions-against-russia/

The Hague Research Institute. (2023, November 10). *Between hybrid warfare and European aspirations: Moldova's energy challenge*. https://hagueresearch.org/between-hybrid-warfare-and-european-aspirations-moldovas-energy-challenge/

The Washington Post. (2025, February 23). *Russia's Gazprom used gas cutoffs to punish Europe and deter Ukraine support*. The Washington Post. https://www.washingtonpost.com/world/2025/02/23/russia-gazprom-war-ukraine-economy

Thomson, Ewan. "These Charts Show Europe's Reliance on Gas Before the War in Ukraine." *World Economic Forum*, November 10, 2022. https://www.weforum.org/stories/2022/11/europe-gas-shortage-russia/#:~:text=The%20International%20Energy%20Agency%20,for%20energy%20security%20this%20winter.

Times Central Asia. (2024, September 18). *The onset of friend-shoring in Central Asia.* Retrieved from https://timesca.com/the-onset-of-friend-shoring-in-central-asia/

TotalEnergies. (2022, June 12). *Qatar: TotalEnergies first company selected by QatarEnergy for giant North Field East LNG project*. TotalEnergies. https://totalenergies.com/media/news/qatar-totalenergies-first-company-selected-partner-qatarenergy-giant-north-field-east

U.S. Energy Information Administration. (2024, March 18). *Three new LNG export projects expected to come online in the United States by 2025*. U.S. Department of Energy. https://www.eia.gov/todayinenergy/detail.php?id=64884&utm

Ursula von der Leyen, *Speech by President von der Leyen at the Munich Security Conference 2025*, European External Action Service, February 15, 2025, https://www.eeas.europa.eu/delegations/ukraine/speech-president-von-der-leyen-munich-security-conference-2025_en?s=232

Weede, E. (2004). The Diffusion of Prosperity and Peace by Globalization. *The Independent Review*, *9*(2), 165–186. http://www.jstor.org/stable/24562700

Weede, E. (2010). The Capitalist Peace and the Rise of China: Establishing Global Harmony by Economic Interdependence. *International Interactions*, *36*(2), 206–213.

Weede, E. (2010). The capitalist peace and the rise of China: Establishing global harmony by economic interdependence. *International Interactions*, 36(2), 206–213. https://doi.org/10.1080/03050621003785181

White House. (2022, March 25). *Remarks by President Biden and European Commission President Ursula von der Leyen in joint press statement*. The White House. https://bidenwhitehouse.archives.gov/briefing-room/speeches-remarks/2022/03/25/remarks-by-president-biden-and-european-commission-president-ursula-von-der-leyen-in-joint-press-statement

Wilson Center. (2025, January 6). *Russia's energy cutoff: Moldova crisis or opportunity?* Wilson Center. https://www.wilsoncenter.org/blog-post/russias-energy-cutoff-moldova-crisis-or-opportunity

World Bank. (2023). *European Union imports of uranium (HS 284410) by partner country*. World Integrated Trade Solution (WITS). Retrieved from https://wits.worldbank.org/trade/comtrade/en/country/EUN/year/2023/tradeflow/Imports/partner/ALL/product/284410

World Economic Forum, 2022. *Europe is facing a gas shortage this winter – here's what you need to know.* 2 November. Available at: https://www.weforum.org/stories/2022/11/europe-gas-shortage-russia/

World Economic Forum. "*Europe's Gas Shortage Will Force the Continent to Rapidly Rethink Its Energy Mix*." World Economic Forum, November 2022. https://www.weforum.org/stories/2022/11/europe-gas-shortage-russia/#:~:text=Since%20Russia%20has%20cut%20its,rapidly%20rethink%20their%20energy%20mix.

World Economic Forum. (2022, August 15). *Germany's energy crisis explained – and why it affects us all*. World Economic Forum. https://www.weforum.org/stories/2022/08/energy-crisis-germany-europe/

World Nuclear Association. (2024). *Nuclear power in France*. World Nuclear Association. https://world-nuclear.org/information-library/country-profiles/countries-a-f/france

Zachmann, G., & Moll, B. (2023, October 26). *The European Union's gas supply shock* (BPEA Conference Draft, Fall 2023). Brookings Papers on Economic Activity. Brookings Institution. https://www.brookings.edu/wp-content/uploads/2023/10/BPEA-Zachmann-Moll-20231026.pdf

Zettelmeyer, J. (2022, December). *Beating the European energy crisis. Finance & Development*, International Monetary Fund.
Retrieved from https://www.imf.org/en/Publications/fandd/issues/2022/12/beating-the-european-energy-crisis-Zettelmeyer

Zsiros, Sandor, e Jorge Liboreiro. "'Russia will lose the energy battle,' says IEA chief Fatih Birol." *Euronews*, 28 ottobre 2022. https://www.euronews.com/my-europe/2022/10/28/russia-will-lose-the-energy-battle-says-ieas-chief-fatih-birol#:~:text=Birol%27s%20comments%20appeared%20to%20refer,LNG