

**Publisher**<http://jssidoi.org/esc/home>**THEORETICAL AND CONCEPTUAL FOUNDATIONS OF EUROPEAN ENERGY SECURITY****Jānis Teivāns-Treinovskis ^{1*}, Nikolajs Jefimovs ²**

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Abstract. In recent years, the energy security of the European Union has become one of the most significant issues in European public policy and legal regulation. Its importance has been profoundly shaped by geopolitical disruptions, risks to energy supply, and Russia's military aggression against Ukraine. This publication aims to examine the theoretical and conceptual foundations of European energy security by identifying the principal elements of energy security, the risks arising from energy dependence, and the significance of diversification, while also assessing the role of energy security in the evolution of European Union policy. The study employs general scientific analytical, comparative, and systemic research methods. The analysis is based on recent academic literature, European Union legislation, and official documents issued by the European Commission, the International Energy Agency (IEA), the Agency for the Cooperation of Energy Regulators (ACER), and other international organisations. The findings indicate that contemporary energy security is a multidimensional concept encompassing not only secure and uninterrupted energy supply but also the resilience of energy systems, the protection of critical energy infrastructure, economic security, sustainable development, and the capacity to adapt to geopolitical challenges. The analysis demonstrates that the diversification of energy suppliers and transport routes, the expansion of renewable energy sources, improvements in energy efficiency, and the key instruments of the European Union's common energy policy—including the Energy Union, the European Green Deal, and REPowerEU—constitute the foundation for strengthening European energy security. The results of this study provide a theoretical basis for analysing the legal framework governing European Union energy security and its future development in the context of armed conflict and other emergency situations.

Keywords: energy security; security of energy supply; energy dependence; diversification; Energy Union; REPowerEU; European Union; legal framework.

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1. The Concept of Energy Security

Over the past several decades, energy security has evolved into one of the central interdisciplinary concepts in international security policy, economics, and legal scholarship. Particularly following Russia's full-scale invasion of Ukraine in 2022, the concept of energy security within the European Union has expanded considerably, encompassing not only the availability and uninterrupted supply of energy resources but also the resilience of energy infrastructure, market flexibility, climate policy, the security of critical raw materials supply, and the capacity of energy systems to adapt to geopolitical disruptions (Al-Saidi, 2023). Consequently, energy security is no longer regarded solely as an issue of the energy sector but rather as an integral component of both national and regional security (Azzuni & Breyer, 2018; International Energy Agency [IEA], 2020; IEA, 2021; Ivančík, & Andrassy, 2026a, b; Ivančík & Dušek, 2026).

The most widely accepted international definition of energy security has been proposed by the International Energy Agency (IEA), which defines it as "the uninterrupted availability of energy sources at an affordable price." This definition highlights two interrelated dimensions—physical availability and economic affordability—while recognising that the content of energy security continues to evolve alongside the transformation of energy systems. Whereas earlier discussions primarily focused on the security of oil and natural gas supplies, the ongoing energy transition has shifted increasing attention towards electricity security, the resilience of energy networks, the availability of critical minerals, and cybersecurity (IEA, 2021; IEA, 2024).

The academic literature does not provide a universally accepted definition of energy security. Azzuni and Breyer (2018), after reviewing more than eighty definitions, conclude that energy security is inherently multidimensional and that its meaning has evolved in response to geopolitical, technological, and environmental changes. According to the authors, earlier definitions primarily concentrated on the availability of fossil fuels and import security, whereas more recent approaches place greater emphasis on sustainability, climate objectives, social accessibility, and the resilience of energy systems. Accordingly, energy security should be understood not as a static condition (Teivāns-Treinovskis, Jefimovs et al., 2023), but rather as the dynamic capacity of an energy system to anticipate, withstand, absorb, and recover from disruptions of various origins.

Contemporary academic research also widely applies the so-called "4A framework", which conceptualises energy security through four interrelated dimensions: availability, accessibility, affordability, and acceptability from environmental and societal perspectives. Although this framework was originally developed several decades ago, recent studies continue to employ it as an important conceptual foundation while extending it to include such dimensions as infrastructure security, governance, flexibility, and resilience to crises (Schmitz, Flachsbarth et al., 2025). This evolution demonstrates that energy security has become increasingly intertwined with the transformation and decarbonisation of energy systems.

During the past decade, the approach adopted by international organisations towards energy security has also undergone significant transformation. Within European Union policy, energy security is increasingly interpreted through the framework of the Energy Union and, more recently, the REPowerEU initiative. Under this approach, energy security encompasses not only the provision of stable energy supplies but also the diversification of suppliers and transport routes, the integration of the internal energy market, the development of cross-border infrastructure, improvements in energy efficiency, and the wider deployment of renewable energy sources (De Rosa et al., 2022). Consequently, energy security has become closely associated with strengthening the European Union's strategic autonomy and reducing risks arising from dependence on external suppliers.

A comparison of the principal approaches reveals several important distinctions. Definitions developed by international organisations are primarily policy-oriented and focus on the practical management of risks, emphasising uninterrupted energy supply, price stability, and the effective functioning of energy systems. Academic research, by contrast, conceptualises energy security as a complex socio-economic and geopolitical phenomenon in which institutional quality, market structures, technological innovation, climate policy, and societal resilience play a central role. These perspectives should not be viewed as competing but rather as complementary. Institutional definitions establish policy objectives, whereas academic research explains the mechanisms through which energy security can be achieved, maintained, or undermined.

In summary, the theoretical literature demonstrates that contemporary energy security is a multidimensional concept encompassing the physical availability of energy resources, economic affordability, technical reliability, infrastructure resilience, sustainable development, and the capacity to adapt to geopolitical, economic, and climate-related disruptions. Within the European Union, the concept is increasingly shaped not only by the security of fossil fuel imports but also by the successful implementation of the energy transition, which reduces strategic vulnerabilities and strengthens the Union's long-term strategic autonomy. This understanding provides the theoretical foundation for the subsequent analysis of the European Union's legal framework governing energy security.

2. Key Elements of Energy Security

Energy security is a multidimensional concept comprising several interrelated elements. Contemporary academic literature increasingly recognises that the assessment of energy security should not be based solely on the physical availability of energy resources but also on the capacity of an energy system to ensure secure, affordable, sustainable, and uninterrupted energy supply under both normal operating conditions and periods of external or internal disruption. Consequently, energy security is increasingly analysed from a systemic perspective that encompasses the availability of energy resources, the security and continuity of energy supply, price stability, the protection of critical energy infrastructure, sustainable development, and the resilience of energy systems to crises (Azzuni & Breyer, 2018; International Energy Agency [IEA], 2023).

One of the fundamental elements of energy security is the availability of energy resources. Traditionally, this concept referred to the availability of sufficient reserves of fossil fuels—oil, natural gas, and coal—to ensure the uninterrupted functioning of the economy and society. However, in the context of the ongoing energy transition, the notion of availability has broadened substantially. In addition to fossil fuels, increasing importance is attached to electricity generation capacity, the potential of renewable energy sources, energy storage technologies, and the availability of critical raw materials required for manufacturing wind turbines, solar photovoltaic panels, batteries, and other clean energy technologies. Consequently, the availability of energy resources is no longer assessed solely in terms of natural resource endowments but also in relation to a country's ability to secure access to essential technologies and resilient supply chains (IEA, 2023; International Renewable Energy Agency [IRENA], 2023).

Equally important is the security of energy supply, which reflects the capacity of an energy system to ensure adequate energy supplies under both normal and emergency conditions. In the academic literature, security of supply is commonly understood as the risk that energy deliveries may be disrupted by geopolitical conflicts, technical failures, natural disasters, or market volatility. The European Union's experience following 2022 demonstrates that security of supply is closely linked to the diversification of suppliers, adequate storage capacity, the development of cross-border interconnections, and coordinated action among Member States during crisis situations. Accordingly, security of supply constitutes not only a technical issue but also a political and legal one (European Commission, 2022; IEA, 2023).

Closely related to security of supply is the continuity of energy supply, which refers to the ability of an energy system to provide a stable supply of electricity and other energy resources without significant interruptions. Unlike security of supply, which primarily concerns the availability of energy resources, continuity of supply focuses on the operational performance of energy infrastructure, the reliability of transmission and distribution networks, reserve generation capacity, and overall system flexibility. Within electricity systems, particular importance is attached to the availability of balancing capacity, the security of digital control systems, and the capability to restore system operations rapidly following disruptions. As the share of renewable energy continues to increase, system flexibility has become one of the principal prerequisites for ensuring uninterrupted energy supply (ENTSO-E, 2022; IEA, 2023).

Another essential dimension of energy security is energy price stability. Although price fluctuations are an inherent feature of any market, sharp and sustained increases in energy prices may generate significant socio-economic consequences by reducing business competitiveness, accelerating inflation, and increasing energy poverty. Consequently, the contemporary understanding of energy security extends beyond the physical availability of energy resources to include their economic affordability for both households and businesses. The European energy crisis of recent years clearly demonstrated that price stability depends on well-integrated markets, adequate generation capacity, effective competition, and sound regulatory frameworks (OECD, 2023; European Commission, 2023).

The security of critical energy infrastructure constitutes another key element of energy security. Power generation facilities, electricity transmission networks, liquefied natural gas (LNG) terminals, gas storage facilities, cross-border interconnectors, and digital control systems all form part of the critical infrastructure whose disruption may have severe consequences for national security and economic stability. Recent

developments—including the growing number of cyberattacks and incidents affecting subsea infrastructure in Europe—have significantly increased attention to both the physical protection and cybersecurity of critical energy infrastructure. Consequently, ensuring energy security also requires preventive measures aimed at infrastructure protection and comprehensive risk management (NATO, 2023a; European Commission, 2023).

Within the contemporary understanding of energy security, sustainable development has become an inseparable component. Whereas the traditional objective of energy security focused primarily on ensuring sufficient energy resources, climate change mitigation policies have considerably broadened the scope of the concept. Academic research increasingly argues that long-term energy security cannot be achieved while maintaining a high level of dependence on imported fossil fuels. The expansion of renewable energy sources, improvements in energy efficiency, and reductions in energy consumption simultaneously contribute to the achievement of climate objectives and the strengthening of energy system security. Sustainability has therefore evolved into a structural dimension of energy security rather than remaining solely an objective of environmental policy (IRENA, 2023; European Commission, 2023).

Closely linked to sustainability is the resilience of energy systems. Resilience refers to the capacity of an energy system to anticipate potential risks, absorb external shocks, adapt to changing conditions, and restore normal operations following a crisis. Unlike the traditional security paradigm, which primarily focuses on preventing threats, the resilience perspective emphasises the adaptive capacity of the system. This approach has become particularly relevant in the aftermath of the COVID-19 pandemic, Russia's military aggression against Ukraine, and the increasing risks associated with climate change, all of which underscore the necessity of developing flexible and decentralised energy systems (Azzuni & Breyer, 2018; IEA, 2023).

The large-scale missile and drone attacks launched by Russia against Ukrainian power plants and electricity distribution infrastructure during the winter of 2023 had profound consequences not only for Ukraine's military capabilities but also for substantial segments of its economy. These events clearly demonstrated that modern economies cannot function effectively without a stable electricity supply. This applies not only to industrial production but also to critical sectors such as agriculture and the provision of essential public utility services. Accordingly, the resilience of energy systems should be regarded as a fundamental prerequisite for maintaining both economic continuity and national resilience during armed conflicts and other major crises.

In summary, the above elements demonstrate that energy security constitutes an integrated and mutually reinforcing system in which each component complements the others. The availability of energy resources alone is insufficient without ensuring the continuity of supply, while resilient infrastructure cannot by itself guarantee energy security if the energy system remains economically or geopolitically vulnerable. Consequently, the contemporary model of energy security is based on an integrated approach that combines technical, economic, legal, environmental, and geopolitical dimensions. This comprehensive understanding provides the theoretical foundation for the subsequent analysis of European Union energy policy and its legal framework.

3. Energy Security as a Component of National and Regional Security

Energy security is now widely recognised as one of the fundamental pillars of both national and regional security. Whereas energy policy was traditionally examined primarily from the perspective of economic development and industrial growth, over the past two decades—and particularly following Russia's military aggression against Ukraine—energy security has evolved into a strategic issue directly affecting state sovereignty, economic stability, and the ability of governments to pursue an independent foreign policy. The academic literature increasingly emphasises that the interrelationship between energy security and national security has become substantially stronger as a consequence of globalisation, the growing interdependence of supply chains, and escalating geopolitical risks (Azzuni & Breyer, 2018; International Energy Agency [IEA], 2023).

From the perspective of national security, energy security refers to a state's ability to ensure the uninterrupted availability of energy resources required to maintain critical national functions, regardless of external threats. Reliable supplies of electricity, natural gas, petroleum products, and other energy resources are indispensable

for the functioning of public administration, healthcare, transport, electronic communications, defence, and other critical sectors. Disruptions to energy supply may produce far-reaching economic and social consequences while simultaneously limiting a state's capacity to respond effectively to military conflicts, cyber incidents, or natural disasters. Consequently, energy security has become an increasingly important component of national security strategies and policies governing the protection of critical infrastructure (European Commission, 2023; NATO, 2023a).

Energy security is also closely linked to economic security, as a stable and predictable energy supply constitutes one of the fundamental prerequisites for sustainable economic development. Fluctuations in energy prices, interruptions in supply, or prolonged shortages of energy resources may adversely affect industrial competitiveness, the investment climate, and household welfare.

Moreover, the energy security and functional resilience of households directly influence social cohesion and political stability in democratic societies. Recent developments associated with Russia's war against Ukraine provide clear evidence of this relationship. For example, Ukrainian drone strikes targeting Russian oil refineries and fuel logistics infrastructure during the summer of 2026 reportedly generated not only significant economic consequences but also public dissatisfaction and increased social tensions within Russia. Likewise, the European energy crisis of 2022–2023 demonstrated that severe disruptions in energy markets can accelerate inflation, constrain economic growth, and increase fiscal pressures on governments, which are often required to implement extensive support measures for households and businesses. Energy security should therefore be regarded as one of the essential foundations of economic security (OECD, 2023; European Commission, 2023).

Contemporary security research assigns an increasingly important role to energy security within the broader framework of national security. Unlike traditional concepts centred primarily on military threats, modern national security encompasses economic, technological, informational, and energy-related dimensions. This broader understanding is based on the recognition that a state's vulnerability may arise not only from armed aggression but also from prolonged disruptions to energy supply, excessive dependence on a single supplier, or coordinated attacks against critical infrastructure. Furthermore, recent military conflicts have demonstrated that coordinated attacks on critical infrastructure have become one of the most effective means of undermining a state's resilience. This is evidenced not only by the experience of the war in Ukraine but also by confrontations involving the United States and Iran. Iran's asymmetric operations, including missile and unmanned aerial vehicle attacks directed at critical infrastructure supporting U.S. allies in the Middle East, demonstrated the capacity of such attacks to disrupt economic activity and generate wider political repercussions. Consequently, ensuring energy security is increasingly regarded as a fundamental component of national resilience, strengthening a state's capacity to prevent, withstand, and recover from crises of diverse origin (IEA, 2023; NATO, 2023a).

At the same time, energy security possesses a pronounced regional dimension. The energy systems of European Union Member States are highly interconnected, while electricity and natural gas markets operate largely on the basis of cross-border infrastructure and common market rules. As a result, disruptions to energy supply in one Member State may have cascading effects across neighbouring countries. For this reason, regional cooperation, the development of interconnections, coordinated action by transmission system operators, and solidarity mechanisms have become essential elements of European energy security. Ensuring energy security is therefore no longer solely a matter of national competence but is increasingly pursued within the framework of a common European energy policy (European Commission, 2023; ENTSO-E, 2022).

From a theoretical perspective, the regionalisation of energy security reflects the growing interdependence of states. The academic literature emphasises that integrated energy markets simultaneously enhance system efficiency and increase the need for coordinated risk management. Although market integration reduces the risks associated with national isolation and promotes competition, it may also create new vulnerabilities, including the potential for more widespread consequences arising from electricity transmission failures or cyber incidents. Consequently, regional energy security depends not only on market integration but also on effective crisis management and the strengthening of infrastructure resilience (Azzuni & Breyer, 2018; IEA, 2023).

Energy security has also become an integral component of the European Union's Common Foreign and Security Policy. Russia's use of energy resources as an instrument of political influence has fundamentally reshaped the European Union's foreign policy priorities. The European Commission emphasises that energy security is closely linked to strategic autonomy, the strengthening of external partnerships, and the resilience of supply chains. Within this context, energy policy can no longer be regarded solely as an element of internal market regulation but has evolved into an important instrument of foreign, security, and defence policy. Consequently, the European Union has intensified cooperation with alternative energy suppliers, expanded joint infrastructure projects, and strengthened its energy diplomacy (European Commission, 2022; Council of the European Union, 2023).

In parallel with developments within the European Union, NATO has attached increasing importance to energy security by substantially expanding its approach to the protection of critical infrastructure. Alliance strategic documents identify energy infrastructure as one of the principal targets of hybrid threats. Particular attention is devoted to safeguarding subsea pipelines, electricity interconnectors, liquefied natural gas (LNG) terminals, ports, and digital infrastructure. This approach reflects the recognition that disruptions to energy supply may significantly affect both the functioning of civilian society and the operational capabilities of Allied armed forces (NATO, 2023b).

In conclusion, energy security constitutes a multidimensional component of national and regional security encompassing economic, technological, political, and geopolitical dimensions. Within the contemporary security environment, energy security cannot be reduced merely to ensuring the availability of energy resources; it also includes the protection of critical infrastructure, market resilience, international cooperation, and the capacity of states to respond effectively to a wide spectrum of threats. The experience of the European Union since 2022 demonstrates that energy security has become one of the principal prerequisites for both economic stability and the effective implementation of the Union's common security policy. Accordingly, it provides an essential theoretical foundation for further analysis of the European Union's legal framework governing energy security.

4. Energy Dependence and the Theoretical Aspects of Diversification

One of the central concepts in contemporary energy security theory is energy dependence, which characterises the extent to which a country, region, or economic sector relies on external energy resources to meet domestic demand. Traditionally, energy dependence has been measured by the share of imported energy resources in total energy consumption. However, recent academic research increasingly argues that the concept should be interpreted more broadly, taking into account not only import volumes but also the structure of supply, the diversity of suppliers, the resilience of energy infrastructure, and the capacity of energy systems to adapt to external disruptions. This broader perspective reflects the transition from the traditional notion of security of supply towards a multidimensional concept of energy system resilience (Azzuni & Breyer, 2018; Streimikiene et al., 2023).

One of the principal indicators of energy dependence is import dependency. A country that satisfies a substantial share of its energy demand through imports is exposed not only to the risk of supply disruptions but also to fluctuations in international energy prices and the political decisions of supplier countries. Nevertheless, recent studies emphasise that a high level of import dependency does not, in itself, imply a low level of energy security. The decisive factor is the structure of imports, including the number of suppliers, their political stability, the degree of competition among them, and the ability to rapidly redirect supply flows when necessary. Consequently, assessments of energy security increasingly employ diversification indicators, such as the modified Herfindahl–Hirschman Index (HHI), which measures supplier concentration and the associated level of risk (Kelly, 1981).

Theoretical literature devotes particular attention to single-supplier dependency. This risk arises when the overwhelming majority of energy resources is imported from a single external supplier, thereby enabling that supplier to exercise significant economic and political influence over the importing country. Such asymmetric interdependence constrains the importing state's ability to pursue independent political decisions and increases

the likelihood that energy resources may be used as an instrument of foreign policy. This phenomenon has become one of the central issues in contemporary energy security research (Burke et al., 2007). The European Union's long-standing dependence on Russian natural gas prior to 2022 is frequently cited as a clear example of how economic interdependence may evolve into a strategic vulnerability when alternative sources of supply are insufficiently developed.

Geopolitical risk analysis also occupies a prominent position within the theory of energy dependence. Unlike market risks, which are primarily associated with price volatility and fluctuations in demand, geopolitical risks stem from international conflicts, sanctions, political instability, the disruption of transport routes, and the foreign policy interests of states. Recent events have clearly demonstrated that interruptions in energy supplies may result not from economic considerations but from political decisions. Consequently, energy security has become closely intertwined with foreign policy, security policy, and theories of international relations, particularly the realist approach, which emphasises interstate competition for strategic resources.

Contemporary security studies increasingly examine the use of energy as an instrument of political influence. The export of energy resources serves not only as a source of economic revenue but may also be employed to exert political pressure on importing countries. This phenomenon is commonly described as the geopoliticisation of energy, whereby energy supplies become instruments of foreign and security policy. Russia's manipulation of natural gas supplies to Europe fundamentally altered the European Union's perception of the need to reduce strategic dependence on a single supplier and to develop a more resilient energy system. Consequently, within the European Union, energy security is increasingly interpreted as a prerequisite for maintaining political autonomy.

In light of these risks, diversification is widely recognised as one of the principal instruments for strengthening energy security. In the academic literature, diversification is defined as the systematic reduction of an energy system's dependence through the diversification of suppliers, transport routes, energy sources, and technologies (Rubio-Varas & Muñoz-Delgado, 2019). The objective of diversification is not to eliminate imports entirely but rather to prevent situations in which disruptions affecting a single supplier or transport corridor can jeopardise the functioning of the entire energy system (Lekavičius et al., 2024). Empirical evidence suggests that countries characterised by greater diversity of suppliers and energy sources demonstrate higher levels of resilience to external shocks and price volatility.

The diversification of suppliers (Teivāns-Treinovskis, Lavrinovicha, et al., 2015) represents the most significant dimension of this strategy. Energy security theory suggests that distributing imports among several independent suppliers reduces both political leverage and the risk of supply disruptions. Nevertheless, recent studies emphasise that simply increasing the number of suppliers is insufficient. Equal consideration must be given to the political stability of supplier countries, the quality of their legal and regulatory systems, and the predictability of international relations. Accordingly, European Union policy increasingly prioritises cooperation with reliable partners while simultaneously seeking to avoid the emergence of new forms of unilateral dependence.

The diversification of transport routes is equally important. The security of energy supply depends not only on the choice of suppliers but also on the diversity of transport infrastructure. Pipeline systems, liquefied natural gas (LNG) terminals, ports, and electricity interconnectors provide alternative supply routes when one or more transport corridors become unavailable. The European Union's experience since 2022 demonstrates that the expansion of cross-border interconnections and LNG infrastructure has significantly enhanced the flexibility of the European energy system while reducing dependence on traditional pipeline routes.

Liquefied natural gas (LNG) occupies a particularly important role in contemporary energy security policy. LNG has substantially increased the flexibility of global gas markets by enabling natural gas to be transported from multiple regions independently of fixed pipeline infrastructure. Following the reduction of Russian gas supplies, the European Union significantly expanded LNG imports, thereby reducing immediate supply risks. At the same time, scholars emphasise that LNG should not be regarded as a long-term solution if it creates new forms of concentrated dependence on a limited number of exporting countries. Accordingly, LNG is best

understood as a transitional instrument that should be complemented by the development of domestic energy resources and measures aimed at reducing overall energy demand.

In the longer term, increasing importance is attached to the diversification of energy sources, particularly through the expansion of renewable energy. Unlike imported fossil fuels, wind power, solar energy, hydropower, and sustainably sourced biomass reduce dependence on external suppliers while simultaneously contributing to the achievement of climate objectives. In this regard, Latvia possesses a significant strategic advantage through its cascade of hydroelectric power plants, which generates the majority of the country's electricity. At the same time, it should be recognised that under conditions of armed conflict, large-scale energy infrastructure such as hydroelectric power stations may become priority targets for military attacks. From this perspective, decentralised energy generation technologies—including solar photovoltaic installations and wind turbines—may provide greater resilience, as their dispersed nature makes their destruction considerably more costly and operationally demanding for an attacker. Nevertheless, it should also be emphasised that the energy transition introduces new challenges, including increasing dependence on critical raw materials and imported energy technologies. Consequently, future assessments of energy independence will need to consider not only reliance on imported fossil fuels but also the capacity to ensure secure and resilient technology supply chains.

For this reason, contemporary theoretical literature increasingly employs the concept of strategic energy autonomy, referring to the capacity of a state or region to maintain a stable energy supply while minimising vulnerability to external political and economic shocks (Hancher & De Hauteclocque, 2025). This concept does not imply complete energy self-sufficiency. Rather, it denotes a balanced energy system in which import dependence is mitigated through diversified supply structures, domestic energy production, energy efficiency, cross-border interconnections, and flexible market regulation. Over recent years, this approach has become one of the principal theoretical foundations of European Union energy policy.

In summary, energy dependence should not be assessed solely on the basis of the volume of imported energy resources but rather in terms of the overall vulnerability of an energy system to external risks. Diversification constitutes a comprehensive strategy encompassing the diversification of suppliers, transport routes, energy sources, and technologies. These elements are mutually reinforcing and collectively provide the theoretical foundation of the European Union's contemporary energy security policy, which seeks to strengthen energy system resilience, reduce geopolitical risks, and enhance long-term strategic autonomy.

5. The Role of Energy Security in the Development of European Union Policy

Energy security has become one of the fundamental principles underpinning the European Union's energy policy, exerting a profound influence on both the evolution of the Union's legal framework and its long-term strategic priorities. Although EU energy policy was initially focused primarily on establishing an integrated internal energy market and promoting competition, its scope has expanded considerably over the past decade. Climate change, increasing geopolitical instability, dependence on imported energy resources, and Russia's full-scale military aggression against Ukraine have collectively accelerated the transition towards an integrated policy approach in which energy security is intrinsically linked to economic security, climate policy, and the European Union's strategic autonomy (European Commission, 2023; International Energy Agency [IEA], 2023).

One of the most significant milestones in the evolution of EU energy policy was the establishment of the Energy Union in 2015. Its objective was to create a unified, secure, sustainable, and competitive European energy system by reducing fragmentation among Member States and strengthening solidarity in the field of energy supply. The Energy Union is built upon five mutually reinforcing dimensions: energy security, solidarity and trust; a fully integrated internal energy market; energy efficiency; decarbonisation; and research, innovation, and competitiveness. This framework substantially broadened the traditional understanding of energy security by emphasising that long-term security depends not only on the availability of fossil fuels but also on effective market integration, the development of cross-border infrastructure, and the sustainable transformation of energy systems (European Commission, 2015; European Commission, 2023).

The Energy Union also introduced a new understanding of solidarity as a fundamental principle of energy security. In addition to the individual responsibility of Member States, it established the concept that, in the event of severe disruptions to energy supply, Member States have a collective obligation to cooperate and provide mutual assistance. This principle was subsequently incorporated into European Union legislation, particularly the legal framework governing the security of natural gas supply, which introduced joint risk assessments, preventive action plans, and solidarity mechanisms applicable during emergency situations. Consequently, energy security became not only a national responsibility but also a shared responsibility of the European Union as a whole (Regulation (EU) 2017/1938; European Commission, 2023).

A further major impetus for the development of EU energy policy was provided by the European Green Deal, presented in 2019. Although its principal objective is to achieve climate neutrality by 2050, the Green Deal also has profound implications for energy security. Academic research increasingly demonstrates that decarbonisation reduces dependence on imported fossil fuels, promotes the development of domestic renewable energy sources, and mitigates geopolitical vulnerabilities (Samaras, 2025). At the same time, the energy transition gives rise to new challenges, including growing demand for critical raw materials, electricity storage technologies, and digital infrastructure. Consequently, the European Green Deal broadens the concept of energy security beyond the security of energy supply to encompass technological and industrial security (European Commission, 2019; IEA, 2023).

A decisive turning point in European Union energy policy occurred in 2022 with the adoption of the REPowerEU Plan, introduced in response to Russia's military aggression against Ukraine and the substantial reduction in Russian fossil fuel supplies. REPowerEU aims to reduce the European Union's dependence on Russian energy resources as rapidly as possible while simultaneously accelerating the transition towards a climate-neutral energy system. The plan is based on three mutually reinforcing pillars: energy conservation and energy efficiency, the diversification of suppliers and transport routes, and the accelerated deployment of renewable energy sources. This strategy clearly demonstrates that energy security and climate policy are no longer regarded as competing priorities but rather as complementary objectives that reinforce one another (European Commission, 2022; European Parliament, 2023).

The implementation of REPowerEU has also significantly reshaped the European Union's understanding of energy independence. Whereas previous policy primarily focused on security of supply and market efficiency, since 2022 increasing emphasis has been placed on the concept of strategic autonomy. This approach seeks to reduce the capacity of external suppliers to influence the European Union's political and economic decision-making while simultaneously strengthening domestic energy production, electricity and gas interconnectivity, the development of critical technologies, and industrial capacity. This evolution reflects a fundamental transformation of EU energy policy, in which energy security has become increasingly associated with economic security, industrial competitiveness, and geopolitical resilience (European Commission, 2023; IEA, 2023).

At the same time, the European Union continues to strengthen the integration of its internal energy market, recognising it as one of the most effective instruments for enhancing energy security. The expansion of electricity and natural gas interconnections, the application of common market rules, increased cross-border transmission capacity, and the coordinated operation of transmission system operators all contribute to reducing the risk of supply disruptions and improving the flexibility of the European energy system. Empirical research indicates that more closely integrated energy markets are better able to absorb supply shocks and mitigate the impact of price volatility on consumers. Consequently, market integration serves not only the objective of economic efficiency but also the broader goal of strengthening energy security (ENTSO-E, 2023; ACER, 2023).

Contemporary European Union energy policy also places increasing emphasis on energy system resilience (Monie et al., 2025). Alongside traditional risks associated with energy supply, growing attention is devoted to cybersecurity threats, the impacts of climate change on energy infrastructure, the availability of critical raw materials, and the resilience of energy supply chains (Tvaronavičienė et al., 2025). This reflects the understanding that ensuring energy security requires not only effective crisis response but also the development of energy systems capable of anticipating risks, adapting to changing circumstances, and rapidly recovering

from disruptions. These principles are being progressively incorporated into the European Union's legal framework governing critical infrastructure protection, cybersecurity, and the security of energy networks (European Commission, 2023; IEA, 2023).

In summary, energy security has become one of the fundamental principles underpinning the European Union's long-term development strategy. The Energy Union, the European Green Deal, and the REPowerEU Plan together constitute a coherent and mutually reinforcing policy framework aimed at simultaneously ensuring a secure, sustainable, and competitive European energy system. The contemporary EU approach demonstrates that energy security can no longer be understood solely in terms of the availability of fossil fuels. Rather, it encompasses the resilience of energy systems, technological innovation, the achievement of climate objectives, the protection of critical infrastructure, and the strengthening of the European Union's strategic autonomy.

Conclusion

The theoretical analysis conducted in this study confirms that energy security is a multidimensional concept whose scope has expanded substantially over recent decades. The traditional approach, primarily concerned with the availability of energy resources and the continuity of energy supply, has gradually evolved into a systemic perspective in which energy security also encompasses economic stability, the protection of critical energy infrastructure, energy system resilience, sustainable development, and the capacity to adapt to geopolitical and technological challenges.

The analysis of the constituent elements of energy security presented in this study demonstrates that a secure and reliable energy supply constitutes a prerequisite for economic development, societal well-being, and the safeguarding of national security. At the same time, excessive dependence on a limited number of energy suppliers and the use of energy resources as an instrument of foreign policy significantly increase the vulnerability of states. Consequently, the diversification of suppliers, transport routes, and energy sources, together with the expansion of renewable energy sources and improvements in energy efficiency, has become one of the principal long-term instruments for strengthening energy security.

The evolution of European Union energy policy—particularly through the Energy Union, the European Green Deal, and the REPowerEU Plan—demonstrates a fundamental paradigm shift from the traditional concept of security of energy supply towards an integrated approach in which energy security is intrinsically linked to climate policy, economic resilience, the protection of critical infrastructure, and the European Union's strategic autonomy. This integrated approach provides the theoretical foundation for the further development of the European Union's legal framework governing energy security and serves as the methodological basis for future analyses of its implementation in the context of armed conflict and other emergency situations.

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