

Energy security once again? Or how we are trying to figure out what energy security is

Policy report no. 2

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Summary

This policy report is a part of the project External Carbon Security in the Decarbonising European Union: Creating a Common EU Energy Voice (EXCARBITY), which examines the impact of recent energy crises on EU energy security policy. Energy security has long been a central issue in global politics; historically linked to crises such as the 1970s oil shocks or global instability after 9/11 and, in Europe, the natural gas disputes between Russia and Ukraine in 2006 and 2009. These events exposed Europe's vulnerability and led to measures such as the development of Projects of Common Interest (PCIs), new LNG terminals, or enhanced interconnections. More recent crises, including the COVID-19 pandemic, the Russian invasion of Ukraine, and instability in the Middle East, have further emphasized the importance of energy security while also taking the path of the green transition.

Despite decades of debates, there is still no universally accepted definition of energy security, as different actors prioritize its various aspects. This report explores these conceptual differences through a questionnaire survey targeting academic experts working on energy security (59 responses collected). The questionnaire examined how scholars define the concept, which dimensions they consider the most important, and how they balance short- and long-term priorities. The results indicate that a majority (90%) of respondents agree that a clear definition is necessary, but only 61% support a universal one. Two-thirds favour sector-specific approach to energy security (such as in electricity, gas, renewables). The results show further that half respondents prefer to create their own definition or modify existing one when working with the concept adapting it to fit specific analytical or regional contexts.

Experts rank availability and affordability as the top dimensions of energy security. They also emphasize political factors such as geopolitical stability, economic considerations, integration of renewable energy sources, and the uninterrupted delivery of energy as crucial elements of energy security. In the short term, respondents highlighted market dynamics such as price and supply-demand balance as crucial, whereas in the long term, energy security is viewed as dependent on geopolitical stability and international cooperation. This report thus demonstrates that while certain principles of energy security are universal, their practical application varies significantly across national and regional contexts.

1. Introduction

This policy report is a part of a research project [External Carbon Security in the Decarbonising European Union: Creating a Common EU Energy Voice](#) (EXCARBITY). The project studies the impact of the latest energy crisis on the development of external carbon security policy in the EU. It examines changes in the positions of the European Commission and European Union (EU) member states on creating a common approach towards natural gas suppliers from third countries and proposes a new theory of European integration that sheds light on the said changes, triggered by the crisis. Energy security has been one of the key topics in European as well as global policy debates over the past years, particularly in connection with Russian invasion of Ukraine and the subsequent need to reduce dependence on Russian fossil fuels. The invasion fundamentally changed Europe's future vision of energy security, making diversification of supply, energy savings, and the green transition key objectives of EU energy policy.¹

However, discussions on energy security are far from new. Throughout modern history, especially during times of crisis, the concept of energy security has been in the centre of political and societal attention. The oil shocks of the 1970s, for example, transformed the global energy landscape and led to the establishment of the International Energy Agency (IEA) in 1974, which turned into a global authority working on coordinated responses to future supply disruptions and decarbonization agenda. Similar concerns emerged also at the beginning of the 2000s, when volatility in oil and gas markets and growing awareness of climate change catalysed debates about the long-term sustainability and resilience of energy systems.²

In the region of Central and Eastern Europe, the issue of energy security gained particular importance during the gas crises of 2006 and 2009, when disputes between Russia and Ukraine disrupted (and at one point fully halted) supplies to several EU member states. These events revealed the region's vulnerability to external energy shocks and prompted the EU to take concrete measures, such as the development of Projects of Common Interest (PCIs) and the construction of new interconnections, LNG terminals, or reverse-flow infrastructure to strengthen internal energy market integration.

More recent crises such as the COVID-19 pandemic, the Russian invasion of Ukraine, or the instability in the Middle East have emphasized the importance of energy security and stable energy supplies. However, despite the long-standing and vivid discussions on this issue, there is still no universally accepted definition of energy security. Different actors emphasize various dimensions (such as availability, affordability, sustainability or resilience) depending on their perspectives and priorities. Recognizing this conceptual diversity, this report explores how experts from academia perceive, define, and interpret energy security nowadays.

The report is structured as follows: the next section outlines the different conceptual approaches to energy security, the third part presents the methodological underpinnings of our research, the fourth part discusses the results of our empirical examination (the expert questionnaire), while the final section provides conclusions and policy implications.

2. Approaches to defining energy security

Energy security is a concept widely discussed across political and academic sphere as well as within media, particularly in connection to the ongoing energy crises and the 2022 Russian invasion of Ukraine,

¹ European Commission (2025). REPowerEU. Available online: https://commission.europa.eu/topics/energy/repowerEU_en (accessed on October 20, 2025).

² Mitchell, J. V. (2002). Renewing energy security. Available online: https://www.chathamhouse.org/sites/default/files/public/Research/Energy,%20Environment%20and%20Development/renewing_energy_security_mitchell_july_2002.pdf (accessed on October 20, 2025).

which have both brought attention to the debates on how to ensure secure energy supplies (and save energy as well). These events shifted attention not only to short-term energy policy solutions, but also to long-term strategies for achieving stable, affordable and environmentally responsible energy supplies. Despite vivid discussions on energy security, major international institutions and research organizations define energy security in different ways, reflecting their specific nuances and areas of focus. In this section we therefore provide the overview of different approaches towards energy security definition.

The Cambridge Dictionary offers a simple understanding of the energy security concept. This definition emphasizes sufficiency and access but does not address broader systemic or strategic dimensions describing energy security as "*the fact that a place is able to produce or obtain enough energy (= electricity, fuel, etc.) for the needs of the people who live there.*"³

The Routledge International Handbook of Energy Security provides a scholarly overview of the concept, analysing its definitions, dimensions and measurement approaches. It highlights that energy security can be understood through multiple lenses and while some emphasise security of supply and affordability, others focus on efficiency, environmental sustainability, governance, and social aspects. The Handbook highlights that there is no single, universally accepted definition, but rather a range of interpretations depending on disciplinary and policy contexts.⁴

Brookings Institution⁵ identifies three substantive dimensions of energy security, which illustrate how energy security is increasingly viewed as an interdisciplinary and interconnected challenge:

- Strategic: focusing on the intersection of politics and energy;
- Economic: addressing risks of supply disruptions, price volatility, and the implications of the energy transition;
- Environmental: concerning climate change, greenhouse gas emissions and the role of non-fossil energy sources.

When it comes to defining the concept from the point of international institutions, the International Energy Agency (IEA) provides one of the most widely cited definitions, framing energy security as "*the uninterrupted availability of energy sources at an affordable price.*"⁶ This definition captures the two-fold importance of reliability and affordability, forming the basis for many policy discussions within the OECD (Organisation for Economic Co-operation and Development) and EU contexts.

The International Renewable Energy Agency (IRENA) further expands this view by emphasizing the energy transition as a process of building an entirely new energy system, not merely substituting one fuel for another. IRENA promotes a "*multi-dimensional approach to energy security access to technology, flexibility for high-renewable systems, infrastructure safeguarding, demand side of energy security, cybersecurity, physical effects of climate change and human security.*"⁷ This definition clearly reflects an understanding of energy security focusing on decarbonization.

While the United Nations does not explicitly define energy security in its framework, it integrates the principle into its seventh Sustainable Development Goal (SDG 7), which aims to ensure "*access to clean*

³ Cambridge Dictionary (2025). Energy security. Available online:

<https://dictionary.cambridge.org/dictionary/english/energy-security> (accessed on October 20, 2025).

⁴ Sovacool, B. K. (ed.) (2011). The Routledge Handbook of Energy Security. Available online:

<https://www.routledge.com/The-Routledge-Handbook-of-Energy-Security/Sovacool/p/book/9780415721639> (accessed on October 20, 2025).

⁵ Brookings Institution (2025). Energy Security and Climate Initiative – About. Available online: <https://www.brookings.edu/projects/energy-security-and-climate-initiative/about/> (accessed on October 20, 2025).

⁶ International Energy Agency (IEA) (2025). Glossary. Available online: <https://www.iea.org/glossary> (accessed on October 20, 2025).

⁷ International Renewable Energy Agency (IRENA) (2024). Geopolitics of the energy transition: Energy security. Available online: https://www.irena.org/media/Files/IRENA/Agency/Publication/2024/Apr/IRENA_Geopolitics_transition_energy_security_2024.pdf (accessed on October 20, 2025).

and affordable energy which is key to the development of agriculture, business, communications, education, healthcare and transportation.”⁸ This approach connects energy security with development, equity and clean energy access and frames it as a condition for progress in other societal areas such as health, education, as well as economic growth in general.

Within the national context, for example, the U.S. Department of Energy (DOE) takes a more comprehensive and security-oriented view. It defines energy security as “*the secure and reliable delivery of energy*” and links it directly to national security, economic stability, public health, and safety. According to the DOE, energy security depends on the continuous functioning of energy infrastructure and supply chains, since all other critical sectors rely on uninterrupted energy access:

“The ability to access electricity, natural gas, and petroleum products on demand relies on the uninterrupted operation of the energy infrastructure and supply chains that support energy delivery. All other critical infrastructure sectors depend on energy for their own secure and reliable operation.”⁹

The EU in its glossary of the terms does not directly define the concept of energy security but European Commission identifies eight key areas within it: the EU Energy and Raw Materials Platform, security of gas supply, safety of offshore oil and gas operations, gas storage, diversification of gas supply sources and routes, security of electricity supply, security of oil supply and critical infrastructure and cybersecurity.¹⁰

3. Methodology

This part presents our methodological procedure on data collection and analysis of the expert questionnaire focusing on energy security. The questionnaire explored views of the experts on the variety of existing definitions, conceptual clarity and the importance of various dimensions of energy security. The research design was motivated by the ongoing debates on energy security in academic,¹¹ non-profit organizations,¹² media¹³, and policy circles including international organizations¹⁴. In our research we focused especially on the definition of energy security, the conceptual clarity of its dimensions, and the relative importance of different aspects such as availability, affordability, sustainability, resilience, efficiency or governance that are often considered as being crucial.¹⁵ However, there is no agreement on their (relative) importance. We were also interested in the short-term and long-term aspects of energy security. The purpose of the questionnaire was twofold: to capture how experts view the definitional and conceptual challenges associated with energy security and to gain more insights into which dimensions are considered most significant in current discussions and policy practices and debates.

⁸ United Nations (UN) (2025). Sustainable Development – Energy. Available online: <https://www.un.org/sustainabledevelopment/energy/> (accessed on October 20, 2025).

⁹ U.S. Department of Energy (2025). Energy Security. Available online: <https://www.energy.gov/topics/energy-security> (accessed on October 20, 2025).

¹⁰ European Commission (2025). Energy security. Available online: https://energy.ec.europa.eu/topics/energy-security_en (accessed on October 20, 2025).

¹¹ Ang, B. W., & Stern, D. I. (2015). Energy security: Definitions, dimensions and indexes. *Renewable and Sustainable Energy Reviews*, 42, 107–118. <https://doi.org/10.1016/j.rser.2014.08.089>

¹² ECFR (2024). Energy Sovereignty Index: Gains, gaps, and the road ahead. Available online: <https://ecfr.eu/special/energy-sovereignty-index-2024/> (accessed on October 20, 2025).

¹³ POLITICO (2025). Energy security. Available online: <https://www.politico.eu/tag/energy-security/> (accessed on October 20, 2025).

¹⁴ NATO (2024). Energy security. Available online: https://www.nato.int/cps/en/natohq/topics_49208.htm (accessed on October 20, 2025).

¹⁵ Azzuni, A. & Breyer, C. (2018). Definitions and dimensions of energy security: a literature review. *WIREs Energy and Environment*, 7 (1), e268. <https://doi.org/10.1002/wene.268>

We targeted approximately 1,400 experts from academia for data collection through a questionnaire survey. Participants were invited to complete the questionnaire via their publicly available institutional email addresses listed in the Web of Science database, which allowed us to identify individuals with relevant experience and expertise in the studied field. The questionnaire was distributed electronically in two rounds (the second being a reminder) between December 2024 and February 2025. A total of 59 completed questionnaires were collected within this timeframe (return rate of approximately 4%).

Respondents were chosen based on their publications on energy security. We collected all papers on energy security published during the last three decades (1994-2023) listed in the Web of Science database and extrapolated email addresses of all authors. This resulted in a list of authors from a broad range of academic backgrounds, including political scientists, economists, etc., ensuring diversity in expertise and perspectives. Throughout our research we proceeded in line with ethical principles of the Faculty of Arts at Comenius University Bratislava and adhered to the principles of informed consent, voluntary participation, and confidentiality during data collection and processing.

The questionnaire consisted of both closed and open-ended questions. The first part of the questionnaire aimed to explore definition of energy security itself. Respondents were asked whether they consider a precise and universally accepted definition of energy security necessary, or whether a broader and more flexible understanding is more useful for research and policy purposes. The second part examined the relative importance of different dimensions of energy security. Respondents were asked to assess six dimensions (availability, affordability, sustainability, resilience, efficiency and governance) using ranking methods. This part included also open-ended option to add another dimension that the respondents considered important. This qualitative material enriched our dataset, allowing for deeper insights into emerging debates and overlooked aspects of energy security.

In the third part respondents were asked to reflect on existing literature if it sufficiently describes energy security or they create their own definition within their research. The open-ended question provided space to describe definition that they use. Finally, the questionnaire included evaluation of short-term and long-term views of energy security from both market and geopolitical perspectives.

The data analysis combined descriptive statistics with qualitative coding of responses for three open-ended questions. While the results presented in the next section are limited due to the relatively small sample size and the non-random nature of respondent selection, it nevertheless offers a contribution to the understanding of contemporary expert perspectives on energy security.

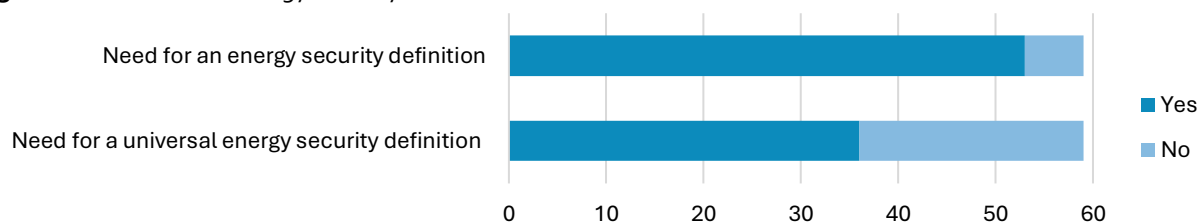
4. Results

This section presents key findings from a quantitative and qualitative analysis of responses to the questionnaire. It is divided into four parts, the first one deals with conceptual clarity and various definitions of energy security, the second part examines different energy security dimensions and their importance, the third section focuses on the literature used while working with energy security definitions, and the fourth part studies the temporal perception of short-term and long-term energy security priorities by energy policy experts.

4.1. Conceptual clarity and definitions

A significant majority of our respondents indicated that an explicit definition of energy security is necessary for their research on the issue. Out of the 59 completed questionnaires, 53 participants (90 %) answered "Yes" when asked whether such a definition should exist (see Figure 1). This outcome indicates a consensus among the respondents on the importance of definitional clarity of the energy security concept.

Figure 1. Need to have energy security definition

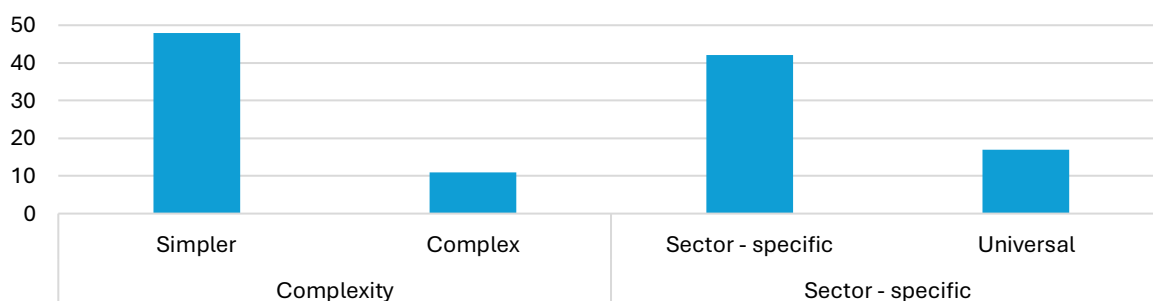


Source: Authors based on the questionnaire

However, views diverged on the character of this definition (Figure 1). When asked whether energy security should be defined in a universal manner applicable across all countries and regions, there was less agreement among the respondents. While 61 % of respondents supported the option of a universal definition, the remaining 39 % of respondents expressed hesitation towards this view and answered “No”. This indicates that for some experts energy security should be context-specific, allowing for variations. This results indicate further that while the majority of experts accept the need for a definition, fewer scholars believe that a single, globally applicable one is feasible.

The questionnaire further addressed the question of complexity in defining energy security. When asked the experts to express their preference for a simple or more complex formulation, a clear preference among the responses was for simplicity (see Figure 2). A total of 48 (81 %) respondents selected a simpler definition, reflecting the view that the energy security concept should remain clear and straightforward. At the same time, however, 11 (19 %) respondents opted for a more complex definition. This indicates that these experts acknowledged that the multifaceted nature of energy security concept can benefit from more elaborate conceptualization.

Figure 2. Type of energy security definition



Source: Authors based on the questionnaire

The Figure 2 also shows that an additional dimension was explored through questions about sector-specific definition of energy security. Approximately two thirds of the respondents (71 %) indicated that sector-specific approaches would be valuable, which suggests that the broad concept of energy security could be refined to address particular areas such as electricity, natural gas, oil, renewables, or nuclear energy. Only 17 (29%) respondents indicated their preference for a universal definition valid across different energy sectors.

The results of this part of the questionnaire thus showed that while simplicity was the preferred option overall among the experts, a large proportion of respondents also considered it useful to distinguish between different sectors when defining energy security.

4.2. Importance of specific energy security dimensions

At the beginning of this part of the questionnaire we asked which aspect of energy security is the most important and we got variety of answers. Three respondents emphasized that clarity of the energy security concept and common understanding is important. Respondent 13 highlighted even the importance of the *"understanding by the users"* and respondent 38 added that common understanding is important from *"economic and legal aspects"*.

The respondents identified several aspects they consider most important for energy security reflecting also economic and geopolitical realities and environmental aspects. In general, respondents indicated especially *"Affordability"* (17 respondents), *"Availability"* together with *"Accessibility"* (both 18 respondents) and *"Sustainability"* (18 respondents; summarized in Figure 3 and Table 1).

Several respondents emphasized the importance of diversity and independence in energy supply. As one respondent noted, *"it varies by country. For countries [which] have to import energy, perhaps the most important aspect is a diversity of suppliers"* (Respondent 9). Similarly, others pointed to the need for a diverse energy mix and reduced dependence on imports, highlighting the role of *"reliable, affordable, resilient and sustainable energy supply through diverse resources, robust infrastructure, reduced dependence on imports and technological innovation"* (Respondent 11), as well as *"a diverse energy mix, sustainable supply without failure at reasonable costs, risk management and country's competitive advantage"* (Respondent 41).

Some respondents highlighted the importance of local and contextual dimensions, suggesting that relevant aspects *"may be defined at all levels and [in] local context"* (Respondent 11). One response stressed the value of a *"locally organised energy supply system, based on renewable energy mix"* (Respondent 32), while another pointed to adaptability as a key factor (Respondent 37).

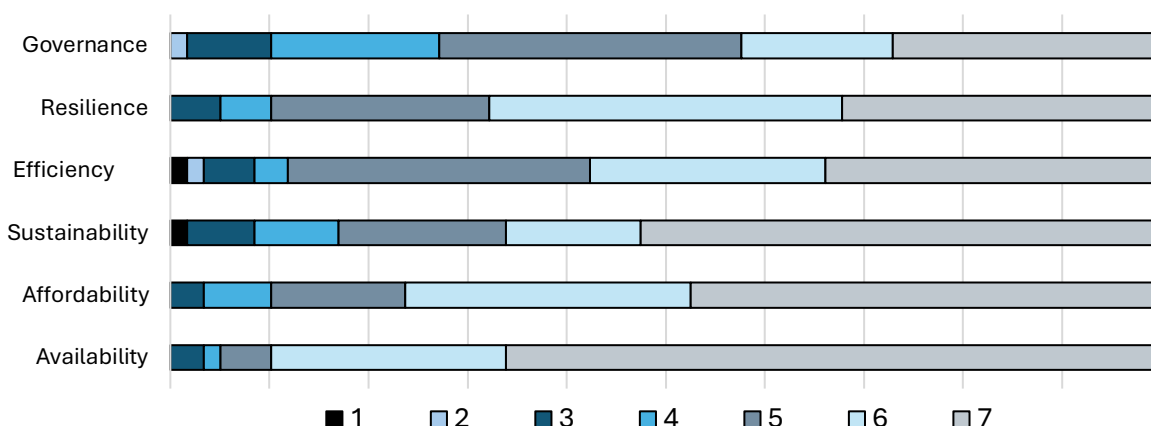
Energy self-sufficiency and domestic production were therefore emphasized by the respondents as being crucial. One respondent highlighted *"domestic production of energy"* (Respondent 19) as a critical energy security feature, while another agreed with such view and emphasized *"self-sufficiency"* (Respondent 59). This focus on independence was repeated in context of geopolitical terms, with a call for ensuring *"enough energy for Europe independent of countries which use energy as a political weapon"* (Respondent 48).

Environmental and climate dimensions were frequently mentioned as increasingly central to energy security. One respondent observed that priorities *"have shifted in the face of current ecological challenges: from availability to environmental sustainability"* (Respondent 20). Others underlined the compatibility of energy policy with climate targets, as well as the consideration of Critical Raw Materials supply risks, energy poverty and equity (Respondent 21). Similarly, another respondent linked energy security to *"safety of people [and] ecological safety"* (Respondent 49) and the *"connection to the environmental and social, national security"* (Respondent 52).

Finally, several responses focused on more traditional dimensions such as the stability of supply (Respondent 25) and continuity of supply (Respondent 44), which still remain fundamental elements of energy security even as environmental and social aspects are gaining attention.

The questionnaire also asked respondents to evaluate specific dimensions of energy security. Figure 3 and Table 1 both illustrate the importance of these dimensions. These categories were selected for inclusion in the questionnaire because they reflect key themes in the academic debate on energy security and remain central to its conceptual discussion. Each aspect was assessed on a seven-point scale (from 1 = least important to 7 = most important). The results show that the most important dimension identified by respondents was the *"Availability"* of energy sources, followed closely by *"Sustainability"* and *"Affordability"*.

Figure 3. Most important aspects of energy security dimensions (1 is the least important, 7 is the most important)



Source: Authors based on the questionnaire

As shown in the Table 1 "Availability" emerged as the top priority with both the highest average rating (6.47) and the most frequent ranking as "most important" (39 times; 66 %). "Affordability" and "Sustainability" followed closely, highlighting the current debate underlining concern regarding environmental aspects and economic access to energy within security discussions. Other dimensions, such as "Resilience" and "Efficiency" received less attention of the respondents, however, these were reflecting the recognition of system robustness and performance within energy security debates. Finally, "Governance" was rated lower with average ratings only 16 respondents (27 %) acknowledging its highest importance.

Table 1. Average importance of energy security dimensions

	Average importance (1 least – 7 most)	Standard deviation	Times ranked as most important
Availability	6.47	0.94	39
Affordability	6.10	1.09	28
Sustainability	5.89	1.45	31
Resilience	5.85	1.10	19
Efficiency	5.66	1.36	20
Governance	5.31	1.36	16

Source: Authors based on the questionnaire

The analysis of average scores and standard deviations (SD) provides insights into the degree of consensus among experts regarding the relative importance of different energy security dimensions. The results indicate a relatively high level of agreement on "Availability" (SD = 0.94) and "Affordability" (SD = 1.09), suggesting that these dimensions are widely perceived as fundamental pillars of energy security. Similarly, "Resilience" (SD = 1.10) shows only small variation, reflecting a shared understanding of its important role in ensuring stable energy systems. On the other hand, the highest standard deviation for "Sustainability" (SD = 1.45) suggest more diverse views among experts, possibly reflecting different interpretations of the relationship between environmental objectives and traditional energy security priorities. This variation can also reflect concerns that renewable energy sources, while being essential for local energy use and decarbonization, are not stable due to their dependence on weather conditions and storage limitations.

We then asked respondents which other dimensions they consider important and received a variety of answers. While 39 respondents (66 %) did not identify any additional aspects, 20 respondents (34%) provided further comments on what they see as crucial factors. We divided these additional dimensions

into four categories: political factors, security of supply, renewable energy sources, and economic factors. Some of these may overlap with the categories already mentioned: for instance, political factors relate to the “Governance” dimension, while economic factors are closely tied to “Affordability.”

First category are political factors. The most cited factor was geopolitics or geopolitical stability as an important element of energy security. This view was shared by three respondents. This indicates the view that the stability of international relations and the political climate between countries can directly influence energy trade, supply routes, and the security of long-term energy contracts. Energy security is often linked to external dependencies and geopolitical shifts can create vulnerabilities or opportunities in access to energy resources. One respondent added geographical distribution, an important element of global energy security (Respondent 40) as a relevant issue, noting that the location of resources and infrastructure is an important element of global energy security. Another respondent claimed that transparency is an important dimension (Respondent 24) which suggests that transparent decision-making, regulation, and communication are key to building trust and ensuring stable energy governance.

The second category of responses focuses on the uninterrupted delivery of energy. Two respondents specifically highlighted reliability as the most important dimension, emphasising that secure access to energy is not only about having resources but also about ensuring that supply chains and systems remain functional under various circumstances. Other related factors included disruptions, adaptability, interoperability, and risks. These responses stressed the importance of preparation for unexpected challenges, such as technological failures, natural disasters, and external shocks and ensure that energy systems are able to operate with zero or minimal interruptions.

A third category concentrates on the growing role of renewable energy sources. One respondent raised concerns about “*probable problems with renewables*” (Respondent 56), pointing out that while renewables are critical for sustainability and domestic production of energy, their integration into energy systems may create new forms of vulnerability, such as variability or storage challenges. Another respondent added that broader environmental and systemic considerations should be included, citing the circular economy, local energy sources, greenhouse gas footprint, environmental impacts and energy conservation as dimensions that are increasingly shaping how energy security should be understood (Respondent 26).

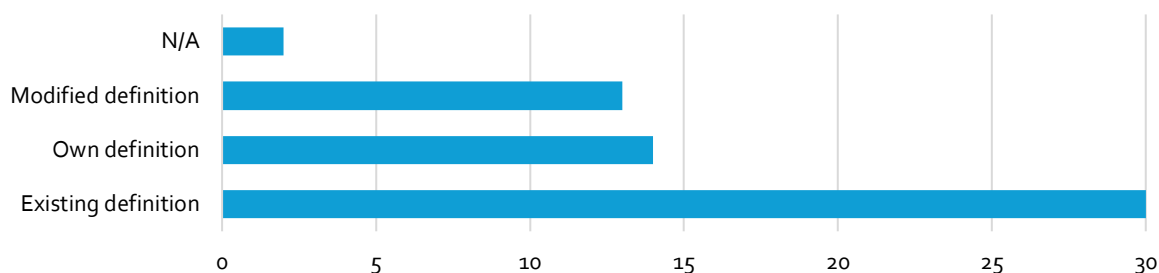
The last category of the responses is related to economic factors. Two respondents referred to trade and technology availability, as well as the skills necessary to manage energy systems effectively. These comments highlighted the importance of maintaining access to international markets, developing technological capabilities, and ensuring a skilled workforce able to operate and adapt to evolving energy infrastructures.

4.3. Literature guidance

The following part of the questionnaire looked at how respondents approach the conceptual and definitional aspects of energy security in their work, particularly in relation to existing literature. Overall, most respondents agreed that the literature provides at least some useful guidance. However, several noted ambiguities and inconsistencies in how energy security is defined across different disciplines, which might suggest that it complicates comparative or interdisciplinary research.

About half of the respondents (30) stated that they use existing definitions of energy security, most frequently those provided by the International Energy Agency (IEA) or the United Nations (see Figure 4). As one respondent explained, “[t]he definition must involve aspects of energy security which are available in the literature” (Respondent 28). Yet, even among those who rely on established definitions, there is a certain degree of dissatisfaction as one respondent admitted being “*not fully satisfied with it [definition]*” (Respondent 55), suggesting that while these definitions offer a common ground, they may lack precision or adaptability for certain contexts.

Figure 4. Using the existing versus developing the own energy security definition



Source: Authors based on the questionnaire

A substantial group of 13 respondents (22 %) indicated that they adapt existing definitions or develop context-specific operationalizations, depending on their research objectives or data constraints. As Respondent 16 explained, *“the availability of comparable data is a limitation, therefore, I stretch the definition to the data.”* Others described combining elements from multiple sources to create definitions that better fit their analytical frameworks or regional contexts.

And finally, there is a group of 14 respondents (24 %) who, during their research, prefer to formulate their own definitions, emphasizing the absence of a universally accepted one. As Respondent 29 observed, *“there is no generally accepted definition (that is not overly broad), hence, one needs to be clear what one means on a case-by-case basis.”* This perspective highlights the conceptual flexibility and at times fragmentation surrounding the understanding of energy security in academic and policy discussions.

At the same time, respondents stressed the importance of standardization and terminological clarity. One respondent provided an illustrative example:

“I generate my own terms, or try to standardize terms in my own work, so as to influence and standardize terms internationally. For unconventional oil and gas extraction, the terms hydraulic fracturing, fracking, shale gas and oil are all used interchangeably. These terms mean different things or are subsets of broader umbrella terms. All the terms are especially confusing to regulators and government who may need to draft regulations to protect the environment during energy generation. Therefore, standardization of terms and proper standardized definitions are very important” (Respondent 59).

4.4. Short-term and long-term priorities

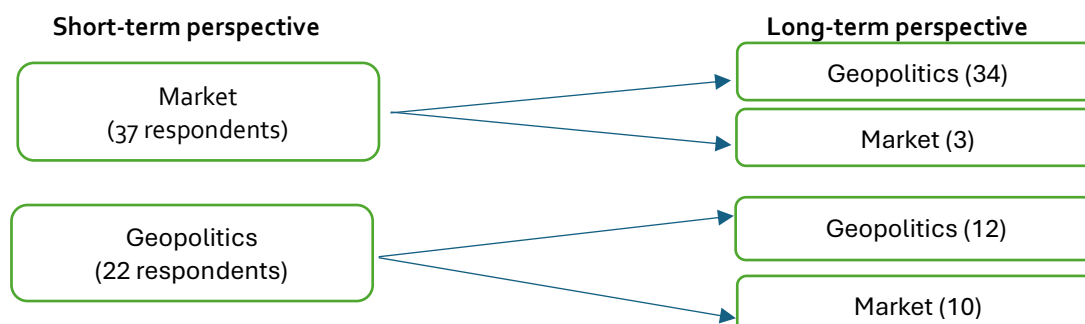
In the fourth part of the questionnaire we asked the respondents to reflect on the relative importance of short-term and long-term priorities in energy security demonstrated by a differentiation between market dynamics and geopolitical considerations (see Figure 5). The majority of respondents (38 %) identified market-related factors, among which we can include energy prices, supply-demand fluctuations, or infrastructure capacities, as critical in the short-term, emphasizing their immediate influence on energy affordability and availability.

In contrast, geopolitical issues were perceived as more significant in the long-term perspective suggesting that the stability of international relations, the formation of strategic alliances, and the establishment of reliable partnerships in energy trade remains very important in the long-term. These responses suggest that while market mechanisms can mitigate short-term volatility, enduring energy security requires a predictable geopolitical environment.

Interestingly enough, the responses revealed a consistent pattern as almost all respondents who considered market dynamics essential in the short-term (37 respondents, 63 %) also regarded geopolitical factors as central to long-term security (34 respondents, 58 %). This alignment indicates an understanding that short-term market stability and long-term geopolitical stability are interlinked.

Without secure and cooperative international relationships, even well-functioning markets may struggle to ensure steady and affordable energy supplies over time.

Figure 5. Short-term versus long-term energy security priorities



Source: Authors based on the questionnaire

On the other hand, respondents who viewed geopolitical factors as crucial in the short term were divided in their long-term outlook. About half continued to see geopolitics as key, stressing the lasting importance of international stability and alliances. The others shifted focus to market dynamics, expecting technological progress, diversification and market efficiency to drive long-term energy security.

5. Conclusions and policy implications

This report explores how experts from academia understand and define energy security, drawing on a questionnaire that combined both quantitative and qualitative insights. The findings reveal that although energy security remains a central concept in academic and policy debates, its interpretation continues to evolve and remains open to different understandings.

While a majority of respondents (53 out of 59) agreed that a definition of energy security is necessary, agreement on common approach was missing. There was less agreement on whether this definition should be universal or context specific. While 61 % of respondents supported a single, broadly applicable definition, 39 % argued that energy security should be context specific. There was also a clear preference for simplicity in defining the concept: 81 % of respondents favoured a simple and straightforward definition, suggesting that clarity is essential for practical policy application. At the same time, 19 % of respondents supported more complex definitions, acknowledging that the multifaceted nature of energy security requires nuanced understanding. Importantly, two-thirds of respondents supported sector-specific approaches, indicating that definitions may need to vary across domains such as electricity, natural gas, or renewable energy.

The results of the questionnaire show that availability, and affordability are seen as two most critical dimensions of energy security. Availability emerged as the top-rated dimension, highlighting the ongoing concern with ensuring stable and sufficient energy supply. Sustainability indicated more diverse expert views, reflecting differing perspectives. While some scholars see it as an important dimension of the energy security concept due to its domestic nature and climate concerns, others point to renewables as a challenge for the stability of energy systems. Meanwhile, resilience, efficiency, and governance were ranked lower but remain relevant as supporting conditions that enable robust and adaptive energy systems. As one respondent summarized: *"There is not the most important dimension. All dimensions must be balanced"* (Respondent 53).

When asked to identify additional dimensions, respondents emphasized political, economic, and environmental factors, what indicates the interdisciplinary nature of energy security. Political aspects,

particularly geopolitical stability, were viewed as important, as energy policy is shaped by international relations and external dependencies. Economic factors such as trade, technology availability, and skills development were also highlighted, indicating that energy security is inseparable from economic competitiveness and innovation. Finally, respondents emphasized the growing role of renewable energy sources being key to energy security, but also bringing the challenges of their integration.

In terms of literature use, approximately half of the respondents rely on existing definitions while the other half adapt or create their own definitions to suit specific analytical or regional contexts. This finding suggests that the concept of energy security remains very vivid and evolving, with scholars trying to fit the realities of various aspects into one definition. Respondents also emphasized the need for greater terminological consistency and standardization. That is important especially to improve the interdisciplinary dialogue, but also regulatory coherence across different countries and regions.

The analysis of short-term and long-term priorities shows that market-related factors such as energy prices, supply-demand dynamics, and infrastructure capacities are seen as decisive for ensuring short-term demand. In the long term, however, respondents highlighted geopolitical stability and international cooperation as an important feature of energy security.

From a policy perspective, the results point to several key implications:

- Policymakers and researchers should recognize that while certain principles of energy security are universal, their practical application varies across national and regional contexts.
- Effective energy policies must find balance between availability, affordability, and sustainability, while taking into account that development in one area does not halt development in another areas.
- Despite lower rankings, governance mechanisms remain crucial for maintaining trust, transparency, and long-term cooperation, which is important for long-term stability and predictability of energy system.
- Policymakers should design frameworks that address immediate market risks while supporting structural transformation toward sustainable and geopolitically secure energy systems.