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## The role of energy security – selected issues

**Abstract:** Energy security is related to the political situation of individual countries and affects both national security and economic security. The article addresses both legal and economic issues. It discusses the importance of legal regulations and the country's economic situation. It also addresses the context of the war between Russia and Ukraine and its impact on this security and energy transformation.

**Keywords:** energy security, energy transformation, diversification of energy sources.

### Introduction

Energy security plays a significant role for nations in the 21st century. Its importance is determined by the political situation of individual countries and is directly related to national security and economic security. Furthermore, an important aspect is the relationship between energy security and development policy and the protection of the natural environment, including the mitigation of the destructive climate change. The state's task is to introduce legislative solutions into the legal system and pursue foreign policies that will serve as a guarantee of climate independence, thereby influencing economic stability and development.

The article aims to show the role of energy security in the social market economy. The aspects that will be discussed concern the economic and legal levels. The formal and dogmatic method will be used. The subject of the analysis will be the content of applicable law and its interpretation. Basic types of legal interpretation will be used (linguistic, systemic, functional), as well as legal inferences. To

the extent resulting from the assumed purpose of the monograph, the findings of economic sciences will be used in the considerations of this study to the extent necessary.

## 1. The significance of the concept of “energy security” – general remarks

Energy security entails the security of fuel and energy supplies at a level that ensures the satisfaction of the needs of individual European Union Member States at economically acceptable prices, assuming optimal utilization of energy resources and diversification of sources and supply routes for crude oil, liquid fuels and natural gas.<sup>1</sup> The proper functioning of the internal energy market requires cooperation between various administrative bodies of the EU Member States. The main threat to the energy security of the European Union primarily manifests itself in the reduction of natural gas supplies from Russia and crude oil supplies from the Middle East. The possession of natural resources can be used as a means of exerting pressure and achieving high profits. The most crucial aspect of energy security in the European Union is the cooperation between the Member States and their mutual relationships, which are more important than relationships with non-member states.<sup>2</sup>

Energy security is linked to multiple factors. The most frequently mentioned factor is diversity, which refers to balanced and diversified energy production systems that encompass various electricity generation technologies with appropriate generation capacities, enabling the maximum utilization of the advantages of each technology. This allows for price stability and ensures the continuous supply of energy to consumers.<sup>3</sup>

Another factor associated with energy security is price. The affordability of energy supply for consumers at an acceptable level is a function of the costs of its production, transmission and distribution. It should be pointed out that disruptions in supply networks can have a negative impact on price levels and create economic difficulties for countries that are overly dependent on a single source of supply.

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<sup>1</sup> See: M. Miś, “Bezpieczeństwo energetyczne Polski w obliczu konfliktu na Ukrainie,” [in:] *Bezpieczeństwo energetyczne Polski i Europy. Uwarunkowania – Wyzwania – Innowacje*, eds. M. Ruszel, S. Pomiotko, Rzeszów 2019, pp. 10 *et seq.*

<sup>2</sup> See: J. Gola, J. Mielczarek-Mikołajów, A. Pinkas, “Stan regulacji prawnych prawa krajowego – wnioski de lege lata i de lege ferenda,” [in:] *Rekomendacje do zmian legislacyjnych w zakresie przeprowadzenia transformacji energetycznej i osiągnięcia neutralności klimatycznej*, ed. J. Korczak, Wrocław 2021, pp. 23–32.

<sup>3</sup> <https://www.gov.pl/web/polski-atom/bezpieczenstwo-energetyczne-podstawa-rozwoju-spolenczenstwa> (accessed: 13.07.2023).

Sustained growth and short-term sharp price increases in crude oil, gas and electricity can trigger inflation and recession. The expertise and knowledge required to establish a secure energy system should also not be overlooked. Without technological know-how and experts in law, economics and technology, it would not be possible to take appropriate steps to improve energy security.<sup>4</sup>

Furthermore, access to diversified energy sources plays a significant role. This requires the necessary knowledge and infrastructure in various production technologies, as well as transmission and distribution systems, such as pipelines and transmission lines. Additionally, energy security depends on the country's current political situation. The energy supply system can be susceptible to disruptions caused by various and often conflicting political interests of nations, terrorist attacks or war. This has become particularly noticeable since Russia's attack on Ukraine in 2022.<sup>5</sup>

Undoubtedly, state policies have a significant influence on energy security. In this context, the document *Polityka energetyczna Polski do 2040 r.* (Energy Policy of Poland until 2040) plays a highly instructive role in Poland.<sup>6</sup> The strategy aims to introduce modernization changes across the whole economy while ensuring energy security, fair cost allocation and the protection of the most vulnerable social groups. It emphasizes the need to implement low-carbon energy transformation with the active involvement of end-users and the engagement of the domestic industry, providing an impetus to the economy while ensuring energy security in an innovative, socially acceptable manner with respect to the environment and climate.

## 2. Energy security – economic aspects

There is no doubt that energy security belongs to the classic category of public goods, characterized by non-excludability and non-competitiveness. Importantly, they are financed with public funds, making them free of charge for end-users.<sup>7</sup> In economic terms, the significance of energy resources arises from the special role of natural resources in the modern world, their exhaustibility and the inability to diversify their distribution. Exports of these resources serve as an effective instrument of political pressure and influence both policies and international economic relations.<sup>8</sup>

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<sup>4</sup> Ibid.

<sup>5</sup> M. Miś, "Bezpieczeństwo energetyczne Polski w obliczu konfliktu na Ukrainie," pp. 10–13.

<sup>6</sup> See: Resolution of the Council of Ministers of 2 February 2021 no. 22.

<sup>7</sup> <https://www.gov.pl/web/polski-atom/bezpieczenstwo-energetyczne-podstawa-rozwoju-spoleczenstwa> (accessed: 13.07.2023).

<sup>8</sup> I.M. Jankowska, "Bezpieczeństwo energetyczne w polityce bezpieczeństwa państwa," *Studia Lubuskie* 2015, vol. 11, p. 147.

Economic scholars point out that “the level of energy security in a country can be measured, among other things, using the net import model of the World Bank, which represents the percentage change in GDP under conditions of sharp energy price increases, depending on the magnitude of net energy imports relative to GDP and the price elasticity of energy demand. The energy dependence index, illustrating the share of net energy imports in relation to gross national energy consumption plus stored energy, is often used as well.”<sup>9</sup> Another commonly used measure of energy security is the so-called energy dependence index, which shows the extent to which the national economy relies on imports to meet its energy needs. This index is calculated on the basis of net imports divided by the sum of gross national energy consumption plus stored energy.<sup>10</sup>

This factor may also be related to the indicator of energy intensity of production, which represents the energy consumption in the production process relative to a specific level of output in which that energy is utilized. It distinguishes between direct energy intensity (referring to the consumption of energy media directly supplied to the specific manufacturing process) and cumulative energy intensity (encompassing the total amount of primary energy consumed in all processes leading to the production of a product or service).<sup>11</sup>

It is worth noting that competitiveness of the energy market also plays a significant role. Today’s world is seeing strong pressure to expand the scope of energy markets, leading to a process of regionalization, where individual countries take joint actions intended to develop energy markets within specific regions. This represents a form of regional integration that serves to meet the needs of both collective and individual countries.<sup>12</sup> It is being observed that “regionalist tendencies are a remedy for the simultaneous process of globalization, although others argue that they represent a stage on the path to full liberalization of energy markets. The creation of regional groups brings significant benefits to individual countries. On the one hand, they gain greater capacity to counter countries characterized by higher competitiveness in energy production. On the other hand, countries belonging to regional groups have the opportunity to improve the quality of services and reduce prices by expanding the scale of operations and increasing access to new sources of energy.”<sup>13</sup>

In a social market economy, energy security issues can be viewed from the point of view of consumers and producers. M. Słowikowski notes that the main

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<sup>9</sup> J. Braun, “Bezpieczeństwo energetyczne jako dobro publiczne – miary i czynniki wpływające na jego poziom,” *Studia Ekonomiczne* 2018, no. 358, p. 27.

<sup>10</sup> *Ibid.*, p. 27.

<sup>11</sup> A. Czech, “Ekonomiczny wymiar bezpieczeństwa energetycznego Polski,” *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu* 2018, no. 523, p. 107.

<sup>12</sup> J. Braun, “Ekonomiczny aspekt bezpieczeństwa energetycznego – analiza obecnej sytuacji w Polsce i wybranych krajach Unii Europejskiej,” *Energia Gigawat* 2020, no. 8–9, *passim*.

<sup>13</sup> *Ibid.*

problem for consumers is maintaining constant supplies of raw materials and responding to negative trends in global raw materials markets. Another essential issue is problems with political relations between exporting, transit, and importing countries. He emphasizes that reducing consumption or losing the sales market may be problematic for countries producing and selling energy raw materials.<sup>14</sup>

### 3. Energy security – legal aspects

When analysing the characteristics of energy security, attention should be paid to the legal aspects. Undoubtedly, the regulations of European Union law directly relate to energy security issues. In the EU context, energy security means ensuring the supply of fuels and energy at a level that guarantees the needs of individual EU Member States at economically acceptable prices, assuming optimal utilization of energy resources and diversification of sources and supply routes for crude oil, liquid fuels, and gas.<sup>15</sup>

The proper functioning of the internal energy market requires cooperation between the various bodies of public administration of the EU Member States. Furthermore, there is a need to develop a unified energy policy at EU level, which would be manifested through a unified energy security management system encompassing a set of actions and measures intended to achieve an adequate level of security and influence the effectiveness of the energy sector.<sup>16</sup>

From the point of view of energy security, Directive 2009/73 plays an important role, while its preamble is particularly important.<sup>17</sup> It states that security of energy supply is one of the fundamental elements of public security. Public security is closely linked to the efficient functioning of the internal gas market and the integration of isolated gas markets of Member States. It should be acknowledged that ensuring the security of supply of fuels and gas should currently be one of the European Union's top priorities, especially considering the threats to this security arising from Russia's military and political actions. The market for these resources is increasingly being used to make weaker states dependent on stronger economies. Therefore, EU legal solutions intended to limit these harmful

<sup>14</sup> M. Słowikowski, "Przyszłość bezpieczeństwa energetycznego Polski w związku z powstającą unią energetyczną," [in:] *Organy regulacyjne w społecznej gospodarce rynkowej. Konspekt prawny i ekonomiczny*, eds. J. Gola, W. Szydło, Wrocław 2017, p. 261.

<sup>15</sup> See: J. Gola, "Selected aspects of energy security in the European Union, its impact on international business relations and the role of judicial review of decisions of regulatory authorities," [in:] *The trajectory of growth and structural transformation of the world economy amid international instability*, eds. S. Balashova, V. Matyushok, Moscow 2014, pp. 74–81.

<sup>16</sup> Ibid.

<sup>17</sup> OJ L 211/94 of 14.08.2009. See: L. Olejarsz, "Trzeci Pakiet Energetyczny – szansa na uniknięcie kolejnego kryzysu gazowego?," *Przegląd Prawno-Ekonomiczny* 3, 2011, no. 16, pp. 93–97.

practices, which have often led to discrimination in competition in terms of access to infrastructure, are of great importance.<sup>18</sup>

There is no doubt that *de lege ferenda*, at EU level, fundamental, new and coherent frameworks for cooperation must be established with regard to economic relations in the energy industry. Only in this way can the European Union find itself among the countries that determine energy policy on the international stage. It will also have a greater influence on the political situation, which is often changed by economic instruments. The greatest threat to EU Member States in this context may be a complete dependence on the energy economy of an external state, which can lead to divisions within the Union and a reduction in energy efficiency.<sup>19</sup>

At this point, it is worth mentioning the wording of Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC.<sup>20</sup> This Directive emphasized that, fully taking into account the relevant provisions of the Treaty, in particular Article 106 (formerly Article 86 of the EC Treaty), Member States may impose public service obligations on companies operating in the electricity sector in the general economic interest. These obligations may relate to security, including security of supply, regularity, quality and price of supply, as well as environmental protection, including energy efficiency, renewable energy sources, and climate protection.<sup>21</sup> However, such obligations must be clearly defined, transparent, non-discriminatory, verifiable and ensure equal access to domestic consumers for Union energy companies.<sup>22</sup>

The EU legislator notes that the European Union is facing unprecedented challenges arising from increasing energy dependence and limited energy resources, while energy efficiency is one of the best ways of meeting these challenges. It increases the level of security of energy supply in the Union by reducing primary energy consumption and limiting energy imports, while also contributing to the cost-effective reduction of greenhouse gas emissions and thereby mitigating the effects of climate change. Furthermore, according to the EU legislator, the transition to a more energy-efficient economy should also lead to the faster popularization of innovative technological solutions, the improvement of industrial

<sup>18</sup> J. Gola, "Selected aspects of energy security in the European Union...", pp. 74–80.

<sup>19</sup> Ibid.

<sup>20</sup> OJ L 211/55 of 14.08.2009.

<sup>21</sup> See: I. Kraś, "Bezpieczeństwo energetyczne Unii Europejskiej," *Prace Naukowe im. Akademii Jana Długosza w Częstochowie* 2011, vol. 4, pp. 35–48.

<sup>22</sup> See: A. Gawlikowska-Fryk, "Bezpieczeństwo energetyczne Unii Europejskiej," *Wspólnoty Europejskie* 2008, no. 1, passim; T. Tylec, "Bezpieczeństwo dostaw energii w Unii Europejskiej – wyzwania i ograniczenia," *Studia Ekonomiczne* 2015, no. 228, pp. 92–100; M. Zajączkowska, "Bezpieczeństwo energetyczne (Unii Europejskiej). Studium przypadku," *Krakowskie Studia Międzynarodowe* 2016, no. 3, pp. 117–126; M. Kaczmarek, *Bezpieczeństwo energetyczne Unii Europejskiej*, Warszawa 2010, passim; J. Misiągiewicz, *Bezpieczeństwo energetyczne Unii Europejskiej. Implikacje nowych projektów infrastruktury gazociągowej w Europie*, Lublin 2019, passim.

competitiveness in the Union, the stimulation of economic growth and the creation of high-quality jobs in energy efficiency-related sectors.<sup>23</sup>

It is also worth mentioning national legal regulations. The main act of law related to this topic is the Energy Law of 10 April 1997.<sup>24</sup> With regard to its scope, the legislator states that the objective of the law is to create conditions for the sustainable development of the country, ensure energy security, economically and rationally use fuels and energy, develop competition, counteract the negative effects of natural monopolies, consider environmental protection requirements and international commitments, and balance the interests of energy companies and fuel and energy consumers.<sup>25</sup> By highlighting the role of energy security, the legislator emphasizes that energy security plays a crucial role in the Energy Law.<sup>26</sup>

This act of law also contains a legal definition of energy security. The legislator states that it is a state of the economy enabling the current and future needs of consumers of fuels and energy to be met in a technically and economically justified manner while observing environmental protection requirements.<sup>27</sup> Therefore, energy security in the energy sector refers to the absence of such threats as interruptions in energy supply and disruptions in the supply chain of energy resources “since they are mostly imported, which significantly influences the quality of national security policy in the case of Poland.”<sup>28</sup> The state should therefore take up the necessary tasks that “would enable the functioning of a legal and economic system ensuring supply certainty, including compliance with requirements and restrictions arising from regulations regarding not only competitiveness but also environmental protection.”<sup>29</sup>

The Energy Law also introduces definitions of electricity supply security and security of the operation of the power grid. They are coherently linked to the previously mentioned general definition. The former refers to the ability of the electricity supply system to ensure the safe operation of the electricity grid and to balance the supply of electricity with the demand for this energy.<sup>30</sup> The latter refers to the uninterrupted operation of the grid, as well as meeting the requirements for the qualitative parameters of electricity and quality standards for customer service,

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<sup>23</sup> J. Gola, *Gospodarność i efektywność w działaniach organów administracji gospodarczej wobec przedsiębiorców publicznych*, Wrocław 2021, p. 78.

<sup>24</sup> OJ L 1385/2022 of 08.08.2022.

<sup>25</sup> Article 1 of the Energy Law.

<sup>26</sup> See: T. Nowacki, “Od nacjonalizacji do regulacji. Prawodawstwo energetyczne w Polsce w latach 1945–1997,” *Studia Iuridica Toruniensia* 31, 2022, no. 2, pp. 223–244.

<sup>27</sup> Article 13, item 16 of the Energy Law. See: J. Kostka-Twór, “Prawnofinansowe aspekty bezpieczeństwa energetycznego w Polsce i UE,” *Studia Prawnicze. Rozprawy i Materiały* 15, 2014, no. 2, p. 210.

<sup>28</sup> M. Jurgilewicz, A. Ovspeyan, “Bezpieczeństwo energetyczne a ochrona środowiska,” *Studia Prawnicze KUL* 70, 2017, no. 2, p. 75.

<sup>29</sup> Ibid.

<sup>30</sup> Article 13, item 16a of the Energy Law.



including permissible interruptions in the supply of electricity to end-users under foreseeable working conditions of the power grid.<sup>31</sup>

Energy security is directly related to aspects of the state's energy policy. It is worth quoting the view of A. Walaszek-Pyziół here, who states that energy policy is an act of planning with the widest scope relating to the energy sector. According to the author, planning in the energy sector plays an important role due to the investment process. It also indicates that the power balance in the national power system must be configured in such a way as to ensure continuous coverage of the demand for current electricity.<sup>32</sup>

## 4. Conclusions

Ensuring stable and affordable energy supplies is a crucial challenge for the Polish energy sector. Long-term energy security can only be achieved through transformation, with the financial burden falling on energy companies. The war between Russia and Ukraine has further demonstrated the extent to which energy prices are dependent on geopolitical situations. Therefore, it is undoubtedly necessary to move away from fossil fuels. This would not only have an impact on environmental issues related to global warming but also on energy security. It can be noticed that the future of our country's energy security depends on the implementation of plans and projects related to the diversification of our country's energy policy, as well as those of all European Union countries. Solidarity among Member States in the context of energy security is of paramount importance. It will contribute to increasing the diversification of directions and sources of strategic energy resources.

The current energy crisis in Europe requires a reconstruction of the energy market. Efforts should be made to increase investment in renewable energy infrastructure and viable alternatives to pipeline gas. This requires financial support to achieve predictability for businesses and increase their competitiveness. The dynamics of economic development and the growing demand for raw materials on a global scale make energy security one of the main priorities in the social market economy, and natural raw materials constitute an essential element of pressure in international relations.

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<sup>31</sup> Article 13, item 16b of the Energy Law.

<sup>32</sup> A. Walaszek-Pyziół, "Energetyka," [in:] *System Prawa Administracyjnego*, eds. J. Grabowski, L. Kieres, A. Walaszek-Pyziół, vol. 8b, Warszawa 2018, pp. 161–162.



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