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### **Energy security and state ownership**

#### **Abstract**

The issue of state ownership has been taken up in the literature since the days of Adam Smith. There is a shortage of articles combining state ownership and energy security issues. Energy security and state ownership are extremely important research topics, since state enterprises constitute a significant part of the economies of the Visegrad Group countries (V4), and energy security is one of the most important contemporary problems and a challenge for all Central and Eastern European countries. The aim of the article is to present the ownership structure of V4 energy companies and to indicate the connection of energy security issues with state-owned property. To that end, a critical literature review and comparative analysis were used. At the outset, the concept of energy security and the most important threats and challenges to energy security were presented. Then, it was explained how the state can effectively prevent and counteract challenges, threats, indicating policy measures aimed at ensuring the stable functioning of energy systems. At the end, the results of conducted research on the ownership structure of energy companies in the Visegrad Group countries were presented. The obtained results reveal that state ownership is a predominant model among V4 energy companies.

**Keywords:** energy security, state ownership, the Visegrad Group, threats to energy security, challenges to energy security, energy companies.

#### **Introduction**

The topic combining energy security and state ownership is extremely important, as energy security is the foundation of a country's economic stability. In addition, in the V4 countries, the largest energy companies are on the lists of strategic enterprises, meaning that their activity is crucial for the functioning of their respective domestic economies. Therefore, it seems justified to analyze the role of the state in the structure of these enterprises.

The main goal of this article is to present the ownership structure in the largest enterprises from the V4 energy sector. The specific objectives are: to present the issues of energy security and the challenges it needs to confront, as well as describe the role of the state in this context. In the paper, the state is assumed to be the main owner of energy companies.

The study was based on a critical literature review and comparative analysis. Both Polish and English literature items were used, alongside legal acts, scientific articles, reports of international organizations and the Amadeus database.

### **Definitions of energy security**

Przybojewska (2015, p. 221) emphasizes that the concept of energy security is highly widespread despite the difficulties in adopting for it a precise definition. In line with the definition of the Polish Ministry of Economy, an autonomous approach to energy security is distinguished, in which energy security is understood as energy independence of a country and a reduction in dependence on imported raw materials (Bożyk 2003, p. 10).

On the other hand, in political terms, energy security is the security of the state and its institutions, not interrupted by disruptions in the inflow of energy to state institutions and its strategic sectors. As far as costs, the breach of energy security occurs when energy prices increase, which then slows down, or decreases, domestic income. Consequently, the people's standard of living is affected and a number of other negative implications ensue (Bożyk 2003, p.12). As Pronińska notes (2012 p.11), energy is essential for the functioning of all modern civilization, having an impact on economic growth, technological development and the quality of life of citizens. These and other reasons demonstrate that energy security is the foundation of today's world (Gawłowski, Listowska-Gawłowska, Piecuch 2011, p. 9).

Pronińska (2012) also indicates that energy security is a dynamic process in which global, regional and energy trends are extremely important. The most crucial components of energy security include: the degree of diversification of supply sources, forms of ownership of enterprises, development of renewable energy sources, stored reserves and their quantity, source of supply, and most importantly, the supply of energy resources available in the country (Bojarski 2004 ).

However, according to the International Energy Agency (2007), energy security should be understood as a risk management problem, which implies reducing risk and disturbances to a level acceptable for a given country. Chmielewski (2010, p. 10), mean while, stresses the importance of multidirectional activities of the state and enterprises which would be aimed at ensuring the right amount of energy resources.

Azzuni and Breyer (2018, p.2) indicate that the concept of energy security depends on the context, the subject of analysis and the assumptions of scientific considerations.

Accordingly, (Moslener, Loschel, Rubbelke 2010) emphasize that this is an abstract concept, ambiguous and inherently difficult to contain in a single definition.

## **Threats and challenges to energy security**

### **1.Threats**

There are at least five important threats to energy security that have been identified (Soroka 2015, p. 42):

- interruption of energy supply from abroad,
- interruption of energy supply due to infrastructure disruption,
- a cyberterrorist attack affecting critical energy infrastructure,
- economic risks,
- loss of influence on infrastructure by the state.

The impact of the first threat depends on the state's dependence on imports (Soroka 2015, p. 42), which is directly related to the ownership function of the state. The state has a better negotiating position with other countries than a private enterprise. This also creates the possibility for the state to ensure emergency sources of supply, which is an extremely expensive undertaking, and an entirely ineffective one, too, if the emergency never occurs.

In the case of the second threat, it primarily concerns blocking transport routes, mechanical failures and damage to equipment. In addition to the possibility of a breakdown, targeted damage is highly likely, e.g. due to acts of terrorism or sabotage (Soroka 2015, pp. 43-45). Only the state can counteract military threats, for which it has not only the means but also the instruments. However, it is also pointed out that the level of energy security largely reflects military capabilities, which in turn are correlated with factors such as the state's economic development (Jankowska 2015, p. 152).

The third threat is a consequence of computer systems being an indispensable tool in controlling energy systems and overlooking the functioning of control devices. It is worth noting that cyberattacks are relatively inexpensive to carry out and can be done from anywhere in the world (Soroka 2015, pp. 47-49), with one recent example being the large-scale 2017 hacker attack on Ukraine, in which systems used by energy companies, including the Chernobyl plant, were blocked. Not only that, other enterprises with branches in Ukraine were also affected by the attack (Eset 2017).

The fourth threat has economic implications, as it refers primarily to the prices of energy carriers and acquisition costs. Energy is a price determinant, which means that any increase in its price will automatically lead to an increase in the price of all articles whose production process relies on energy. Interestingly, oil shocks are directly linked with this threat as well. A further manifestation of this threat concerns agreements and cartels of manufacturers, who are able to determine the amount of extraction and hikes at a given time. The next risk is the possibility of the collusion of an energy producer with a consumer (Soroka 2015, pp. 49-52). It should be noted that the state has appropriate instruments to combat unfair competition. As Leszczyński points out (2017, p. 85), political threats, such as energy blackmail, are also associated with this threat. Another argument for state ownership is that it is better to manage the entire energy network because of costs. Such a task can, thus, only be undertaken by a public entity.

The fifth threat relates primarily to the loss of ownership of individual infrastructure components. State ownership in this respect offers a number of advantages. First of all, it ensures control over the transmission of energy carriers and prevents interruption of supplies (Soroka 2015, pp. 52-53). In addition, in reference to the theory of natural monopolies, it is pointed out that the monopolistic structure of the market is more advantageous from the point of view of allocation efficiency. It is also necessary to underline that few private investors will actually decide to invest in infrastructure with such a long payback period, as is the case with investments in energy networks. A state owner, meanwhile, has no choice because he or she acts for the public good.

## **2.Challenges**

Importantly, challenges may arise at any time and unexpectedly. They concern primarily (Soroka 2015, pp. 53-54):

- gradual depletion of fossil energy sources,
- infrastructure consumption and decapitalization,
- the greenhouse effect,
- a global financial and economic crisis.

The exhaustion of hard coal, lignite, oil and natural gas is related to the fact that for many years these were the basic sources of energy. Searching for new deposits and methods of extracting raw materials is therefore very important (Soroka 2015, pp. 53-54). It is the state

that has the capacity to conduct activities aimed at finding new energy sources and investing in renewable sources.

The second challenge is actually very common today. The progressive decapitalization results, among others, in a decrease in the power capacity and volume of pipelines, which may then lead to non-performance of long-term contracts, power failures and outages (Soroka 2015, pp. 54-55).

The third challenge concerns the greenhouse effect, which consists in accumulating in the atmosphere of gases blocking thermal radiation, especially methane and carbon dioxide. States have, therefore, incurred large costs to reduce carbon dioxide emissions within their economies. There are, of course, voices that challenge the influence of carbon dioxide on the climate, denying the existence of a relationship between these factors (Soroka 2015, p. 55).

The fourth challenge stems from a global financial and economic crisis because any such downturn affects exports. Consequently, societies deepen recessionary tendencies by saving more (Soroka 2015, pp. 53-59). Friedrich List drew attention to the existence of a gap between the knowledge of an individual and the state about the long-term prospects and threats to economic development of the nation. The state has an incomparably broader vision of development, hence it will by default fare better at developing plans and policies in this regard (Szarzec 2013, pp. 44-50).

### **State energy policy**

Seven measures to ensure the stable functioning of the energy sector can be distinguished (Soroka 2015, pp. 92-95):

- provision of internal supplies,
- provision of foreign supplies,
- road diversification,
- conclusion of contracts,
- collecting reserves,
- prevention of cyberterrorist attacks,
- creating networks of local energy producers, energy dialogue and state retention of shares in the ownership structure of energy entities.

In reference to the first measure, states are not willing to hand over to other states or international concerns control over their own resources. Importantly, foreign enterprises are guided solely by profit, and so they most often exploit the acquired resources right away. The

second measure concerns mainly energy carriers that the state does not have or has limited access to (Soroka 2015, pp. 92-95).

Road diversification is the next component of state energy policy, an extremely important one, too, because there is a risk of interference in the transit countries. The fourth state activity is concluding current and short-term contracts<sup>1</sup> (Soroka 2015, pp. 97-107).

In reference to the fifth measure, it should be pointed out that having strategic reserves is the basic anti-crisis instrument<sup>2</sup>. It is emphasized that warehouses should not belong to private entities, as this would violate the basic principles of energy security (Zawisza 2011, pp. 110-113).

The sixth measure is prevention of cyber terrorist attacks, that is, the constant monitoring of potential risks and hazards in the worldwide web. In the coming years, due to the growing threat of such attacks, it will also be reasonable to strengthen intelligence cooperation and unify the law of computer crime (Polish Ministry of Foreign Affairs 2017).

The last measure forming part of state energy policy is necessary due to the strategic nature of the energy sector. Energy affects all citizens and the competitiveness of the economy as a whole, being in itself a major price determinant. In turn, as Domagała points out (2008 p. 7), access to energy sources is one of the strategic interests of the state.

### **Ownership in the largest V4 energy companies**

The main purpose of integration within the V4 group is to build structures of democracy, free market and close integration with Europe. Currently, the V4 group members are: Hungary, Poland, Slovakia, and the Czech Republic (International Visegrad Fund 2018). The largest V4 energy companies were presented, because the V4 countries are similar in many respects, including: they underwent a political transformation, depend on raw materials imports, have a high share of industry in domestic product, and are among the poorest in the European Union (Kowalczyk 2017). In addition, one of the objectives of the Visegrad Four is to strengthen energy security, with each of the members facing a number of common challenges regarding the energy market and energy security (Slobodian et al., 2016, pp. 8-13).

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<sup>1</sup>Long-term contracts are the most common, providing certainty but also being risky due to the inability to forecast 20-30 years ahead. In addition, there are often unfavorable provisions regarding excess supplies, which is why it is reasonable to pay attention to short-term contracts that eliminate the above-mentioned problems.

<sup>2</sup>Reserves are understood broadly, i.e. not only with reference to raw materials, but also other products, semi-products and devices.

Table 1 shows the largest energy companies in the V4 countries by net turnover in 2017, based on the 2017 COFACE 500 ranking (Coface 2017)<sup>3</sup>.

**Table 1. Ownership structure of the largest V4**

Country	Company name	Ownership structure
Poland	Polskie Górnictwo Naftowe i Gazownictwo S.A.	The Treasury holds over 70% of shares
Poland	PGE Polska Grupa Energetyczna S.A.	The Treasury holds over 57% of shares
Poland	Tauron Polska Energia S.A.	The Treasury holds 30% of shares, KGHM holds 10% of shares <sup>4</sup>
Poland	ENEA S.A.	The Treasury holds over 51% of shares
Poland	ENERGA S.A.	The Treasury holds over 51% of shares
Poland	Polskie Sieci Elektroenergetyczne S.A.	a sole shareholder company of the State Treasury
Poland	EDF Polska S.A.	part of the PGE capital group since 2017
Poland	PKP Energetyka S.A.	100% of shares owned by Caryville Investments <sup>5</sup>
Poland	POLENERGIA S.A.	Mansa Investments. holds over 50% of shares <sup>6</sup>
Poland	INNOGY Polska S.A.	RWE Energy is a majority shareholder,
Poland	Zespół Elektrowni Pątnów-Adamów-Konin S.A.	Zygmunt Solorz-Żak holds over 51% of shares <sup>7</sup>
Czech Republic	ČEZ, A. S.	The Treasury holds over 69% of shares
Czech Republic	Alpiq Energy SE	part of the energy group Alpiq Holding Ltd. <sup>8</sup>
Czech Republic	ČEZ Prodej, S.R.O.	The Treasury holds 100% of shares
Czech Republic	ČEZ Distribuce, A. S.	The Treasury holds 100% of shares
Czech Republic	ČEPS, A.S.	The Treasury holds 100% of shares
Czech Republic	EP Energy Trading, A.S.	Daniel Křetínský holds 94% of shares <sup>9</sup>
Czech Republic	Pražská Plynárenská, A.S.	owned by the City of Prague
Hungary	MVM Magyar Villamos Művek ZRT.	owned by the Treasury
Hungary	Magyar Földgázkereskedő ZRT.	owned by the Treasury
Hungary	Fővárosi Gázművek ZRT.	owned by the Treasury
Hungary	E. ON Energiakereskedelmi KFT.	a subsidiary of the German holding company E. ON SE <sup>10</sup>
Hungary	MET Magyarország Energiakereskedő ZRT.	40% of shares held by the Hungarian state-owned group MOL
Hungary	Mavir Magyar Villamosenergia-Ipari	owned by the Treasury
Hungary	Átviteli Rendszerirányító ZRT.	owned by the Treasury
Hungary	Elmű-Évműszaki Energiakereskedő KFT.	a subsidiary of Innogy, whose over 70% of shares are held by RWE <sup>11</sup>

<sup>3</sup> COFACE 500 is a ranking of the largest companies in Central and Eastern Europe. It provides the annual list of 500 companies with the highest net turnover.

<sup>4</sup> More than 31% of this company's shares is held by the State Treasury.

<sup>5</sup> An investment fund belonging to CVC Capital Partners, which is one of the largest investment funds in the world.

<sup>6</sup> The company is a 100% subsidiary of Kulczyk Investments S.A.

<sup>7</sup> Zygmunt Solorz-Żak is a Polish entrepreneur, a majority owner of the company together with Argumentol Investment Company Ltd. and other private companies.

<sup>8</sup> A Swiss company.

<sup>9</sup> Daniel Křetínský is a Czech entrepreneur and lawyer.

<sup>10</sup> A stock-exchange listed company.

<b>Hungary</b>	E. ON Energiaszolgáltató KFT.	a subsidiary of the German holding company E. ON SE <sup>12</sup>
<b>Slovakia</b>	SlovenskéElektrárne, A.S.	66% of shares held by Slovak Power Holding BH (SPH) <sup>13</sup> , and 34% by the Treasury
<b>Slovakia</b>	SlovenskýPlynárenskýPriemysel, A.S.	The Treasury holds 100% of shares
<b>Slovakia</b>	StredoslovenskáEnergetika, A.S.	The Treasury holds 51% of shares
<b>Slovakia</b>	Eustream, A.S.	owned by the Treasury
<b>Slovakia</b>	SPP – Distribúcia, A.S.	owned by the Treasury

Source: own study based on Amadeus data (2017).

In summary, as shown in Table 1, state ownership prevails in all V4 countries in the energy sector. The largest energy companies remain under the control of the state, and if smaller private ones appear, they are largely dependent on the state through the capital structure, or their presence does not significantly affect the market.

## Conclusions

Having reviewed the literature and the Amadeus database, it appears that the state is a predominant owner of energy companies in the Visegrad Group. In addition, it should be pointed out that ownership is correlated with energy security.

At the outset, definitional discrepancies of the concept of energy security were presented, followed by an observation that, in analyzing energy security, all of its conceptual dimensions must be considered so as to avoid adopting too narrow a definition.

In the second section, it is argued that due to a number of threats - such as interruption of supplies from abroad, infrastructure disruption or a cyber terrorist attack, economic threats, and the possible loss of influence on infrastructure by the state - the state should exercise a significant influence on energy companies. State participation is also necessary due to the challenges lying ahead of energy security.

Subsequently, seven components of state energy policy for ensuring the proper functioning of the energy system were highlighted, which can be implemented only with the participation of the state, due to the responsibility, high costs at high risk and the need for stable development and ensuring high quality of energy services.

Energy security in V4 countries was then examined, identifying state ownership as a predominant model of their share structure. In addition to this, some private companies are

<sup>11</sup>A German, stock-exchange listed energy company

<sup>12</sup>A stock-exchange listed company.

<sup>13</sup>An energy company owned in 50% by the State Treasury of Slovakia, and in 50% by the Italian state-controlled company ENEL.



also largely dependent on the state due to a number of legal regulations.

Energy security is the main determinant of the ownership structure in energy companies in the Visegrad Group countries. The state exercises control over the most important issues related to the energy sector. This is crucial due to the strategic interests of the state, security of citizens and the amount of costs incurred. It is assumed that state ownership is necessary to eliminate threats and confront challenges associated with domestic energy security, as well as to implement relevant measures with a view to provide a stable functioning of energy systems.

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