STRATEGIC IMPORTANCE OF NATURAL GAS IN POLISH ENERGY POLICY: A CRITICAL ANALYSIS

STRATEGICZNE ZNACZENIE GAZU ZIEMNEGO W POLSKIEJ POLITYCE ENERGETYCZNEJ – ANALIZA KRYTYCZNA

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— ABSTRACT —

This article deals with the importance of natural gas as an energy source in Polish energy policy. Its purpose is to analyze the extent to which natural gas can provide for ensuring state energy security. This article covers issues related to the diagnosis of the gas sector in Poland (the most important economic entities, the functioning of the gas market), its role in the national energy strategy and prospects for future gas use. The article points out that natural gas, although important for maintaining and securing state energy security, is, however, not crucial in this regard. Multiannual strategies envisage diversification of the way of generating energy, which means the opportunity for renewable energy sources (RES) and nuclear energy. Natural gas has a secondary meaning in this context.

Keywords: energy policy, energy security, energy sources, natural gas, diversification

— ABSTRAKT —

Artykuł dotyczy znaczenia gazu ziemnego jako surowca energetycznego w polskiej polityce energetycznej. Jego celem jest analiza, w jakim stopniu gaz ziemny może stanowić podstawę zapewnienia bezpieczeństwa energetycznego państwa. Artykuł obejmuje zagadnienia związane z diagnozą sektora gazowego w Polsce (najważniejsze podmioty gospodarcze, funkcjonowanie rynku gazu), jego rolę w narodowej strategii energetycznej oraz perspektywami wykorzystania gazu w przyszłości. W artykule wskazano, że gaz ziemny, chociaż jest istotny dla utrzymania i zapewnienia bezpieczeństwa energetycznego państwa, to jednak jego rola nie jest kluczowa w tym zakresie. Wieloletnie strategię polityczne zakładają bowiem dywersyfikację sposobu wytwarzania energii, a to oznacza szansę dla odnawialnych źródeł energii oraz energii jądrowej. Gaz ziemny ma w tym kontekście znaczenie subsydiarne.

Słowa kluczowe: polityka energetyczna, bezpieczeństwo energetyczne, surowce energetyczne, gaz ziemny, dywersyfikacja

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INTRODUCTION

The issue of natural gas in relation to Poland is one of the key challenges in the field of energy security. Poland – as a member state of the European Union, tries, on the one hand, to have its own national strategy for ensuring energy security. On the other hand, it applies – in this respect – to the EU guidelines, which form the basis for the European energy policy created for many years. Building national energy policy is therefore subject to both internal and external (international) determinants. The first category is undoubtedly the issue of the structure of the national energy sector, which should be understood as, among others: condition of energy companies, quality of energy infrastructure, level of competitiveness of the sector against other sectors of the economy, specificity of energy balance or problems of energy self-sufficiency (Tomaszewski, 2014). The second category should include international conditions, i.e., the issue of the State's membership in international organizations, the nature of relations with the countries which are energy resources suppliers, cross-border infrastructure, the specificity of international agreements in the energy sector.

The purpose of this article is to analyze the conditions of Polish energy policy taking as an example of the natural gas sector. Blue fuel, as natural gas is often named, is an important factor for Poland in shaping the national energy policy and building economic security. It is crucial to put a research question on the importance of gas for the national economy in the context of other energy carriers that make up the energy balance of Poland. Is natural gas a real opportunity for Poland to build energy security in the medium and long term?

The basic hypothesis for verification – in the context of the above research questions – is: natural gas cannot be the basis for building an energy security strategy for Poland, but only a functional complement to the energy balance alongside other carriers (in particular: renewable energy sources, hard coal and lignite – in the future – nuclear fuel). This is due to the modest own resources and strong dependence of the state on external suppliers (in particular from the east – especially gas from the Russian Federation).

In the methodological dimension, system analysis will be used. It will enable a comprehensive look at the natural gas sector in Poland, through the perspective of the market and policies that include expectations about the future of this sector and its significance for the Polish economy.

Referring to the literature of the subject, attention should be paid to interesting analyzes of researchers from the AGH – University of Science and Technology in

Kraków (publications prepared by: M. Kaliski, J. Siemek, S. Rychlicki, S. Nagy, & A. Szurlej). They concern in particular technological and economic issues related to the issues of gas supplies to Poland. The economic approach with elements of security science and international relations is presented by scientists from the SGH – Warsaw School of Economics (including: K. Żukrowska, K. Księżopolski). The work of the following authors, including V. du Castel (2014), B. Jullien and A. Smith (2015), as well as N. Bachkatov (2012), are an inspiration to undertake a scientific attempt to synthesize problems of the economy and politics.

This text is a presentation of energy sector problems from a perspective of political sciences. It includes – in particular – some aspects related to the impact of power on the energy sector, issues of the energy strategy for Poland and relations between economics and politics. Due to the scope of the subject, national policy is the central point of reference. This is a limiter of the presented text. Nevertheless, one should also take into account the wider context and remember that it is also conditional on Poland's membership in the European Union.

THE NATURAL GAS SECTOR IN POLAND

Poland is a country where energy consumption is relatively diverse. The coal is the energy carrier of the dominant importance. Natural gas accounts for approximately 17 percent in the overall structure of primary energy consumption. This is definitely less than the average in the European Union.

Diagram 1. Primary energy consumption by fuel in 2016 – European Union and Poland

Source: BP Statistical Review 2017; BP Energy Outlook 2018.

At the same time, in line with global trends, an increase in domestic gas consumption is observed. The share of natural gas in the primary energy balance in Poland is also gradually increasing. In 2016, it was at the level of approx. 13,63 percent, and compared to 2000, it increased by 2,69 percent (Ministry of Energy, 2017).

Diagram 2. Primary energy balance in Poland in 2000 and 2016 – comparison

Source: Ministry of Energy – Poland (2017).

The low level of dependence on natural gas goes hand in hand with a relatively high dependence of Poland on gas imports. Over 70 percent of the raw material is imported from abroad. Eastern direction is the dominating source of imports (PGNiG, 2017). Such a situation is the main reason for the Polish authorities' concern for security of supply. Dependence on deliveries from one direction means that action to diversify supply lines becomes a key action in energy policy (Bachkatov, 2012).

The main supplier of the raw material is the Russian company OAO Gazprom. Imports to Poland are carried out under a long-term contract, which is valid until 2022. This situation of strong dependence on supplies from one direction, however, is gradually improving. This is influenced by both the diversification activities undertaken by entities responsible for the gas sector, as well as a number of investments in infrastructure development (e.g., LNG terminal in Świnoujście), which allows Poland to use gas supplies from the country other than the eastern one.

Diagram 3. Sources of Poland's supply of natural gas

Source: PGNiG S.A., March 2018.

Turning to the market situation of the Polish gas sector, it should be pointed out that its structure consists of entities conducting the following types of activities: transmission, distribution, trade, storage, exploration, and extraction. This structure is still highly monopolized. It results from the dominance on the market of one capital group, which is Polskie Górnictwo Naftowe i Gazownictwo S.A. (hereinafter referred to as: PGNiG S.A.), which directly or through its subsidiaries conducts all of the aforementioned activities, covering 98 percent of the market. The Polish gas market is in practice the domain of one vendor.

PGNiG S.A. belongs to a group of strategic energy companies in which the State Treasury owns its shares. It is also the third largest company¹ listed on the Warsaw Stock Exchange (PGNiG, 2018). This provides the government not only with an opportunity to influence the composition of the board, but also allows the appointment of a representative of the State Treasury to the composition of the company's supervisory board. In this way, there is a kind of synergy between the ideas of the state on the shape and functioning of the gas sector, and the implementation of these assumptions by the company. On the one hand, this situation guarantees that the largest Polish energy company operating in the gas

¹ In terms of market cap at May 23rd, 2018.

sector will be part of the government's plans for shaping energy policy, but on the other hand, the management and supervisory board must reconcile these demands with economic challenges, in particular raising the company's value and expectations of investors.

Diagram 4. Shareholding structure of PGNiG S.A. (as of December 31, 2017)

Source: PGNiG S.A., 2018.

PGNiG S.A. implements its activities directly, as well as by subsidiaries in virtually all areas of the gas market. According to the company's articles of association, it conducts activities in the sphere of, among others, exploration, extraction, natural gas trading and gas distribution to recipients (PGNiG, 2016). A functional division of the PGNiG company was made in 2004. A new entity was separate – the transmission company Gaz System S.A. Initially, it was part of the PGNiG S.A. Group, to become an independent entity in later years, although also controlled by the State Treasury². These two economic entities play a key role in shaping the Polish natural gas market³.

² Gaz-System S.A. is the Operator of the Transmission Network (TSO) in Poland. Its task is to transport gas through high-pressure networks. In practice, the company operates a network of gas transmission pipelines with a length of approx. 9.853 km, gas compressor stations and reduction and measurement stations.

³ In addition to PGNiG S.A. and Gaz System S.A. there are several independent entities involved in gas distribution and trade, including: CP Energia, EWE Energia, and G.EN Gaz Energia. In the field of natural gas production in Poland, apart from PGNiG S.A., such activities include the companies: Petrobaltic S.A., having an exclusive license for the exploration and exploitation of hydrocarbon deposits in the Polish maritime area, covering approximately 30.000 km², FX Energy Poland Sp. z o.o., RWE Dea Polska Oil Sp. z o.o.

Bearing in mind the weakness of competition in this energy sector, gas prices on the market are regulated. Responsibility in this respect rests with the President of the Energy Regulatory Office, which approves the tariffs⁴ (in accordance with the provisions of art. 23 of Prawo Energetyczne, OJ 2017, item 220 – consolidated version).

Turning to the analysis of the problem of own resources, it must be pointed out that natural gas deposits in Poland remain at the disposal of PGNiG S.A. and amount to 98 billion m³. Domestic conventional resources are concentrated mainly in the Polish Lowlands (66 percent), in the foothills of the Carpathians (30 percent), in the Polish economic zone of the Baltic Sea (3,5 percent), and in the Carpathians (Szurlej, 2008).

Natural gas is an important element of the energy market in Poland, mainly when it comes to large industry, which is the primary recipient of this raw material. To a lesser extent, this raw material is used for energy production (in particular due to the high costs of purchasing gas from abroad) and by individual consumers in households (GUS, 2016).

Diagram 5. Natural gas sales by sectors in Poland (2016 and 2017) – comparison

Source: PGNiG S.A., 2018.

⁴ The tariffs specify both the price of fuel and the rates of fixed and variable fees for transmission and distribution, subscription fees, connection fees for the network and penalties for illegal consumption of gaseous fuels.

Bearing in mind the portfolio of natural gas use and its share in the structure of production as well as primary energy consumption, the conclusion is that gas is not a key energy carrier for the Polish economy. Nevertheless, in the context of forecasts indicating an increase in demand for fuels and energy in Poland, guaranteeing the supply of this raw material is of key importance not only as a challenge for the future, but as a current task of Polish energy policy and is undoubtedly a matter of *raison d'état* (Kochanek, 2015).

To sum up the natural gas sector in Poland is an important pillar of the national economy. The key – from the point of view of this sector – enterprises remain dependent (to a large extent) on the state, and their activities reflect national interests. However, the problem that remains is a high dependence on external supplies of raw material and – from the market point of view – a lack of full liberalization of the sector.

NATURAL GAS – AS AN ELEMENT OF THE NATIONAL POLITICAL STRATEGY

The role of natural gas in the national economy is not subject to discussion. Bearing this in mind, the natural gas sector is the subject of strategic behavior on the part of the state and its structures. This is undoubtedly reflected in the national strategies adopted in the context of long-term shaping of the energy sector's vision. An example that confirms this thesis may be strategic documents known as: *Energy Policy of Poland* (in turn: ...until 2025, ...until 2030, ...until 2050). In this text, the moment of Poland's accession to the European Union was adopted as a starting point for further analysis. It sets a new way of thinking about the national economy in the context of membership in international integration structures. Three long-term strategies were designed during the period.

When describing Polish energy strategies, at least two of their constitutive features should be emphasized, one of which is an advantage, the other should be considered an "Achilles' heel". On the one hand – what is positive – is the fact that they arise based on a certain political compromise. This is a fundamental issue in shaping changes in the economy. They cannot be subject to cyclical party influences or election fluctuations and constant changes along with the new ruling teams, but they should be part of a continuum that will enable the desired economic change to be implemented (Lane & Wallis, 2009). At the same time, it will allow effective programming of structural changes in the economy.

On the other hand, as a negative element, it has to be pointed out that energy strategies have basic disadvantages in the form of relatively strong rooting in the political and economic reality in which they arise (Höglund et al., 2018). They are burdened with a weakness of predetermination, which means that they concern the problems of “tomorrow”, but they try to solve them with conceptual categories of “today”. In practice, they are conservative and to a small extent they focus on new, innovative solutions (Lisowski, 2005). Their weakness is also the lack of fastening in econometric models. They are based primarily on the predictions of experts. They are *de facto* built on the knowledge and experience of the people who created them (Johansson, 2009).

Referring to the natural gas issues, it should be noted that the following challenges appear in these strategies: ensuring stable gas supplies to Poland (especially in the context of diversification of directions), construction of transborder gas connections (with countries neighboring Poland) and new infrastructure (in particular LNG terminal).

Moving on to a detailed analysis of selected issues in relation to the natural gas sector, one should point to the first strategy of this type, i.e., the document: *Energy Policy of Poland until 2025* adopted in 2005 (hereinafter: PEP 2025). Its approval coincided with Poland’s accession to the European Union. It is therefore a kind of reflection of the way of thinking about the energy and gas sector that the European Union at that time adhered to. It was then decided that one of the most important directions of the government’s activities should be consistent building of a competitive gas market in accordance with the then energy policy conducted within the framework of European cooperation. This objective was to be achieved by stimulating competition and effectively eliminating barriers such as long-term contracts (PEP 2025). At the same time, it emphasized – as a key measure in the internal dimension – the need to diversify the directions and sources of natural gas supplies, maintain fuel reserves and ensure transmission capacities that would enable diversification. It also points to the insufficient level of cross-border connections that do not ensure the functioning of the natural gas market in an efficient manner. Such a provision was particularly important in the context of the EU policy of building an integrated natural gas market. The document for the first time also included the issue of the construction of technical infrastructure that would enable the import of LNG to Poland.

Another document of a strategic nature was *Energy Policy of Poland until 2030* adopted in 2009 (hereinafter: PEP 2030). This time, among the circumstances accompanying the adoption of the document, there were fluctuations in

the prices of energy resources in the world, and within the EU there was a new challenge – ecological issues. The natural gas sector was indicated mainly in the context of the security of gas supply, which reflects the EU efforts to strengthen the level of energy security of the Member States. In Poland, this has been transposed to the task of diversifying the directions and sources of this raw material supply. Attention was also paid to the need to increase storage capacity. As an interesting and far-sighted proposition one should also recognize the postulate of obtaining by domestic enterprises access to deposits located outside the country, but also to increase mining in Poland. No less important issues are: development of the transmission and distribution system, development of coal gasification technologies and obtaining gas thanks to that, and the use of methane exploited from surface wells. These ambitious goals, especially the issues of innovativeness, have not been further developed in the strategy, especially in terms of indicating the financial resources necessary to implement such projects. However, one cannot deny the fact that they completely forgot about economics. It was pointed out that the diversification will be preceded by an economic analysis – in terms of the alternative use – of the possibility of obtaining gas from domestic raw materials, including the use of new technologies (PEP 2030).

Some of the detailed entries have been successfully implemented. This applies in particular to the development of the natural gas transmission and distribution system (PEP 2030). The construction of the LNG terminal was to be a stage to achieve this goal, which was put into operation in the following years.

The document also plans to build a gas connection with the Norwegian Continental Shelf (PEP 2030), which was intended to allow it to become independent from deliveries from one direction. Tariff problems have not been forgotten. Legislative actions were announced to improve the sector and its modernization. Taking into account the guidelines of the then Directive 2003/55/EC⁵, it was planned to appoint a gas storage system operator to reduce the level of monopolization of the market in the sector.

However, these assumptions as to the activities in the gas sector are difficult to assess unequivocally. Although “specific objectives” have been set, there is a lack of detail in them. The time frame for achieving these goals has not been specified, nor has the sources of financing for the projects described in the strategy been

⁵ Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 Concerning Common Rules for the Internal Market in Natural Gas and Repealing Directive 98/30/EC, OJ L 176, 15.07.2003, pp. 57–78.

identified. Expected effects related to the decline in dependence on imports of raw material were combined with crude oil, which made it unclear what progress is expected and desired in this respect. Another key weakness is the identification of certain specific objectives with activities in the area of the gas sector. As an example, one can point to the demand for “access to natural gas deposits located outside Poland” by domestic enterprises. It is treated as both an action and an end in itself. So it has both a practical and teleological dimension.

Another document that concerned the issue of strategy in the gas sector was the project *Energy Policy of Poland until 2050*, processed by the Ministry of Economy until 2015. However, this document has not been officially adopted by the government, so there is no formal status of the strategy. Nevertheless, the analysis of the assumptions contained therein does not foster optimism from the previously analyzed ones. It was just as vague. It would be difficult to admit that it presented a coherent and precisely structured vision of the development of the energy sector (or – specifically – gas dimension). Work on the document continued parallel to the preparations of the Paris climate summit (COP 21). That is why environmental problems are an important element of the Polish strategic document.

As far as gas is concerned, the strategy included provisions on the development of competitive natural gas markets and on the maintenance and development of transmission and distribution capacities, including those infrastructures. Also mentioned was the expansion of cross-border connections with neighboring countries.

As a positive aspect of the new strategy, it should be pointed out that it contained the planned scenarios for the development of the energy sector: a) sustainable, b) nuclear, and c) gas + RES. It should be mentioned that both the first and the third option included increasing the importance of natural gas in the economy. According to the sustainable scenario, the role of gas will be of bigger importance than before, but fossil fuels, mainly on hard coal and lignite, were still to play a key role in the economy (Olkuski, Szurlej, & Janusz, 2015). The natural gas was to be used as a reserve power stabilizer in the power system (PEP 2050).

In a particularly interesting, from the point of view of this article, the “gas + renewable energy” scenario, a combined share of both components was assumed at the level of 50–55 percent. This variant predicts that the gas will supply in particular: the electricity generation sector, the chemical and petrochemical industry, as well as heating. It was the most favorable scenario when it comes to the development of the gas sector. It created real opportunities to modernize it due to the increase in demand for raw material. In addition, it would not

only make it possible to meet the requirements related to the EU energy policy, but would also imply fundamental modernization changes in the Polish energy sector. As shown by T. Olkuski, A. Szurlej and P. Janusz (2015), natural gas and renewable energy sources complement each other very well, because this raw material works perfectly as a stabilizing factor for relatively unstable production from renewable energy sources. This kind of scenario also seems to be accurate in the perspective of Poland's climate commitments.

The "nuclear" scenario is omitted in this analysis, due to the fact that the role of gas was the least significant in its course. An interesting analytical look at the discussed variants is presented in the table below.

Table 1. Energy balance in Poland until 2050 (analysis of the scenarios of the Polish Energy Policy until 2050) (Percent)

Scenario	Source of energy				
	Nuclear energy	Hard coal and lignite	Natural Gas	Crude Oil	RES
Sustainable	15	>20	15–20	15–20	15
Nuclear	40–60	10–15	10–15	10–15	15
Gas + RES	10	30	30	15–10	>20

Source: Olkuski, Szurlej, & Janusz (2015).

The analysis of the document *Energy Policy of Poland until 2050* allows to notice that during the discussed period there was a certain evolution in the way of thinking about the functioning of the gas sector (Mrozowska, 2016). While at the beginning of the 21st century it was obvious that the main strategic goals were primarily measures for: diversification of sources and directions of supply, construction of new transmission infrastructure and storage capacity, later in the process of more scenario analysis. As part of the developed options, gas appears as a substitute raw material for renewable energy sources and at the same time a factor whose wider use will allow Poland to meet international obligations in the field of environmental protection.

According to the information of the Ministry of Energy – as follows: ME (March 2018) – new works are being undertaken in the Ministry on the long-term energy policy of Poland. A significant influence on its final shape is to exert – according to the ME declarations – the EU policy in the field of energy and climate, in particular the so-called winter package – *Clean Energy for All Europeans* (European Commission, 2016). The energy resort also indicates that under the obligation imposed on

EU Member States, it also undertakes work on the *National Plan for Energy and Climate* (Ministry of Energy, 2018). This document is intended to present Poland's activities for the implementation of the five dimensions of the Energy Union, i.e., energy security, decarbonisation of the economy, energy efficiency, integrated energy market, and innovation (European Commission, 2017a).

PROSPECTS FOR NATURAL GAS IN POLISH ENERGY POLICY

The issue of natural gas – as mentioned in the previous paragraphs – belongs to the strategic challenges in the area of Polish energy policy. After analyzing the state of the sector and strategic visions, one should go to the realities to fully assess the importance of the natural gas sector for the national economy.

Based on government forecasts prepared in 2015 for the purposes of *Energy Policy of Poland until 2050* it appears that due to the gradual modernization and technological reconstruction of the Polish energy sector, the share of hard coal will decrease, and its role in meeting the demand for primary energy will decrease from the current 42 percent to 28 percent in 2050. At the same time, the significance of natural gas will increase from the current 13 percent to 18 percent in 2050, which will be associated with the popularization of this fuel in heating and combined heat and power plants and with the takeover by gas-fired power plants peak sources necessary for the anticipated development of non-disposable wind and solar sources (PEP 2050).

Table 2. Forecast of the size and structure of domestic primary energy demand by fuel (Mtoe)

	2010	2015	2020	2025	2030	2035	2040	2045	2050
Hard Coal	43,0	36,9	35,5	32,8	31,3	30,1	29,9	27,1	24,4
Lignite	11,6	14,3	13,0	11,9	9,1	2,5	2,6	2,2	2,1
Crude Oil	26,5	25,4	27,2	27,5	26,9	25,1	23,4	22,3	21,5
Natural Gas	12,8	14,1	15,2	15,3	15,2	16,1	16,1	15,8	15,5
Renewables	7,3	9,2	12,0	12,6	14,0	14,6	14,1	13,8	13,7
Nuclear Energy	0,0	0,0	0,0	2,8	5,6	10,8	10,9	10,6	10,3
Other	0,6	0,3	0,4	0,4	0,4	0,4	0,4	0,4	0,4
Total	101,8	100,2	103,2	103,3	102,5	99,5	97,3	92,2	87,9

Source: Ministry of Economy – Poland, 2015.

Taking into account the analyzed *Energy Policies...*, it should be emphasized that the same challenges occur on a regular basis: diversification of raw material supplies, underground gas storage, and development of the transmission and distribution network. The most important priorities for the Polish gas sector for the coming years are indicated in the figure below.

Figure 1. The most important energy investments in Poland, by Energy Policies...

Source: Polish Energy Policy until 2050 – assumptions and prospects for the development of the gas sector in Poland, Ministry of Economy, Warsaw 2014.

Natural gas is currently the cleanest – among fossil fuels – source of energy. Its combustion causes the smallest emission of pollutants, and thus the relatively lowest environmental burden.

As indicated by M. Kaliski and A. Szurlej (2008), the 19th century belonged to coal, the 20th century – to crude oil, the 21st century will belong to natural gas (the future, according to the authors, will be under the sign of hydrogen). The argument for this thesis is undoubtedly the increase in natural gas consumption in recent years. In addition, the natural gas market in Poland is characterized by a significant development potential in comparison with other European Union countries. In this context, it should be emphasized that while in the case of EU countries we can observe a nearly 14 percent decline in natural gas consumption

in 2010–2016, in the case of Poland there is a reverse trend, i.e., less than 12 percent increase in gas consumption (Kaliski et al., 2017).

The natural gas market in Poland, after joining the European Union, underwent significant transformations (Kaliski & Szurlej, 2009). These changes are connected with such factors as: implementation of the EU law, modernization of the economy, increase of competitiveness of energy enterprises, increase of citizens' awareness in the context of environmental protection.

Membership in the EU means co-deciding about the future of European energy policy, but also gives a possibility of benefiting from financial support for the implementation of new investment projects. A clear example of this is the Connecting Europe Facility (CEF) mechanism, aimed at strengthening energy, transport and digital infrastructure in the EU in 2014–2020 (European Commission, 2018).

In November 2017, the European Commission announced a list of energy projects of community importance (the so-called PCI; European Commission, 2017b). Such status means that they use legally guaranteed facilities in the form of, among others, accelerated procedure of issuing permits and administrative decisions, or the possibility of receiving financial support. The list includes projects important from the point of view of Poland's energy security, including: the Poland-Denmark (Baltic Pipe) connection together with the necessary infrastructure development in both countries; project for the expansion of the LNG terminal in Świnoujście together with additional functionalities; Poland-Slovakia connection together with the extension of the internal network in Eastern Poland; Poland-Lithuania (GIPL) connection, Poland-Czech Republic (Stork II) connection together with the extension of the internal network in Western Poland (Ministry of Energy, 2017a).

Summing up, it should be recognized that most of the undertakings included in the *Energy Policies...* are successfully implemented. Building a strategy for the sector based on political compromise over party divisions favors the coherent undertakings that can be realized with the benefit of the political views on economy of the ruling elite.

As a successful attempt to diversify delivery directions, the LNG terminal in Świnoujście should be handed over in 2016. It provides the possibility of receiving natural gas at the level of 5 billion m³ per year (after possible expansion, the volume may be increased to 7,5 billion m³) as well as provides a strategic point of view – an important factor in building Poland's independence from Russian gas supplies.

In the context of the diversification postulate, it is also beneficial to build cross-border gas interconnectors (Janusz, 2013), which not only strengthens Poland's cooperation with its neighbors, but also positively influences the shaping of energy security in the region and is a response to Art. 194 TFEU, the task of developing interconnections between energy networks to which Member States are obliged (Tomaszewski, 2017).

Map 1. Gas interconnections

Source: PGNiG S.A., 2018.

The international activities of Poland for the construction of the North-South Gas Corridor should also be considered prospective. The project would connect the LNG terminal in Świnoujście and the Baltic Pipe, through southern Poland, the Czech Republic, Slovakia and Hungary with the proposed Adria LNG

terminal in Croatia. It would consist of many bilateral gas interconnections and national gas pipelines that already exist or are at different stages of implementation. In this way, a natural gas supply route from Norwegian resources would be built, which would protect not only Poland, but also the region of Central and Eastern Europe (Tomaszewski, 2017).

CONCLUSIONS

The natural gas sector is for Poland one of the key elements in the strategy of measures to improve the state's energy security. In subsequent, analyzed in this text, strategies regarding the future of energy policy, this raw material is indicated as an important component of Poland's energy balance both today and in the medium and long term perspective.

Referring to the hypothesis given in the introduction to the article, natural gas, although it is of great importance for Poland's energy security, cannot constitute a fundamental basis for building the energy security of the state. It results from several reasons:

- Poland's own resources are too poor to constitute a viable alternative to the supply of raw materials from abroad;
- shale gas deposits in which high expectations were placed turned out to be not very promising in the context of industrial scale operation (PGNiG, 2016; Książkowski, 2012);
- strategic assumptions of successive governments assume primarily the use of domestic hard coal resources for energy production;
- the European Union does not affect Member States in the direction of increasing the volume of natural gas in the national energy balance (Tylec, 2015). States have full discretion in this regard (Książkowski, 2015);
- importing gas from abroad is connected with: a) energy dependence, b) high costs, or c) the need to incur investment outlays. The first option: the purchase of Russian gas is both costs and the increase of energy dependence on the Russian Federation; second: purchases of LNG from foreign partners – higher prices compared to gas prices from Russia (Kaliski et al., 2017). The third option, which appears in connection with the plans for the construction of the North-South Corridor (Tomaszewski, 2017), means investment expenditures – both in Poland and in other countries participating in (and in the future – being beneficiaries of) this project.

Bearing in mind the above, natural gas remains a raw material for Poland, obtaining of which is a difficult challenge for the government as well as for the main company operating in this sector, namely, PGNiG S.A. Even if the initiative to import gas from directions other than Russia would be expensive or politically complex, it is, after all, worth taking. In this way, the negotiating position relative to the Russian Federation is strengthened. The former monopolist must reckon with the loss or weakening of its position on the market so far, which will allow obtaining better prices from the point of view of recipients.

In conclusion, the analysis of global energy trends indicates that the foundation of the energy security of the modern state is such a diversification of media that enables stable development of the economy.

In relation to Poland, it should be understood in the context of increasing the share of renewable energy sources (Deloitte, 2016), as well as postulate to build new generation capacities based on nuclear energy.

In the political dimension, it would ensure Poland's energy independence, and also allow for adaptation to the challenges posed to Member States by the European Union, which expects action under the treaty to develop RES (Bartnikowska, Olszewska, & Czekala, 2017), energy efficiency and systematic strengthening of energy security (TFEU, Article 194), as well as environmental protection (especially reducing CO₂ emissions to the atmosphere).

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