

Russian natural gas sector: current situation, perspectives and its importance for Europe

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Abstract

The aim of the article is to outline the prospects for the Russian natural gas market in the future and to present the Russian gas sector in comparison with the strategic "players" of the global market. The author examines the issues related to the production, transmission and sale of Russian natural gas. The main problem concerns the possibilities and limitations, that influence the power of the Russian "blue fuel" sector. The article presents briefly the results of the research, which were obtained mainly through the method of *case study*. The verification of the main hypothesis will be made from the *top-down* perspective, considering analysis of the actions of state decision-making centres. Less explicit impact, including the interaction of non-public actors (such as economic items), will be skipped, because their more precise consideration would provide to the interesting, but different direction of analysis of the sectoral groups of interest.

Keywords: Russian Federation, Gazprom, natural gas, global fuel market, pipelines.

Rosyjski sektor gazu ziemnego: stan obecny, perspektywy oraz jego znaczenie dla Europy

Streszczenie:

Celem artykułu jest nakreślenie perspektyw dla rosyjskiego rynku gazu ziemnego w dającej się przewidzieć przyszłości oraz prezentacja rosyjskiego sektora gazowego na tle strategicznych „graczy” globalnego rynku. Autor analizuje problematykę związaną z produkcją, przesyłem i sprzedażą rosyjskiego gazu ziemnego. Główny problem dotyczy możliwości oraz ograniczeń, które definiują siłę rosyjskiego sektora „błękitnego paliwa”. Artykuł prezentuje skrótowo wyniki badań, które zostały uzyskane głównie dzięki metodzie studium przypadku. Weryfikacja głównej hipotezy zostanie dokonana z perspektywy *top-down*, uznając za kluczową analizę działań państwowych ośrodków decyzyjnych. Oddziaływania mniej jawne, w tym oddziaływania graczy niepublicznych (w postaci np. podmiotów gospodarczych), zostaną pominięte, przede wszystkim dlatego, że ich dokładniejsze uwzględnienie kierowałoby rozważania na skądinąd ciekawy, ale odmienny tor analizy sektorowych grup interesu.

Słowa kluczowe: Federacja Rosyjska, Gazprom, gaz ziemny, globalny rynek paliw, rurociągi.

Energy resources are not only a valuable source of income for the exporting countries, but also an excellent tool for creation of global reality. This fact influences the strength and relevance of the participants in international relations with strategic hydrocarbon resources (Gawlikowska-Fyk 2007: p.15–32; Ruszel 2013: p. 93–104; Łoś-Nowak 2000: p. 44–45). The power and importance of oil and gas exporting countries are determined by the size of the deposits, their location, the production costs, the length and the mileage of the transmission routes. The policy of transit countries, through which the pipelines are running, is also important (Rotarski 2008, p. 267–298). Energy resources focus the attention of the great powerful states, often leading to the armed conflicts, which directly affect events occurring internationally (Klare 2001: p. 27–137).

The dissolution of the Soviet Union caused major changes on the geopolitical map of the world. This fact was the cause of the serious depreciation of the position of the new Russian Federation, which was formed as an independent state. In comparison to the Soviet era, Russia has lost the most of its assets contributing to its power and leadership position. In the last decade of the XX century, in addition to weapons of mass destruction, only access to hydrocarbons contributed to Russia's strength and importance on the international arena. Based particularly on the rich resources of natural gas, crude oil, as well as on a very well developed transmission network, the new Russian leader Vladimir Putin began his efforts to regain the country's power on the international arena. Although, the oil export brings incomes to the state budget, the importance of natural gas in the energy strategy of the exporting countries is broader. In this context, it is possible to assume that natural gas, in relation to crude oil, is more "versatile". Thus, alongside the military power, natural gas is considered as a fundamental tool for shaping the foreign policy of the Russian Federation (Gryz 2009: p.119–133; Paniuszkin, Zygar 2008: p. 5–7).

The main directions of Russian natural gas export are the European countries, and to a smaller extent – the Asian market. This is due to the directions of existing gas routes, as well as to the favourable price of natural gas in relation to its acquisition and transfer costs. The dominant position of "Gazprom" – the Russian monopolist on the European energy market – is a cause of doubts of some countries of the "Old Continent", that arises from the fear of obtaining a too broad political influence by the Russian authorities and its economy. Therefore, it is not surprising, that some of the European Union's Member States work to diversify the supply of natural sources, to build a common energy market, aiming at reinforcement of the negotiating position towards the Russian side (Bryc 2009: p.122–129). Together with the increasing importance of Russian natural gas on the European fuel market, which is the result of the increased demand for it from the dynamically developing EU economy during the recent several years, we can see a strengthening of the energy policy (Leszczyński 2008: p.1–17).

Simultaneously with the actions undertaken by the EU countries in the energy sector, the Russian side seeks to increase the number of natural gas consumers. This is reflected in the cooperation undertaken by the Russian Federation with Asian countries, especially with China as a leader (Dobosz 2013: p.1–8). In recent years, the increase of interest of

Russia in the use of new technologies for natural gas transfer in the form of LNG (liquefied natural gas), as well as the implementation of the sourcing process of the "blue fuel" extraction from bituminous slate and gas hydrates, must also be noted.

Russia also works on methane gas acquisition. Together with the rejection of nuclear energy by some countries, more intensive pressure on natural gas prospecting is expected to be a component of the electricity production process. Russia is also trying to prepare new deposits of natural gas for exploitation, for example, Arctic deposits and those located in Eastern Siberia and the Russian Far East (Eder et al. 2015; Provornaya 2016; Saenko 2015). These activities are necessary for maintaining the strategic position of the gas supplier, especially in the face of the dynamically developing competition in the form of exploitation of shale on industrial scale in the USA, which may in the future (with the expansion of the American LNG infrastructure) lead to the important change in the global fuel market (WNP.PL 2017; Newsweek 2012).

Methodological assumptions of the research

The research described in this article examines the issues related to the production, transmission and sale of Russian natural gas. The main research problem concerns the possibilities and limitations, that influence the strength of the Russian "blue fuel" sector. The aim is to outline the prospects for the Russian natural gas market in the future and the presentation of the Russian gas sector in comparison of the strategic "players" of the global energy market. The article presents the results of the research, which were obtained mainly by the *case study* method.

The author focuses his attention on numerous research problems, including the first: insufficient adaptation of the modernisation processes of the Russian natural gas sector in relation to the current global standards and competition strengthening in the "global natural gas market" by entering new "players"/actors on the energy market. The other research problem is related to the Russia's weakness on the international scene caused by its aggressive foreign policy.

The author claims, that despite the dynamically changing situation in the field of production technology and the ways of the "blue fuel" distribution, the Russian Federation will remain in the future a key actor on the global fuel market. According to the author, it is visible from the actions involving the Russian Federation (not only on the European, but on the broader global fuel market), successively reinforcing the position of this state as a strategic exporter of the "blue fuel". The author will try to defend the above-mentioned statement using examples chosen by him. The verification of the main hypothesis will be made from the *top-down* perspective, considering analysis of the actions of state decision-making centres. Less explicit impact, including the interaction of non-public actors (such as economic items), will be skipped, because their more precise consideration would provide to the interesting, but different direction of analysis of the sectorial groups of interest. The used model of the analysis, carried out from a *top-down* perspective, appears to be adequate in view of the centralised and concentrated style of public

decision-making and the implementation processes that dominate in Russia. Within the used model approach will be taken into account the main opportunities and barriers for the implementation of the strategic decisions of Russia, the European Union and the other public actors. Taking into consideration the broad dimension of the subject, many of these opportunities and barriers will only be outlined with the intention of developing appropriate interpretations in the further discussions. Therefore, the used model of the analysis concerns the natural gas sector, with particular emphasis on Russia's policy, in certain sense is a *case study*. However, the methodological essence of this research is the *top-down* method. According to this method, the strategic decisions in the analysed sector are taken in three main stages.

The first stage is the choice of place and, more precisely, the country or the group of countries, to which the political and economic decisions are aimed, in order to achieve both macro-economic effects and a widening of the zones of influence. The second stage is focusing (through the state decision-making centres and the institutional and organisational brokers, acting on their behalf) on the industry conditionalities of the target economic markets. The third stage is the weakening and the elimination of regional and local rivals, and strengthening of the centres cooperating with the Russian gas sector.

The main tool of the embedded in the characterised model analysis will be a narration in progress, which will be presented in a descriptive way. It may even seem sometimes publicist, but the used concepts are professional and subordinate to the principles of science, and the language that can possibly cause this publicist effect, has been applied by the author with the intention to at least partially diversify the text.

The narrative structure has been arranged according to the three phases that correspond to the used *top-down* model, taking into account the characteristics of the resource sector. In this context, the first phase demonstrates the specifics of the energy sector in Russia, consisting of the vast amount of natural gas resources, as well as the specific characteristics and production capacities of the Russian "blue fuel" sector. The second phase will assess the problem of the diversification of the natural gas supply, that would give the opportunity to weaken the sectoral position of the hegemon, which Russia remains. In the third phase of the analysis, the author will consider the new possibilities for the exploitation of gas deposits. At the end, both of the *top-down* model analysis threads will be recapitulated, which will allow the author to verify the main hypothesis.

The author used broad scholar literature for this research, which includes studies, scientific articles, analytical centres' reports and numerous netographic positions. The author of the article also used foreign language sources, especially the Russian ones. Special attention is paid to the materials of the Centre of Eastern Studies and the netographic materials from Polish and foreign servers, related to the problems of the energy sector. In particular, the last mentioned sources provide access to current, the most up-to-date information, giving a chance to conduct research that takes into account dynamically occurring changes.

Russian natural gas sector: resources, production, specifics

The Russian Federation has the largest in the world natural gas reserves. Other key actors in the natural gas market are the USA and Iran, but the last mentioned country due to the sanctions plays a marginal role as an exporter of gas. However, also the largest gas producer in the world, the USA has a fairly cautious approach to the possibility of the export of the "blue fuel" on a mass scale. This is due to the lack of adequate technical infrastructure in the form of LNG terminals, the lack of experience in global export and the fluctuation of prices in the natural gas market.

The volume of the "blue fuel" resources is estimated as 32.3 trillion of cubic metres, which is nearly 18% of the confirmed global resources of gas. Some experts of the global fuel market are willing to increase its volume to 47 trillion m³, that would correspond to 30% of the world's resources in case of inclusion in the "final balance sheet" the Russian Arctic reserves and the projected ones (Kłaczyński 2009: p. 35–36; Kardaś 2017: p. 11). Russia is the largest producer of natural gas after the USA. The volume of the "blue fuel" extracted in the Russian Federation represents 16.1% of its global production (Kardaś 2017: p. 11). A key region for the Russian natural gas sector, where the exploitation of deposits on industrial scale started in the 70s of the XX century, is Western Siberia. The total volume of natural gas extraction from the West Siberian region is estimated at 90% of the value of the entire Russian production, of which close to 80% is extracted in Yamalo-Nenets Autonomous Okrug (Łoskot 2003: p. 9; Kardaś 2017: p. 11–12). Because of depletion of the Western Siberian deposits, production will be displaced to Eastern Siberia and the Arctic region (Ciechanowska 2012). The degree of exploitation of the Western Siberian deposits estimates as 60–80%. However, for financial and technical reasons related to the length of natural gas transmission routes, the Russians try to exploit the existing, already partially managed its deposits.

According to Szymon Kardaś (2017: p.11-12), the largest deposits used in the Russian Federation are: "Urengoy gas field" (5 333 billion m³), "Bovanenkovo gas field" (4 304 billion m³), "Stockman field" (3 939 billion m³), "Yamburg gas field" (3 109 billion m³), "Astrakhanskoye" (3 087 billion m³). Some deposits of natural gas – however, having less importance – are also found in the Black Sea and the Stavropol region (Wyganowski 2014).

The main producer of the "blue fuel" on the territory of the Russian Federation is the "Gazprom" company. Its participation in the Russian natural gas market producers is 68.1%. The second of the gas production companies is "Novatek" (almost 11% of the market). The rest of the gas extraction is provided by oil consortia, which develop both oil and natural gas deposits. For example, the company "Rosneft", whose participation in the Russian market of the "blue fuel" together with the dependent operators is estimated at 9.4%. At the disposal of "Rosneft" there are deposits of around 6.5 trillion m³ of natural gas.

Together with the development of the global market in natural gas and the increase in its demand, some changes of the Russian "blue fuel" market should be expected,

including its partial deregulation. The forward-looking policy of the Russian authorities will aim to boost the efficiency of the gas production process, thereby, increasing the export opportunities (Kardaś 2017: p. 18–29).

In the first decade of the 21st century, the Russian energy sector has been working on the basis of the technologies deriving from the Soviet era. This was due to the inertia of the Russian authorities and the lack of adequate funding for the modernisation process. The production process management system within the energy sector had all the necessary features to fill the extensive economy model. In 2000, when Vladimir Putin came into power, the difficult changing process of the adopted energy strategy has gradually begun. It included not only the issues related to the production and distribution of natural gas to the foreign markets, but also the effective use of gas within the internal relations. While in the 90s of the XX century, a significant part of natural gas was lost during oil production, two decades later it is already possible to speak about serious, positive changes. In 2005, during crude oil production, only 42.6 billion m³ of natural gas were extracted. A decade later, in 2015, there was a dynamic increase of the "blue fuel" production up to 82 billion m³. This is due to the Russian authorities' strategy, that seek to force oil companies to use appropriate technologies to increase the natural gas utilisation rate within primary production, covering the operation of the oil deposits. In 2016 the level of natural gas utilisation in crude oil production was around 90%. The principles of the Russian energy strategy defines the need to raise the gas utilisation rate by further five percent to year 2020. According to the experts dealing with the Russian gas market, due to the incorrectly organised processes of the crude oil and natural gas production, combustion is almost 50 billion m³ of gas per year. The lack of access to modern technologies, and the belief of inexhaustibility of the domestic natural sources' deposits, lead to resource waste (Kardaś 2017: p. 17–18).

Russia took care of the expansion of the existing and the construction of new natural gas storages. The latter are an extremely important security buffer for the entire system of the Russian transmission pipelines. In case of precise usage of the stored gas there is a possibility of undisturbed deliveries both in the export dimension, as well as for the domestic consumer. In the years 2005–2015, the capacity to store natural gas increased from 57.8 billion m³ to 74 billion m³. Together with the development of the transmission infrastructure, there is a further need to expand the storage capacity. It is planned to increase the amount of stored natural gas to 90 billion m³ in the next few years (Kardaś 2017: p. 31).

Russia also store natural gas using storages in the European countries. An example of such cooperation is the use of German "blue fuel" storages. The capacity of the German storage in Rheden, which remains at the disposal of "Gazprom", reaches nearly 5 billion m³ of gas. The total capacity of the natural gas storages on the "Old Continent", whose owner or shareholder is the Russian side, reaches 6–7 billion m³ (in 2017 year). Russia intends to increase it in a few years to 13 billion m³ of natural gas. The German side demonstrates the interest in the Russian energy policy. In the framework of the bilateral energy agreements, Germany shares its gas storages, and also reconfirms the

construction of the new installations, acquiring shares of the Russian energy companies, and permits Russia to participate in the German energy sector. Such policy is aimed to create in the territory of the Federal Republic of Germany the largest European gas hub for service and redistribution of Russian natural gas (Sikora A., Sikora M. 2016: p. 21).

Due to the reduced demand for gas in Russia and the reduction of domestic consumption after a period of rapid increase in production in the years 2000–2008, the scale of the “blue fuel” extraction has now a level above 650 billion m³ annually, which is a few percent decline, in comparison with the record-breaking year 2013 (684 billion m³).

After a few years of the stagnation on the global fuel market, a major increase of natural gas extraction in Russia was noted only in 2017, when Russian energy companies with “Gazprom” as a leader, extracted 690 billion m³ of natural gas (Druś 2018). According to the EU member states, which are importers of Russian “blue fuel”, in 2017 they received from the Russian Federation close to 194 billion m³ of gas (14.6 billion m³ higher than in 2016). (Kardaś 2018: p.1–4). This situation was caused by increasing the demand for gas from the rapidly developing European economies, and by lesser participation of the Chinese market (Malinowski 2018).

Significant changes affecting the energy policy of the Russian Federation also can be observed in the internal market of the “blue fuel”. In the years 2005–2014 there was a serious increase in prices for the gas supplied to households, as well as to the industrial sector. It is estimated, that the costs of natural gas for the national recipients increased nearly three times. This situation has resulted the reduction of consumption, while also influenced modernisation processes forced by the excessive energy intensity of the Russian economy. There is also an excessive tax on the part of the Russian state, which is expressed in an uneven fiscal scale for Russian producers of the “blue fuel”. The average tax rate for each 1000 m³ of gas is about 250 rubles bigger for “Gazprom”, than for the other natural gas producers. This is due to the state strategy, which (faced with economic stagnation persisting after the events in Ukraine) tries to force the modernisation of the gas sector and the accumulation of investments in not yet exploited gas deposits by the new entities operating on the market. Russian strategists believe that the existing model of production, transmission and trade, based on one, leading company is going to depletion, and situation must be changed. While in case of the external market, the dominance of “Gazprom” appears not to be threatned, therefore far-reaching changes can be observed in the internal market. The Russian group “Rosnieft” in 2016 has sent to the domestic consumers almost 72 billion m³ of gas, with a much larger quantity contracted by the internal recipients. “Rosnieft” operates on the Russian “blue fuel” market extremely dynamically, even aggressively, which probably does not happen against the awareness and will of the Russian authorities. To fulfill its internal obligations, the company had to purchase from the gas traders on the Russian fuel market close to 13.3 billion m³ of gas. Following the decisions of the Russian authorities, this can be evidenced by the intention to divide the Russian gas sector between the two big “players” in the fuel market. “Gazprom” will focus on gas trade and expansion into external markets, while “Rosnieft” and “Novatek” will focus on the domestic consumer market. This policy can

strengthen the Russian expansion in the global fuel market by harmonisation of the production, transmission and the sales processes. It will also help to focus more than ever on the implementation of the Russian strategy by "Gazprom", which will be exempted from the national market (Kardaś 2017: p. 23–26).

The problem of the natural gas supply diversification

The disposal of the natural gas resources is not sufficient to play the role of energy power state at the global "blue fuel" market. There are also needed sales markets, transmission lines and the consent of the transit countries for the transfer of the gas through their territories. The last element is mainly determined by political factors, with which the Russian side has been struggling for more than two decades. Some of the transit countries (including Poland and Ukraine, as a result of geopolitical changes) have been opposed to the Russian plans to expand the natural gas sector with a view to its use for the foreign policy purposes. Central European countries are afraid about their dependence on Russian gas supply and deprivation of their status as transit countries. Their negotiating position concerning the long-term transit agreements and the extracting of the gas in this case would be very poor (Drabik et al. 2016: p. 91–132). By expanding its own transmission system, focusing on the new technologies for the gas sourcing in the form of LNG terminals, as well as the prospective production of gas from the deposits of bituminous slate, the Central European region's states are weakening the monopoly position of "Gazprom". Ensuring energy security by replacing Russian natural gas by the gas from other independent deposits could reverse the dominant current trends. Thus, Russia would become dependent on the transit countries, which would create, to some extent, the situation on the European fuel market and at least become its important, difficult-to-miss entities. Therefore, the Russian side, facing such a prospect, decided to accelerate the implementation of the energy projects ensuring the possibility to exclude the Central European region from the gas transit (Nowakowski 2016: p. 9–20). The flagship project, which succeeded in finalizing, the launch of the direct deliveries to Germany, bypassing the countries of the Central and Eastern Europe, is the "Nord Stream" gas pipeline. Currently, the work on the "Nord Stream 2" construction is being implemented in the atmosphere of confrontation. The implementation of the so-called "northern circumvention" will enable the Russian side to transmit 110 billion m³ of natural gas, which is equivalent to 60% of the existing exports' volume. Such solution is financially advantageous, because it excludes transit fees. Moreover, Russia would no longer has to use the Ukrainian transit pipeline, which means that the "blue fuel" goes to Europe directly (Bajczuk 2018; Dąbrowski et al. 2015: p. 1–4). The opponents of the "Nord Stream 2" project underline the environmental damage and the possibility of a simpler and less costly construction of a transmission route by land, thus, taking into account the interests of the countries of Central and Eastern Europe and Ukraine. In fact, however, they are not interested in cooperation with the Russian natural gas sector, aiming to decrease Russian influence in the European "blue fuel" market by replacing Russian contractors with the suppliers from Norway and USA.

Russian political elites also wanted to lead to the construction of the (analogical to the "Nord Stream") southern route, where natural gas was supposed to be sent to customers in Southern Europe without the need of negotiations with the transit countries. Until the Russian-Ukrainian conflict in 2014, the Russians lobbied the construction of the "South Stream", which was supposed to hit the European fuel market with 63 billion m³ of gas annually (Szpala 2014b: p.1-3). When the finalisation of the project became unlikely for political reasons, Russia replaced the designed transit pipeline with another gas transmission connection. Using the deteriorating relations on the Ankara-Brussels-Washington line, they offered Turkey purchase of more gas in exchange for consent to its transfer to Southern Europe, using the Turkish part of the Mediterranean Sea. The direct Russian-Turkish gas agreement will ensure deliveries to Turkey and to the Southern European market of nearly 32 billion m³ of natural gas annually, bypassing the countries of the Central and Eastern Europe. This fact will allow "Gazprom" to deliver gas directly to Turkey, bypassing Ukraine as a transit country. The second part of the gas pipeline, linking Russia with Turkey (with an analogous transmission capacity of 16 billion m³ of gas), will be used for the transmission of "blue fuel" to the other European contractors. It will reduce the amount of natural gas transmitted through the territory of Ukraine by almost 30% (Kublik 2017).

After a few years of lack of interest in the LNG market, Russia began to work on the finalisation of several installations, in order to dynamically step into the liquefied natural gas market. It is economically proven that European LNG terminals are currently used only for 40%. This fact offers an opportunity to Russian liquefied gas, which, according to the recent declarations by the Russian authorities, will be one of the foundations of the export strategy (Sikora A., Sikora M. 2016: p. 29). The example of such policy has become the opening of the LNG terminal in the Yamalo-Nenets Autonomous Okrug, which will transfer gas from Siberia to the contractors all over the world (Kublik 2017: p. 1). Russia is also planning to open a gas harbour in the Kaliningrad region. The transmission capacity of this installation is calculated as 2.5 billion m³ of gas annually (see: *Rosyjskie LNG już w Polsce* 2014; Cizsak 2017: p.1-2). It should be underlined, however, that at the moment these are only plans for the future, and now the European LNG market remains the domain of the other countries (eg. Qatar, Algeria and Norway).

An important element of the Russian authorities' energy policy, which supports the diversification of the transmission lines, is also the expansion of infrastructure supporting the natural gas transfer (in Germany, Austria and Hungary). From outside the European Union, numerous proposals for cooperation in the energy sector with "Gazprom" expresses Serbia (Szpala 2014b: p.1-5). The main emphasis, however, is on cooperation with the Federal Republic of Germany, which wants to become the major European gas hub. Germany intends to provide in the future a lucrative business in the form of redistribution of Russian natural gas, both in terms of its sales to the EU countries, as well as to strengthen own participation in gas contracts for the individual consumer market (Sienkiewicz 2012; Gazprom Export 2018).

One of the most important changes, that have occurred in recent years in the Russian strategy of the supply direction diversification, is a partial change of vector from

European to Asian. Launching the "Force of Siberia" installation, with a total transmission power of nearly 40 billion m³, proves determination of the Russian party wishing to enter more broadly the regional markets of the "blue fuel", not only the European ones. The construction of a new gas pipeline linking the Russian distributor with the Chinese recipient of the "Force of Siberia 2" with a transmission power of 30 billion m³ of gas annually is planned. The Russians are also expanding the transmission capacities of LNG systems to serve Asian countries and to some extent the USA (Jakóbiak 2017).

The Russian natural gas sector, and new technologies for the gas deposits exploration

The changes that occurred on the global "blue fuel" market resulting from the beginning of the shale gas deposits exploitation on the industrial scale have forced the Russian Federation to determine the operational capacity of its own gas deposits. The total amount of unconventional gas resources accumulated on the territory of the Russian Federation can be two or even three times bigger, than conventional deposits (close to 680 trillion m³). The Russian Federation has strategically important resources estimated as 20 trillion m³. It is expected to operate on an industrial scale between 2015–2030. In 2020, the Russian energy sector intends to take on a larger scale the production of gas from methane deposits. Russia is not in a hurry to extract shale gas, it is trying to manage the already existing deposits of conventional gas. This is due both to facilitated access to it, operating costs, as well as technological problems related to the production process. Russia is striving to pursue a political campaign on the international level to weakening the influence of the shale gas lobby, alerting the devastating effects of shale gas production on the environment (on the example of the American experience). Most European countries have taken into account in their energy strategies the problems, which entail the exploitation of shale, abandoning its production on an industrial scale. In some countries, such as Poland, the dispersing of the deposits, the problem of human aggregates and the access to sufficient amount of water needed in the hydraulic fracturing process, has inhibited the work on the implementation of the shale gas production process. The Russian gas sector has much more attention focused on other unconventional deposits of "blue fuel" (see: *Rosyjskie LNG już w Polsce* 2014). In 2011, nearly 11 million m³ of natural gas were extracted from the methanol deposits in Urengoy (Forbes 2012). Russia is also working on obtaining gas from gas hydrates. Plans to operate unconventional gas deposits go much further. In recent years, the need for the production of Helium-3, which would be shipped from the Moon to the Earth, is under intense discussion nowadays. There probably will be a Russian–Chinese competition in this area. China announced the dispatch of the space probes, which aim would be to take the gas samples of Helium-3 and deliver it to the Earth. The purpose of this defined space expedition is to develop a method of acquiring this extremely valuable (due to its properties) raw material from the lunar areas. There are only 10 kg of Helium-3 on the Earth. The energy value of Helium-3 on the Moon is almost ten times greater than all the

energy resources accumulated on the Earth. According to the Russians, for the operation of Helium-3 resources will be needed from 40 billion USD to 200 billion USD (Kublik 2006).

Conclusions

The dynamical changes on the global fuel market make impossible the creation of a fully reliable long-term forecast for the development of the Russian "blue fuel" market. However, several conclusions can be formulated concerning the foreseeable future. The strategic direction of the Russian natural gas supply will remain the European market. The primary recipients will be countries in Western Europe (with Germany as the leader of the region) and Southern Europe (with Italy as a representative of this region).

Some countries of Central Europe will reduce the volume of Russian fuel import by increasing investment in gas purchases mainly in the LNG formula. However, the volume of demand gas will increase in the countries – the main actors of the European "blue fuel" market (including Germany, Italy and France), which would open for the Russian side the possibility of compensating for smaller than ever deliveries to the countries from Central and Eastern Europe. The gas transportation will be carried out using new transmission routes, in particular, new strands of the gas pipelines "Nord Stream" and "Turkish Stream" (TurkStream), which would eventually be accompanied by another successive installation strands, thereby closing the construction project of the European gas pipeline "Nabucco".

The Russians will continue to work towards the construction of new conventional gas pipelines, linking Russian gas deposits with China. Thanks to the growth of the demand for natural gas in Chinese economy, the road to the "Force of Siberia 2" project will be open.

The large financial resources devoted to the construction of LNG installations, originating from both state and private sources, traditionally from the German and Russian companies, will increase the share of Russian liquefied gas on the global LNG market from a few percent to nearly 30% in 2030 year. It will allow to broaden the circle of recipients of the Russian gas, even for the British market.

Russia will also invest in modern gas extraction technologies from bituminous slate and gas hydrates, as well as methane gas. However, it should be expected that its exploitation will only be possible in case of a favourable calculation of the profit in comparison with costs. It would entail a dynamic increase in the demand for gas and, at the same time, a decreasing or slow-growing supply.

Over the decade, Russian expansion in the Arctic is expected, and the displacement of natural gas production from western Siberia to its eastern part. This will allow the growth in production for national needs, which, after transition and recession, will increase, together with the growth of the Russian GDP.

Although, today it sounds impossible, but in 10–15 years we can also expect attempts to acquire Helium-3 from the lunar substrate, and work on technology of the implementation of

its use in the industry. There will be competition in this case between Russia and China, which has already begun work on the project of bringing the samples of the Helium-3 from the Moon. A dynamically growing Chinese economy will need a strategic amount of natural gas, which will result, that China will become an important import partner for EU over the decade.

These changes will contribute to a further deterioration of geopolitical situation for most of the countries in the "Old Continent". Despite the access to hydrocarbons, relatively good development and aggressive, but effective energy policy of the Russian Federation, it will not be possible to overcome in the future the stereotype of "Peripheral Empire". It is depend on both internal and external factors, in the form of policies of EU member states, especially Germany and France. Increasingly, incomes from the production and sale of natural gas will be strengthened by the development and modernisation of the Russian state. Thus, it will reduce the distance between the Russian Federation and the key actors for the development of the international situation.

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