GLOBAL MARKETS

RUSSIA'S ROLE IN THE GLOBAL ENERGY MARKETS*

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In the globalizing world the situation in global energy markets changes rapidly and dynamically. Energy and energy security are becoming an essential part of the global agenda. This article contains the analysis of the amounts of proved reserves of various hydrocarbons in Russia in comparison with those in the leading countries of the world. Production levels and export capabilities of the Russian fuel and energy sector are examined. The prospects of the development of Russia's energy cooperation with different countries are also being analyzed.

Keywords: *Russia, globalization, international energy cooperation, global energy markets, energy resources trade, global energy, oil, natural gas, coal.*

Due to favourable geographical and geological circumstances Russia is an energy resources-rich and abundant country. It possesses considerable reserves of coal, natural gas, oil and other sources of energy. According to BP statistical data, in 2015 Russia's proved reserves of oil were 102.4 thousand million barrels which account for 6 per cent of world total reserves; the proved reserves of gas were 32.3 trillion cubic metres that accounted for 17.3 per cent of world total and the proved reserves of coal were 157,010 million tonnes (17.6 per cent) of world total proved reserves.

In 2013, Russia's total primary energy supply (TPES) was 731 million tonnes of oil equivalent (711 Mtoe in 2014), comprising natural gas (54 per cent; 52 per cent in 2014), crude oil and petroleum products (22 per cent; 23 per cent in 2014), coal (15 per cent) and others, including nuclear and hydro (9.2 per cent; 10 per cent in 2014). As for the total Final Energy Consumption (TFC), in 2013 it was 435 Mtoe (454 Mtoe in 2014) – so it was lower than TPES what is important for the country's secure and favourable situation in energy (Aleshkovski and Mishchenko 2016: 176–177; APEC 2016: 206, 207).

Russia in the Global Oil Markets

According to experts' estimations, at the end of 2015 the proved oil reserves in Russia accounted for 6 per cent of the world's total. This amount is rather big but it is smaller than in Venezuela (17.7 per cent), Saudi Arabia (15.7 per cent), Canada (10.1 per cent), Iran (9.3 per cent), and Iraq (8.4 per cent) and is quite comparable to the reserves of Kuwait (6 per cent) and United Arab Emirates (5.8 per cent) (BP 2016: 6).

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Such a relatively low R/P (reserves-to-production) ratio index value for Russia can be explained by different reasons. For instance, it can be a proof of huge oil production and a low level of energy efficiency in Russia. It can also be a consequence of relatively wasteful level of national resources use in the country (energy intensive economic structure). It is considered that oil reserves are gradually depleting. Thus, according to experts' estimations, the depletion of hydrocarbon reserves of Russia's Ural and Volga federal districts has already exceeded the 70 per cent level. Besides, nowadays 80 per cent of oil production in Russia is provided in the fields which can be depleted in ten years (Aleshkovski and Mishchenko 2016: 175).

Table 1

The countries with largest proved oil reserves, 2015

Country	Proved reserves, thousand million barrels	Share of total, %	R/P ratio, years
Total World	1697.6	100.0	50.7
Venezuela	300.9	17.7	313.9
Saudi Arabia	266.6	15.7	60.8
Canada	172.2	10.1	107.6
Iran	157.8	9.3	110.3
Iraq	143.1	8.4	97.2
Russian Federation	102.4	6.0	25.5
Kuwait	101.5	6.0	89.8
United Arab Emirates	97.8	5.8	68.7
US	55.0	3.2	11.9

Source: BP Statistical Review of World Energy 2016: 6.

Table 2 contains statistical data on the largest oil producing countries. Russia is the third largest country in the world in terms of daily oil production. Having a 6-percent share in the world's total amount of oil reserves Russia accounts for 12.4 per cent of the world's oil production. At the same time the country's internal oil consumption is approximately 3.1 million barrels a day (BP 2016: 9). On the average, about 8 million barrels of oil per day is exported (given 10,980 thousand barrels of daily oil production). On the whole in 2015 Russia exported 254.7 million tonnes of crude oil and 150.1 million tonnes of oil products were exported (BP 2016: 19).

Table 2

The Largest Oil Producing Countries of the World, 2015

Country	Thousand barrels, daily	Share of total world, %
USA	12,704	13
Saudi Arabia	12,014	13
Russian Federation	10,980	12.4
Canada	4,385	4.9
China	4,309	4.9
Iraq	4,031	4.5

Country	Thousand barrels, daily	Share of total world, %
Iran	3,920	4.2
United Arab Emirates	3,902	4
Kuwait	3,096	3.4
Venezuela	2,626	3.1

Source: BP Statistical Review of World Energy 2016: 8.

Russia in the Global Natural Gas Markets

Natural gas remains a very important type of energy resources in Russia both for meeting internal energy needs and for the development and expansion of national energy exports. Thus, Russia's total primary energy supply (TPES) was 54 per cent provided by natural gas (Aleshkovski and Mishchenko 2016: 176).

Proved natural gas reserves in Russia (32.3 trillion cubic metres) account for approximately 17.3 per cent of world's total. It means that Russia is the second largest country of the world in terms of natural gas reserves – behind Iran (18.2 per cent) – but it outstrips Qatar (13.1 per cent), Turkmenistan (9.4 per cent), USA (5.6 per cent), Saudi Arabia (4.5 per cent), United Arab Emirates (3.3 per cent), Venezuela (3 per cent), China (2.1 per cent), Iraq (2 per cent), and other gas producing nations (BP 2016: 20).

Table 3

Countries with highest natural gas reserves, 2015

Country	Proved reserves, trillion cubic metres	Share of total world, %	R/P ratio, years
Total World	186.9	100.0	52.8
Iran	34.0	18.2	176.8
Russian Federation	32.3	17.3	56.3
Qatar	24.5	13.1	135.2
Turkmenistan	17.5	9.4	241.4
US	10.4	5.6	13.6
Saudi Arabia	8.3	4.5	78.2
United Arab Emirates	6.1	3.3	109.2
Venezuela	5.6	3.0	173.2
Nigeria	5.1	2.7	102.1

Source: BP Statistical Review of World Energy 2016.

The predictions about natural gas depletion in Russia state that if the existing rates of gas production are preserved, the country will have it enough for 56.3 years. The situation seems better than in the oil sector but it is worth mentioning that Russia lags behind some other natural gas producing nations significantly. For instance, according to the same R/P ratio estimations, Venezuela possesses natural gas reserves sufficient for 173.2 years, Turkmenistan – for 241.4 years, Iran – for 176.8 years, Kuwait – for 119.1 years, Qatar – for 135.2 years, United Arab Emirates – for 109.2 years, and Yemen – for 100 years. Yet, the USA and Canada – with the account of their rates of gas extraction – will likely deplete it in only 13.6 and 12.2 years respectively. Perhaps, it has

been just this factor that promoted the decision on the massive shale gas development projects in North America.

Production and consumption of natural gas in Russia provides favourable exporting capabilities in this energy sector. Firstly, Russia's share in global natural gas production in 2015 accounted for 16.1 per cent which is the second largest share in the world (behind 22 per cent of the USA). Secondly, according to the BP Global statistical data, Russia constantly produces much larger amounts of natural gas than it is needed to meet the country's internal needs. Thus, in 2005 natural gas production in Russia amounted 580.1 billion cubic metres, in 2010 – 588.9 billion cubic metres, in 2015 – 573.3 billion cubic metres. Meanwhile, in 2005 the natural gas internal consumption was 394 billion cubic metres, in 2010 – 414.1 billion cubic metres, and in 2015 – 391.5 billion cubic metres (BP 2016: 22–23). According to the same source, in 2015 Russia's natural gas exports (by pipeline) accounted for 193 billion cubic metres. But in 2015 the so called 'net' natural gas exporting capacity in Russia– according to previously analyzed statistical data on production and internal consumption should not have exceeded 181.8 billion cubic metres. The point is that though being a huge gas producer Russia still purchases some minor amounts of this energy source. Russia imports natural gas (about 17 billion cubic metres) from the Central Asian states, namely, from Kazakhstan, Turkmenistan, and Uzbekistan.

According to the International Energy Agency, in 2015 Russia was not only the second largest gas producer in the world, but also the world largest natural gas exporting country (192 billion cubic metres) (Key World Energy Statistics 2016: 13). US Energy Information Administration states that in 2015 oil and natural gas revenues accounted for 43 per cent of Russia's federal budget revenues (Transneft). Besides traditional natural gas, transported by pipelines, Russia also exports LNG (liquefied natural gas) – in 2015 the country exported 14.5 billion cubic metres of LNG to Asia Pacific nations (Japan, South Korea, Taiwan, and China). It is an important part of Russia's recent energy policy focused on expanding energy exports to the Asia Pacific region.

Russia in the Global Coal Markets

Russia possesses 157,010 million tonnes of coal (proved reserves) which accounts for 17.6 per cent% of world's total coal reserves (BP 2016: 30; APEC 2016: 205). In TFC (Total final energy consumption) index structure by energy source for Russia (2013–2014) coal's share was 2.7 per cent and 2.4 per cent respectively in the total consumption – considerably lower than that of petroleum products (28 per cent), natural gas (29 per cent), electricity and others, including heat (40 per cent) (Aleshkovski and Mishchenko 2016: 177; APEC 2016: 207). There are plenty reasons for that, for instance Russia now uses less coal than natural gas for electricity generation (at thermal power stations). Thus, in 2014 Russia ranked world's eighth in coal usage in electricity generation and world's second in natural gas usage in electricity production (158 and 533 TWh respectively [Key World Energy Statistics 2016: 25]). The R/P ratio shows that Russia has enough coal reserves for 422 years in 2015 and 417 years in 2016 (production level accounts for 184.5 million tonnes oil equivalent in 2015 and 192.8 million tonnes of oil equivalent in 2016) (see Table 4).

Table 4

Largest Coal Reserves Possessing Countries, 2015

Country	Proved coal reserves, million tonnes	Share of total world's, %	R/P ratio (Reserves-to-Production), years
Total World	891,531	100.0 %	114
USA	237,295	26.0 %	292
Russian Federation	157,010 (160364 in 2016)	17.6 % (14,1 % in 2016)	422 (417 in 2016)
China	114,500	12.8 %	31
Australia	76,400	8.6 %	158
India	60,600	6.8 %	89
Germany	40,548	4.5 %	220
Ukraine	33,873	3.8 %	> 500
South Africa	30,156	3.4 %	120
Indonesia	28,017	3.1 %	71

Source: BP Statistical Review of World Energy 2016: 30; BP Statistical Review of World Energy 2017: 36, 38. Available at: http://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2016/bp-statistical-review-of-world-energy-2016-full-report. pdf. https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review-2017/bp-statistical-review-of-world-energy-2017-full-report.pdf.

According to the International Energy Agency statistical data, Russia ranks sixth among largest coal producing countries, with 6.5 per cent of the world total production. But Russia is behind China, the USA, India, Australia, and Indonesia. At the same time Russia is the third largest coal net exporter in the world (behind Australia and Indonesia). It should be mentioned that a significant difference between Russia's coal and oil and gas sectors is that the former is almost entirely privatized and it lacks any forms of foreign participation.

In 2012 the Russian Government confirmed the long-term program for the development of the coal industry for the period up to 2030 where it states such goals as an increase in annual coal production up to 390 million tonnes, of which 170 million tonnes will be exported. At present about one third of extracted coal is exported (143 million tonnes in 2013). As for export destinations, 70 per cent of exports went to Europe but there are plans to increase exports to Asia by 2030 in such a way that in terms of exported amounts of coal the Atlantic and the Pacific markets will become well balanced and almost equal for Russia (The Long-term Program... 2012).

The Russian coal companies gradually enter Asian markets. For instance, the Russian leading mining and metals companies ‘Mechel’ plans to sell up to 70 per cent of its total exports to Asian countries. China is expected to be a significant purchaser of Russian coal. The launch of railroad between Russia and China's Jilin province in 2013 has reduced the coal transportation costs. Thus, in 2013 the ‘Mechel’ exported to Asia 8.3 million tonnes of coal of which 6.5 million tonnes went to China. Japan is also a very promising partner for Russia in this field (coal marketing, investment projects in Asia). In 2009, ‘Mechel’ and ‘Mitsu&Co’ signed the Memorandum of cooperation.

These examples show that Asian markets are important for Russian coal exports especially in the situation when American coal exporters sharpen competition with Russian coal in the European markets.

The strategy of diversification of Russia's coal exports meets the key goals of the strategy of diversification of energy exports on the whole and the increase of the Russian energy cooperation with Asia Pacific. The Energy Strategy of Russia for the period up to 2030, confirmed by the Russian Government in 2009, sets the following goals (The Energy Strategy of Russia… 2009):

– to diversify the structure of energy exports, to increase exports of energy products with high added value (refined oil products, petrochemical products, LNG, electricity, *etc*.);

– to diversify the geography of energy exports, to increase energy exports to the Asian-Pacific countries (Japan, South Korea, China, *etc*.), to increase the share of Asian countries in oil and oil products exports from 6 to 22–25 per cent, natural gas – up to 19–20 per cent;

– to construct the Eastern Siberia – Pacific Ocean (ESPO) oil pipeline with annual crude oil transfer capacities of 80 million tonnes;

– to create Sakhalin centre of gas production basing on the 'Sakhalin–1, 2, 4, 5, 6' fields and to develop the construction of gas pipelines in Eastern Siberia and the Far East in order to expand exports to the countries of Asia Pacific (South Korea, China);

– to expand LNG exports to Asia Pacific basing on LNG plants built in Russia.

The analysis of the official Energy Strategy of Russia allows drawing a conclusion that oriental (notably Asian Pacific) vector is to become a very significant direction of the development of Russian international energy cooperation.

Russia's International Cooperation in Energy Field: Risks and Opportunities

Until recently, the European countries were most important partners for Russia in energy sphere. Thus, in 2015 Russia exported total 254.7 million tonnes of crude oil, of which 158.5 million tonnes went to Europe (62.2 per cent), 42.4 million tonnes – to China (16.6 per cent), 14.2 million tonnes – to Japan (5.6 per cent), 10.3 million tonnes (4 per cent) to other Asia Pacific countries. As for oil products, in 2015 Russia exported 150.1 million tonnes, of which 88.9 million tonnes went to Europe (59.2 per cent), 13.9 million tonnes – to Singapore (9.2 per cent), 3.8 million tonnes – to China (2.5 per cent), 1.9 million tonnes – to Japan (1.3 per cent), 8.4 million tonnes – to other Asia Pacific countries (BP 2016: 18).

It should be noted that while Russia exports natural gas to Europe via pipelines (83 per cent of Russia's gas exports in 2015), to Asian countries it sells LNG (14.5 billion cubic metres in 2015). This is an important difference in the field of energy technology: energy trade with Asia gives Russia an opportunity to implement modern energy technology. Of course, LNG technology has been already used for many years (*i.e*., in Japan) but for Russia which started LNG production only in 2009 it is a relatively new energy technology. The sanctions of 2014–2015 limited Russia's access to modern energy technologies. For instance, the US initiated restrictions on Russia's energy sector's access to equipment, technology and services used in deepwater, Arctic offshore and shale oil exploration and production projects (unconventional exploration and production projects). These sanctions are aimed at impeding Russia's ability to develop long-term and technically challenging exploration (Country Analysis Brief… 2016).

Nevertheless, Russia goes on developing the construction of pipelines. In the Western direction, between 2011 and 2012, the first two lines of Nord Stream began operations. By 2019 Russian plans to construct a gas pipeline from Russia to Europe through the Baltic Sea ('Nord Stream-2'). In 2015 the projects 'Turkish Stream' and the 'Southern Stream' were frozen (though in autumn, 2016 the Russian and Turkish governments decided to go on with the Turkish stream). The above-mentioned ESPO pipeline has the Skovorodino – Mohe branch pipeline to China with capacity of 30 million tonnes per year which provides Russia with an access to East Asian energy markets (The Energy Strategy of Russia… 2009). Russia also would like to design a pipeline to South Korea but there are some difficulties with the route. Seoul does not want this pipeline to go across North Korea due to a low level of trust, but a sea route would be much more expensive and can take more time for construction.

Given Russia's willingness to sell its oil and gas to Asian countries Russia can become a prospectively sustainable and significant partner for these countries in energy cooperation. Due to the fact that the region lacks energy abundant countries (China is gradually depleting its sources and Indonesia is no longer an OPEC member state, and the countries of the region have been holding certain fears towards 'unstable' energy supplies from the Middle East after the so called 'oil shocks' of the 1970s) it can maintain and develop deeper ties with Russia in this field. But up to nowadays Asian countries are not major importers of Russia's hydrocarbons. Thus, in 2010 only 6.7 per cent of Russia's gas exports went to East Asia. In 2015 it became not significantly higher – only 6.9 per cent of Russia's total natural gas exports. Russia temporary increased its gas sales, for instance, to Japan after the Fukushima NPP disaster in 2011 but then Japan preferred to conclude long-term contracts with Qatar.

Russia is also involved in energy projects related to energy equipment exports and energy facilities construction in Asia. Europe does not show a high demand for Russia's energy technology and energy machinery products and equipment as some countries of Asia do. Thus, Russia constructed nuclear power plants in China and India. Russia was also awarded contracts to build the first NPP in Vietnam (and the whole Southeast Asian region) but the project is temporary frozen and delayed due to changes in Vietnam's electricity and energy markets situation. Russia also provided equipment for hydro plants construction in Vietnam. It is important that while in energy cooperation with the European countries Russia has only a niche of energy supplier, it has good chances to become also an energy technology supplier for some Asian countries.

Conclusion

Russia is an energy abundant country, an important energy producer and exporter. Russia has traditionally developed close energy ties with the European countries but now the country has set a goal to diversify its energy cooperation geographically through enhancing energy partnership with the countries of Asia Pacific. Some countries of the region are at risk of energy deficit so Russia can play its role in mitigating the energy problems in the region – so the partnership can be mutually beneficial. For Asian countries Russia can be not only a supplier of hydrocarbons (as it used to be for Europe for decades) but also a supplier of advanced energy technologies and energy machinery products. So through cooperation with Asia Pacific Russia can change its role in global energy markets.

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